3.2 Anatomy of a masterpiece: the power of abstraction

Objective
The representation of a three-dimensional space in the two dimensions of a painting must be created by subtraction and abstraction.

To understand the world, we must be able to give a concise description of reality, to summarize it, because the flow of stimuli that reach our senses is so massive that without the ability to compress information we would be overwhelmed and paralyzed. A good summary must express the properties of the world that are useful and relevant to inform action and support understanding, while neglecting everything else. Remember that when we create simplifications, it is not the search of the truth that drives our cognitive activity, but utility.

The objective of the exercise is to show how the representation of three-dimensional reality in an image is always an abstraction that requires the invention of a visual language consistent with what the artist intends to express.

Background
At the British Museum you can admire a fresco from the chapel-tomb of Nebamon, a wealthy Egyptian official who lived around 1350 BC (Fig. 3.2a).

Fig. 3.2a – Fresco from the chapel-tomb of Nebamon, (Anonymous, 1350 BC)

The fresco depicts a garden, with a rectangular swimming pool in the centre, full of fish and surrounded by a thick set of trees. The artist's intention is to give a very realistic representation, as it can be seen from the abundance of details that help us to distinguish different species of fishes and plants. However, the artist has a serious problem: how to represent the space within which to place fish, pool and trees?

So, he proposes a brilliant solution, which we can describe in this way: take a shoe box without a lid. On the bottom paint the pool, on the side walls the trees. Then cut the four vertical edges. Then rotate the side walls to bring them to the horizontal plane.

There's one last problem to solve. The trees at the bottom appear upside down. And here's the second stroke of genius. The artist cuts the wall down and flips it over. Finally, the observer's gaze can span the entire space and enjoy the view of the garden in its entirety from a sort of aerial perspective.

Do you find that Paul Klee's 1930 painting has any relation to the garden painted by the unknown Egyptian artist in 1350 BC? You can observe the painting on the internet, e.g., at this link https://www.paulklee.net/ad-marginem.jsp

Here, too, the three-dimensional space disappears. The plant and animal forms rise from the edges of the painting and look for a way to the centre, trying to escape the earthy rust that thickens along the frame. In the centre of the image, a gloomy red sun struggles with a dense misty atmosphere, making it vibrate with yellowish and greenish tones.

The invention of perspective as a mathematical method of representing three-dimensional objects on a plane is due to Filippo Brunelleschi in a period between 1410 and 1420, probably in 1413, according to Martin Kemp (1990).

Giotto, Cimabue, Lorenzetti and Duccio had already experimented with intuitive perspective during the 14th century. Brunelleschi developed later a general method based on the laws of optics, leveraging his architect expertise in the use of triangles for the measurement of buildings.

The method began to spread in the first half of the 1400s with Donatello (The Banquet of Herod, 1423-27) and Masaccio (The Trinity, 1426). Leon Battista Alberti, and Lorenzo Ghiberti. The work of Piero della Francesca, a mathematician and painter, was fundamental to advance the knowledge of mathematical perspective. Piero provided a theoretical and practical treatment of perspective in the *De Prospectiva Pingendi* in 1474, but it is his masterpiece, The Flagellation of Christ, 1460, that makes us understand how the representation of space changes with perspective (Fig. 3.2b).

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Fig. 3.2b - Flagellation of Christ (Piero della Francesca, 1460 ca.)

Piero translates the universal and perennial truths of mathematics into painting. The extreme precision with which he builds 3D spaces is not just a demonstration of technical expertise. Piero builds an ideal space, abstract, and mental, subtracted from the flow of time. Within this intellectual world the characters become ideas, eternal symbols.

The perspective, which was born with Brunelleschi as a precise method to represent on the plane real three-dimensional objects, revisited by mathematicians and humanist-artists of the fifteenth century, is transformed into the middle to build imaginary worlds and ideal architectures to be populated with characters who become, by virtue of the invented space and an indefinite brightness, symbols and metaphors of eternal ideas and feats.

Instructions
With reference to the images in fig. 3.2c to 3.2i, describe the different methods invented by the artists for three-dimensional representation, using one or more of the following criteria:

- Shrinking distant objects without worrying about spatial relationships
- Using horizontal lines or bands
- Flipping vertical planes to a horizontal plane
- Intuitive or naïve perspective
- Fishbone perspective (viewpoint on the middle axis of the painting)
- Mathematical linear perspective
- Blurring of distant objects
- Colouring distant objects in blue (aerial perspective)
- Decomposing the object into fragments

Focusing on the whole and not on the individual elements, try to describe what the artist wanted to communicate by selecting a certain approach. Focus in particular on what is lost and what is gained by preferring a particular approach.

Fig. 3.2c –Still Life (George Braques, 1911)

Fig. 3.2d – Landscape detail from the Mona Lisa (Leonardo da Vinci, 1503-1504)

Fig. 3.2e – Healing of the cripple and the rise of Tabatha (Masolino da Panicale, 1424-25)

Fig. 3.2f - Hunting and Fishing in the marsh. Tomb of Nakht, 14th century BC

Fig. 3.2g - Last Supper (Duccio da Boninsegna, 1308-11)

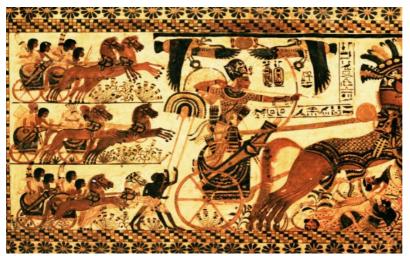Fig. 3.2h - Van Eyck, Madonna of Chancellor Rolin, 1435 (particular)

Fig. 3.2i - Chariot Army, 1347-1359 BC. Painted box found in Tutankhamun's tomb and decorated with scenes of the Pharaoh leading his army Middle Eastern and Nubian armies.

References

Kemp, M. (1990). The Science of Art: Optical Themes in Western Art from Brunelleschi to Seurat, Yale University Press.