

# THE INTERACTION BETWEEN ART & SCIENCE: IMAGING & IMAGINATION

A. Tamir,

*Ben Gurion University of the Negev, Beer Sheva, Israel*

The "two cultures" - *Art & Science* – are usually looked upon as two different entities, but are practically one entity. Even historically, art did not exist as an independent genre as it does today. Great masters were well-ground in both science and art, as represented by Leonardo da Vinci.

The famous Niels Bohr (1926) said that light is not just a wave, nor is it just a particle; it has a dual nature: both a wave and a particle. A similar duality exists between Art & Science in that: Art is used as a means to illustrate science, and Science is instrumental in creating art. Such a combination between Art & Science is unique in bringing spiritual imagination and logical scientific imaging into one framework.

Among the scientific concepts illustrated in the presentation are, for example, Einstein's theory of relativity, gravity and the absence of gravity, entropy, alternative medicine, infinity, the big bang, motion and fluid flow, the concept of time and periodicity as well as perspective. For each category, paintings were selected to demonstrate a specific scientific principle, some by deliberate design of the artist, others without any such intent.

The scientific principles and sciences that served as a basis for the creation of art include, for example, chaos, space sciences, fluid flow, holography, holusion, rheology, zoology and botany, the psychology of vision cognition by the brain demonstrated by visual illusions, virtual motion as well as impossible and contradictory situations.

The presentation will focus on the reciprocal influences of science, in its endeavor to understand nature and the arts, as acts of creation that speak to our emotions.

## Art & Science – One Face



An excellent example is the following inspiring painting



*Starry Night* by V. van Gogh (1889)

This is the most famous of all van Gogh's paintings from the great creative period of June and early July 1889. A highly dramatic cosmic event is taking place in the sky above the sleeping town below, an atmosphere crowded with mysterious flowing lines, suggestive of galaxies in motion. Two gigantic spiral nebulae are entwined; eleven enormously enlarged stars, like fireballs with aureoles of light, break through the night; an unreal orange-colored moon seems to be joined to the sun; a broad band of light - perhaps the Milky Way - is drawn across the horizon, and the deep blue sky appears to be in unsettling turmoil. The immediacy and expressive power of the painting are intensified by the impulsive, sweeping flow of brush.

The equivalent to the above artistic-literary description is known in scientific terms as vortices and flow over submerged bodies. One should also note the interaction between the streamlines formed in the flow over the eleven stars as well as the boundary layer created above the mountains - all in all, a painting showing how art serves to illustrate scientific concepts.