

**QUANTUM AESTHETICS: WHEN QUANTUM THEORY STIMULATES
THE ARTISTIC AND SCIENTIFIC IMAGINATION.
A CRITICAL ASSESSMENT.**

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**QUANTUM AESTHETICS/QUANTUM PHYSICS /DIALOGUE BETWEEN THE
ARTS AND SCIENCES**

This article adopts the twin viewpoints of the arts and physics to consider the phenomenon of the “quantum” label in aesthetics, which emerged in Valencia, but is no longer exclusive to Spain. A great many international artists claim to be part of the Arts and Sciences current, which has become, among the cognoscenti, a cutting-edge label for contemporary creation. But, beyond its dimension as fashion – an ever-present danger in the frenzied quest for new epistemological concepts – what is really going on in this appropriation of science by art? What does the artistic imagination owe to quantum theory? Drawing on four founding principles of this new “current”, the present article will seek to show that a fertile dialogue between the arts and sciences must be based more on shared imagination than on the use of common technical tools and concepts.

The year 1994 saw the foundation in Granada of an international group known as the Salón de los Independientes, which identified quantum theory as the spearhead of a new, “revolutionary” aesthetics. According to the group’s founders, quantum physics played a fundamental role in the “disorder” of post-modernity and provided fertile ground for the development of some of the greatest theories (in philosophy, history, sociology and aesthetics) of this century and the last. In the field of art it is said that, by challenging the principles of classical physics, countering discontinuity with continuity, causality with chance and the separability of atoms with their interdependence, quantum physics might offer a means to enhance the understanding and production of the artworks of the future.

In the *Valencia Manifesto* born of these meetings, the signatories (around sixty artists including the writers Juan Goytisolo and Javier Tomeo) clearly uphold quantum aesthetics as necessary to the renewal of form and ethics in a Spain they regard as still too bogged down in 19th-century realism. Gregorio Morales, one of the movement’s pioneers, developed his theory of quantum aesthetics in several books: *El cadáver de Balzac. Una visión cuántica de la literatura y del arte*;¹ *Principio de incertidumbre*;² *La isla del loco*.³ He was also one of the contributors to the book produced by the Salón de

¹**Gregorio Morales**, *El cadáver de Balzac. Una visión cuántica de la literatura y del arte*, Alicante, De Cervantes Ediciones. 1998.

²**Gregorio Morales**, *Principio de incertidumbre*, Valencia, Diputación de Valencia, 2003 (*Colección Novatores*).

³**Gregorio Morales**, *La isla del loco*, Alhulia, Mirto Academia, 2005.

los Independientes, *The World of Quantum Culture*, edited by Manuel J. Caro and John W. Murphy.⁴

The movement launched in Spain around quantum aesthetics seems now to have gone global. A major current of international artists claim to be part of the Art and Sciences movement or are read through the “quantum” filter by many academic critics. Examples of these artists, in a list in no way intended to be exhaustive, might include:

- in theatre the French playwright Claude Régy, whose theoretical essays about his quantum practice, *Espaces perdus* and *L'état d'incertitude*, have become crucial reading;

- for the novel, the incorporation of quantum material by French writer Michel Houellebecq, notably in *Les Particules élémentaires*, and Japanese author Haruki Murakami (*Kafka on the Shore*), which is wonderfully suited to a quantum reading;

- in music, the American composer John Cage, whose experimental techniques incorporate quantum concepts;

- in science fiction, the American writer Robert Anton Wilson, whose books in the *Schrödinger's Cat Trilogy* (*The Universe Next Door*, *The Trick Top Hat*, *The Homing Pigeon*) are clearly identified as quantum.

The adjectival use of the word “quantum” seems, among the cognoscenti, to have become a cutting-edge label in contemporary artistic creation. Beyond its dimension as fashion – an ever-present danger in the frenzied quest for new epistemological concepts – what is really going on in this appropriation of science by art? What does the artistic imagination owe to quantum theory?

Of the eleven principles defined by Gregorio Morales – *the complementarity principle; the uncertainty principle; the anthropic principle; non-separability; a-causality; complexity; ubiquity; morphogenetic fields; the universe as hologram; implicit order and manifest order; the non-distinction between matter and energy, body and mind*⁵ - four have proved particularly fertile for the artistic imagination.

The anthropic principle is crucial to an understanding of the issues of contemporary creation. “Open” works – spaces constructed in collaboration with the receiver – justify the analogy through the idea that the observer modifies the experiment simply by observing it, dooming to failure any objective attempt to pin reality down. So, to give a concrete example, in the play *Sangre lunar* by Sanchis Sinisterra⁶ (on the same theme as Almodóvar's *Talk to her*), the aesthetics of translucency at work enables the audience to construct the meaning: snatches of information, polysemous clues and semantic gaps mean that receivers each invent their own story and individualize their relationship to the fiction. The analogy with quantum theory and the reclamation of the anthropic principle is made possible here by the reinforcement of cognitive mechanisms dependent on the subject, who seems to regain a freedom previously denied by decades of what is seen as the disembodied monster of determinism. The art object as a thing in itself, disconnected from the perception that underpins it and as a discrete object of analysis, has disappeared, to be replaced by the intrinsic relationship between the thing seen, read or heard and the subject who sees, reads or hears it. It is the receiver's

⁴Manuel J. Caro and John W. Murphy (eds.), *The World of Quantum Culture*, Westport, Greenwood Publishing Group, 2002.

⁵Here we are following the broad lines of a seminar given by Gregorio Morales at the University of Toulouse in 2008 as part of the LLA/CREATIS research programme into quantum theatre.

⁶José Sanchis Sinisterra, *Conspiration vermeille Sang de lune / Conspiración Carmín Sangre lunar*, Toulouse, PUM, 2003 (French translation by Patrice Pavis and Isabelle Martin).

capacity for interpretation that enables the work to emerge in a malleable configuration that is unique in every instance.

The uncertainty principle has also proved a powerful catalyst for analogies. Armed with the idea that an object cannot be simultaneously endowed with properties as obvious and ordinary as position and speed, contemporary creators have claimed the right to emancipate forms in art. Releasing them from what is felt to be too rigid a corset, artists have laid claim to that which underlies all poesis, the generation of forms emancipated from “real referents”, permitting transgressions, fantasies and deviance from norms. So, in Alberto Velasco’s *Le Quantique des quantiques*,⁷ Abel Capricorne is a quantum poetic subject, able to be in several places at once, in a world where hair lotion makes a pair of old moccasins sprout new hair and one can be transported to foreign countries by thought. Everything is possible including, crucially, fantasy rendered legitimate by science.

Similarly the principle of a-causality has given rise to surprising experiments grounded in the realization that one phenomenon may not necessarily be caused by another, as can be seen in the microscopic world. John Cage has taken this factor unpredictability to the extreme of making chaos the underlying principle of his (musical?) work *4’33”*. For four minutes and thirty-three seconds musicians silently play a musical composition intended to reclaim any sound that occurs unplanned.

Creators often refer to the concept of non-separability. The idea that the universe is an interrelated whole has made it possible to counter the idea of spatio-temporally coherent character. In her *Aurelia Steiner* triptych,⁸ Marguerite Duras constructs three superimposed figures, Aurelia Melbourne, Aurelia Vancouver and Aurelia Paris, who are three childhood states of the same figure. Their voices advance like a single wave passing.

So quantum aesthetics makes enthusiastic and imaginative use of the founding principles of quantum physics. This appropriation seems to us to be legitimate: it is the essence of art to set itself no bounds where sources of inspiration are concerned and quantum physics, as an activity that creates concepts and thus imagery, should not be excluded. Yet, however legitimate this appropriation is, it can still pose problems. Art, though admirable in these flashes, may perhaps be too quick to pre-empt scientific imagination to the benefit of its own. Physicists have learned that nature cannot easily be made to fit our categories; it plays cunning, mischievous tricks, even within our most elaborate constructions, be they classical, quantum or something else. The discovery of a purely classical chaos in the equations of Laplace’s determinism in the 19th century is an iconic example. In its frenzied search for new epistemological concepts, art may risk failing to notice such potential reversals and the artistic imagination may crystallize too quickly in definitive ideological positions. To illustrate this idea, in a recent study we proposed a heterodox reading of two of the principles central to quantum aesthetics, the “anthropic principle” and the “principle of non-separability”.⁹ We argued that it is possible to take some “epistemologically wrong-footed” position by showing that the *quantum* dimension of the anthropic principle is not necessary and that -quite amusingly- quantum physics can come to the rescue of our ordinary world against the

⁷Alberto Velasco, *Le Quantique des quantiques*, Paris, Editions Hermann, 2010.

⁸Marguerite Duras, *Le Navire Night, Césarée, Les Mains négatives, Aurelia Steiner, Aurelia Steiner, Aurelia Steiner*, Mercure de France, Paris, 1982.

⁹Monique Martinez and Michel Caffarel “L’esthétique quantique: un regard croisé Arts et Sciences”, in *Science, Fables and Chimera: Strange Encounters*, edited by Laurence Roussillon-Constanty and Philippe Murillo, Cambridge, Cambridge Scholars Publishing, 2012.

non-sense of classical physics describing the instant interaction at any distance between all particles in the universe. Two examples illustrating that the opposition advocated by quantum aesthetics between a “classical” position associated with determinism, cold universe, causality etc. and a “quantum” one associated with indeterminism, freedom, proliferation, boundless universe etc., must be questioned. Physicists are perplexed by the need to apply the quantum label to “restore to art the grandeur, possibilities and mystery it had lost”. This grandeur and mystery still exist, lurking in the folds of our visions of the world and our boldest artistic and scientific constructions. So let us be vigilant. Just as scientists should avoid judging artistic creation against scientific procedures, so artists must take care not to quantify and formalize their own intuitions using the technical tools of science. If there is to be a fertile meeting between the two, it can take place only on the common ground of the imagination, in its artistic and scientific manifestations, rather than that of the technical approaches proper to each field. Each of these two worlds can then much benefit from the intuitions, concepts and images of the other.