**INTRODUCTION**

As a visual sign, a photograph usually represents an object or a scene; this is the habitual way of seeing it. But it accomplishes that common semiotic task by representing various formal features of the object or scene: its color, shape, texture, spatial distribution of light, or even its eventual movement. The curious fact is that photography does this in very different ways.

Our visual world is made of light, because the only thing that our visual system can sense is a certain portion of radiation that gives origin to the perception of light. Light or, more properly speaking, visible radiation is also the physical agent for photography. But our visual system—which comprises all the mechanisms between the eye and the visual cortex—constructs other categories by means of light patterns. These visual categories are usually classified in four or, better, in five groups:

1. **Color**, that is, the perception of the different spectral compositions and intensities of visible radiation;

2. **Cesia**, a new category that describes the sensations originated by the different distribution of light in space, producing the perception of transparency, translucency, opacity, mirrorlike appearance, matt quality, etc.;

3. **Shape**, that is, the construction of different spatial configurations starting from the detection of borders between areas differing in color or cesia;

4. **Texture**, that is, the construction of patterns made of relatively small elements (also detected by differences in color or cesia) that are visually grouped according to certain features;

5. **Movement**, which implies the perception of displacement of areas or visual elements, either between themselves or all of them with respect to the observer.

It has been argued whether photography functions as an indexical sign, because of its necessary physical contact with the objects that emit, reflect or transmit the light patterns that the photograph fixes, or as an iconic sign, because of its condition of being an analogical representation of the visual world (for instance, see Peirce, 2.265 and 2.281; Morris, 1938: 24; Eco, 1968: sect. B; Dubois, 1983: chap. 1; Schaeffer, 1987: chap. 2). The present paper analyzes how the visual categories described before are reproduced by photography or represented in it. We will see that the consideration of a photograph as an index, an icon, or even a symbol, depends largely on which visual category we are taking into account.

Color: the representation of the spectral distribution of light...
Photography represents color by sharing physical properties with the objects. In truth, instead of representing color we can say that a photograph reproduces color. We have an indexical aspect of photography here.

**CESIA: THE REPRESENTATION OF THE SPATIAL DISTRIBUTION OF LIGHT**

Light interacts with objects and it can be absorbed, reflected or transmitted, either regularly, mainly in one direction, or diffusely, in all directions. These are physical matters that the human visual system perceives, decodes and interprets as visual signs carrying information about certain qualities of the objects around: level of lightness or darkness, degree of opacity, glossiness, transparency, translucency, matt quality, etc. These visual aspects have been encompassed under the generic term “cesia” (Caivano 1991, 1994, 1996).

Shape: The spatial configuration of the visual world

With respect to the shape, or spatial configuration, it happens that a photograph, which is a two-dimensional piece of paper, adequately represents three-dimensional objects, in the same way than a draw perspective does. Nevertheless, there are big differences between the perception of shapes and space by our visual system and the reproduction of them by photography.

First of all, human beings have binocular stereoscopic vision, while photography is equivalent to the point of view of a single eye, a kind of cyclopean vision. Furthermore, the photograph can present images that, compared with the ones obtained by our direct vision, result considerably distorted (as it happens with the shoots made with wide-angle and fish-eye lenses), and even so the objects result perfectly recognizable. Another alteration that photography normally produces, and that is usually neglected because of its obviousness, is the change of size: the images of the objects in the photo may be smaller or bigger than the images of direct vision (in long-shoot pictures they could speak of iconicity in the photographic representation of cesias.
are usually smaller, with the use of macro lenses it is the opposite way).

Thus, with respect to the shapes and space, the iconicity in photography does work, because the recognition of what the photo represents is given by a transformation of a topological kind. Shapes and spaces in the photographic image and in direct vision are only similar.

**Texture: The visual patterns composed of small elements**

We have seen that the representation of the spatial distribution of light (or cesia) in photography is not physically congruent with the spatial distribution of light produced by the photographed objects themselves, and that the geometrical status of photography is different from the geometry involved in our visual world.

Texture is a phenomenon that can be considered as something of a visual nature and also of a tactile nature. Let us concentrate on the visual aspect. If we take a texture that is devoid of relief, something like a drawn texture, only perceptible by vision, then, a photograph gives a very close reproduction of it. Picture and textured object are in the same geometric space, and both the perception of the texture and the reproduction made by the photograph work because of differences in luminosity or color between the elements and the background. Thus, we come back to the indexical aspect of photography.

But if we take a texture that has relief, that is materialized in a three dimensional space, which in addition of being perceived by vision is perceived by touch, then, photography faces the same constraints than for the representation of shape and the qualities of space. An we return to the iconic aspect.

**Movement: The visual perception of the displacement of objects**

With respect to movement, photography, being precisely the fixation of an instant and hence carrying the feature of immobility, has to resort to certain basic devices or conventions to represent it. In this sense, and against the claims of Roland Barthes, who had considered photography as a message without codes (1961), we have the fact that certain elementary codes are necessary to interpret the representation of movement in the photographic image.

There are various ways of representing movement by photographic techniques. One of them is by means of an effect of blurring. This blurring of the image may occur in different ways: 1) the moving object is presented as a blur and the background appears fixed, 2) the moving object appears fixed and the blurring is given in the background (which despite of seeming a contradiction results in an very effective representation of movement), 3) both figure and background appear blurred or “moved”. Some other techniques, instead, do not resort to the blurring of the image: 4) the movement may also be represented by a sequence of fixed photographs or by a sequence of fixed images isolated in the same photograph; 5) finally, the movement can also be represented in a photograph where the object has been “frozen” in an unstable position, that our knowledge of the visual world must resolve in the instant before and the instant after.

There exist, of course, various differences between most of these ways of representing movement in photography and our direct visual perception of move-
ment. I am going to enter into details, but it is obvious that in some of the mentioned cases the photo resorts to certain canons or conventions, also used in painting and sculpture to represent movement. And, in this sense, thus, the symbolic aspect of photography appears.

CONCLUSION

According to Schaeffer (1987: chap. 2.8), we can see that photography is a complex kind of visual message that cannot be classified into a specific kind of sign.

One of the visual elements that a photograph represents with greater realistic appearance than any other representational device is the spatial distribution of light that the objects produce, their cesia. These kind of visual signs, along with signs of shape and texture, are the ones that give “realism” to a perceived image. In this respect, these signs are more important than color, because black and white photographs were considered more realistic representations of objects than colored paintings, even of the naturalistic or realistic school, for instance.

As we have seen, photography reproduces, color in a much more realistic way than it reproduces any other kind of visual signs, because the external objects and the photographic reproduction of them share the same physical properties with respect to the spectral distribution of light that originates color perception. However, color is not the most important aspect to give realism to a photograph. We can note a kind of contradiction here. While color is the visual sign best reproduced by photography, in the sense that it is more closely related with the physical reality of objects, it is the one that less contribute to the appearance of realism and concordance with the physical reality that photography conveys. Instead, this role is endorsed to other visual signs of photography, mostly to perceived spatial distribution of light and texture.

One of the consequences of this is that post-photography, understood as digitally produced or modified images with photographic results, must rely more in these kind of visual signs than in any other one if realistic images are intended. The important thing is to made correct representations of spatial distribution of light and texture, color and shape are less important. In this sense, it can be verified that the aspect that has made the softwares of drawing’s rendering or photograph processing to evolve notably is the manipulation of devices for the simulation of spatial light distributions and surface textures.

REFERENCES


