“Art upsets, science reassures”

Popular stereotypes frequently present the scientist and the artist as extreme opposites in their pursuit of understanding the scientist as being objective, disciplined and rational, and artist as being subjective, impulsive and imaginative. Braque described it very felicitously by saying**:** *Art upsets, science reassures*.
Yet, are they really so different in the ways they look at the world? To what extent do you consider these stereotypes accurate, and to what extent do you consider them distortions of the ways in which the sciences and the arts give us their knowledge?

Living in this world, we have many opportunities to appreciate both fields of science andart. This includes various activities like exhibit ions or, in science, we are also notice its usefulness from the fact that many synthesized fibres are made into our clothes and so on. Further, we are clearly aware that within these fields there are experts; scientists and artists. In an effort to know what they both work on and what they are we have created stereotypes, which remain persistentlyon our mind and sometimes are extremely useful for us to categorize things . On the other hand, it could create problems since it has the potential of conjuring up some wrong ideas on them and thus, prevent us from seeing what they truly are. And within the stereotype, the scientists and artists aredescribed as polar opposites. Stereotype, though, really depends on how you define the word and how it is categorized. Then, to what extent does this stereotype work and what is wrong about it?

Science is a field of knowledge, which tries to explain the natural phenomena occurring on the earth, and look for the laws of nature. Scientists can carry out investigations (what is called the empirical method) in order to broaden the area and explore for better reasons to explain. From this definition, it is convincing that scientists should be objective, disciplined and rational. What they are doing does not need their values as human beings (necessarily), but their intellects to execute the task. In fact, in experimental science, when a scientist finds himself with a set of results, he must be so. Being rational and disciplined helps him to find out the laws by making him think in an ordered manner, in a logical way, and when needed, this rationality is vital for him to link the new data together with his obtained knowledge to establish a new theory or to decode what is implied in the data. Objectivity also is an indispensable point. It is essential to find bias-free theories and to carefully observe the truth, which is out there . So, we assume that well-known facts which we learn in school were all found by rational and objective scientists, but it often happens that it is not the case.

First of all, what is scientific objectivity? Does such a thing really exist? Let s have a look at an example. In physics, we firstly learn that light behaves as a wave. When we imagine it, we tend to have an image of transverse wave of short wavelength emitted on us from the light on the ceiling. But, later, when we learn that light also behaves as particle, we say Hang on. How can it be both a wave and a particle? But that is it; in 1905, Albert Einstein proposed that light could also exist in the form of a particle, a small piece of electron called a photon. Until then, for over two hundred years light had been experimentally proven to be a wave.

When Bohr boldly stated in his 1926 theory of complementarity that light could be both a wave and a particle. Knowledge of both these very different aspects was necessary for a complete description of light; choosing one without the other was inadequate. From then, scientific subjectivity was introduced. Whenever a scientist set up an experiment to measure the wavelike aspect of light, the subjective act of deciding whichmeasuring device to use in some mysterious way affected the outcome, and light responded by acting as a wave and vice versa.

An other situation when scientists are not really being objective is when they are so certain of their theory that they try to make the obtained results fit to their theory. When this happens we can see that scientists are not trying to discover the laws of nature from the data as we think. The opposite way around. A good example might be Mendel s green pea experiment. In this effort, he looked for seven different alleles and observed it for 15 years (!). After this long period of time, he successfully found the famous laws on genetics including the principle of segregation and so on. But biological experiments often have more difficulties than physics or chemistry also due to the fact that the object being tested are alive and it cannot be in a universal way during all the investigation continues. They are less mechanical than chemicals, which we use in chemistry, or electrical circuits in physics. We know that biology experiment do not always work. Variables cannot be controlled and the modern biologists expect a percentage of exceptions . Therefore, he must have selected relevant data only to show that his theory works universally. This, too, cannot be said as being objective- rather, he sort of knew what should happen and manipulated the results to have the exact number as in the ratios, which are stated in his laws.

But both revolutionary art and visionary physics are investigations into the nature of reality, both experts sharing the desire to investigate the ways in the interlocking pieces of reality fit together. In fact, great scientists have always relied on intuition and imagination. That is why new ideas sprung from looking at old facts in a new way. This means that there is no way to look at facts objectively- in a new way- because there is only one objective way . Total objectivity must be something sterile and uncreative (thus not stimulating!). We saw that science was not absolutelyobjective as we thought. Then can the same thing be referred to stereotype of artist as well? What exactly makes us to have the impression of artists as impulsive, imaginative and subjective?

Yet, scientists are concerned with the external world whereas the artists are not only concerned with external reality but with inner realm of emotions, myths, dreams and the spirit as well. There they need to be imaginative and subjective. Still, within their work of art, artists coincidentally or not conjure up images and metaphors that are strikingly appropriate when superimposed upon the conceptual framework of the physicists later revisions of our ideas about physical reality. So, not only artists need imagination but scientists, too! Objective world exists untouched, but we can see it only through the filter of each person s temperament- perception. Then we are using our imagination continually to understand everything in this world. So, then, even if we talk about such a thing as objectivity it cannot exist.

Within the conventions of any period, artists can choose both their subject and the manner in which they depict their subject; their particular interpretations embrace the ways they see the world. Many art historians mark the point where Manet exhibited his large composition *Luncheon on the grass* in 1863 as the beginning of modern art. This painting had no logical consistency. This was only the beginning of everything, though. He went on introducing his

own techniques as if he were challenging the old tradition. Yet, the most important work that he did and to be introduced here is the fact that he was the first artist in Western history to curve the hallowed horizon line. The horizon we see appears straight but in fact, we know that it is curved (since the earth is not only a flat surface). Each visible straight segment is an exceedingly small arc of a circle twenty-four thousand miles in circumference. Manet knew that the flat space of Euclidean appearance had to be reviewed. At that time, mathematicians felt, too, that it was the time to review Euclidean mathematics because non-Euclidean mathematics is more of an importance to us as we live in the three-dimension world. Then, there came Monet. In 1891 he began to paint the same scene repeatedly viewed from the identical position in space, but at different times of day.He drew the entrance of the cathedral in Rouen in forty separate works because he had seized upon a great truth about time that an object must have duration besides three extensions in space; thus theintroduction of four-dimensions in art. Clearly, any real thing must have extension in four directions: length, breadth, thickness and duration. Later, in his water lilies painting series, he has blurred all the possible lines and made the distinction between things (e.g. between water lilies and water, and the reflection in itself) difficult. In fact, it is so diffuse that it could accidentally be hung upside down. This was the challenge to the veracity of Euclid s vectors which consisted of plain words like top , bottom , right and left . Monet s concern for the fourth dimension was somewhat similar to those investigated by physicists and mathematicians of later times. Paul Cézanne, instead, wanted to investigate the relationship of space, light and matter. So, this time, he made an opposite approachfrom that of Monet, finding it by eliminating the variable of time. (It sounds like a scientific experiment where we keep variables and change one at a time!) In previous times, when expressing light, artists always had it travelling in the straightest lines. Instead, his form exists in a universal light in the sense of directed rays from a single source. Light which is uniform and enduring, steady, strong and clear. Cezanne challenged Western culture s assumptions regarding the nature of light by eliminating the angle of declination that had prevailed in previous arts. In doing so, he also called into question the assumptions about the other two constructs, space and time. This idea, indeed, fitin exactly with the new conceptions of space, time and light that were to be elaborated by a physicist in the early years of the twentieth century.

Looking through these facts, the surprising thing is that in order to have new knowledge, we should look at the world in different way than before and to do this, both artists and scientists actually need to be imaginative. That is why revolutionary artists like the three mentioned above and revolutionary physicists managed to investigate so far as we know. Further, the fact that revolutionary artists had these ideas before anyone else tells us that if anything new is to be discovered, then it could be no one but them. Therefore, we see that the widely prevailing stereotypes prevent us from seeing what exactly scientists and artists are like. Although to some extent the stereotype may be even helpful to categorize them and especially living through our daily life, it could also provide us the danger of not seeing the true aspects of these two types of people.

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