

# Quantum Paradoxes in Papier-Mâché: An Urban Journey Through Science, Art, and Wonder

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## **Public spaces used (Max 150 words):**

Briefly describe the public space(s) used and the potential impact in terms of number of participants

Putignano's historic-center was gently modelled by a profound metamorphosis into a diffused museum, an open-air art gallery where bizarre papier-mâché sculptures, inspired by paradoxes of quantum mechanics, were harmoniously integrated within the urban context. This integration enhanced the intrinsic beauty of the mediaeval location, creating unique elements of cultural and tourist interest with unlimited access. This distinctive art collection was crafted to resonate with every potential audience member, and the choice of papier-mâché as preferred artistic medium was not accidental. This ancient and noble art, deeply rooted in the carnival tradition [<https://www.carnevalediputignano.it/>], possesses unique plasticity to allow visual interpretation of abstract and often surreal concepts, such as those emerging from paradoxes in the subatomic world. Carnival, with its innate ability to create parallel universes, became the perfect vehicle to narrate these fascinating phenomena and to grant long-lasting aesthetic impact on participants of all ages and educational backgrounds.

## **Activity description (Max 600 words):**

Provide a brief description of the initiative, including key components, format, and any innovative communication elements

Contamination, as a fusion of elements from diverse origins interfering within a single process, perfectly encapsulates the essence of the initiative. Art and science harmoniously merged and cross-correlated to celebrate the International Year of Quantum Physics. Peculiar, often counter-intuitive, concepts belonging to the microscopic world were creatively shaped by the talent of papier-mâché artists, custodians of inexhaustible ingenious. They have outstandingly translated into naïve 3D forms, colours, and visions some of the most challenging ideas represented by entanglement, superposition of states, uncertainty principle. The idea was born from a jolt to logic, a break from convention: each piece on display was not merely a papier-mâché masterpiece, but a true visual poem, a playful paradox meant to stimulate speculations about the most abstract concepts of science. The exhibition was a metaphorical journey that engaged curiosity, emotions, perceptions, and sentiments of those who explored the suspended realm of quantum physics, where classical rules seem to dissolve.

The exhibition unfolds through six installations, bringing quantum physics into unexpected locations of the city-center: **Senbazuru** (atomic mushroom clouds surrounded by delicate origami, where destruction and hope coexisted in a work created in memory of Sadako Sasaki and her thousand paper cranes); **Shadows – Quantum Freedom** (fragile and poetic piece, with fragments of papier-mâché forming an intermittent message of peace

only when struck by a precise beam of light); **Universal Love** (mysterious interconnections among living beings merging into a cosmic embrace, transcending space and time); **Still Life** (a watermelon that revealed itself as a trap—behind the appearance of a summer fruit lied compressed bodies, silent pain, and guilty silence); **The Seed of Reality** (observer's gaze defining the contours of reality and shaping the world); **The Observer and the Observed** (a female figure suspended in the void, drawing the viewer into a play of reflections).

The ambition of the art gallery was to offer visitors a comprehensive and welcoming environment in which to freely explore scientific concepts: there, well-acknowledged competences of CNR-IFN for outreach activities have perfectly matched vision&strategy of Putignano Carnival Foundation to create a vibrant and virtuous model of collaboration between public and private partners towards:

- identifying and granting the most suitable urban spaces, to ensure artworks visibility and enhancement within the gorgeous context of the historic city-center
- providing technical and logistical support for safe installation and overall maintenance of papier-mâché sculptures, made by selected materials to guarantee long-term stability-durability
- offering financial support (funding) to ensure sustainability and management of the ambitious project with significant touristic impact
- involving experts in communication to promote the initiative via social media, institutional channels, websites, newspaper, local tv&radio...
- disseminating informative contents aimed to engage a diverse audience, including the use of QR code totems accompanying each papier-mâché installation, providing access to synopses, behind-the-scenes materials, videos, and additional content.

A series of collateral events, live shows and theatre performances have contributed to creating a vibrant cultural and scientific hub, letting all participants delve deeper into the exhibition's themes by translating any potential implication emerging from quantum physics into scenic action augmented with artistic interpretation, power of narration, metaphor, and emotional engagement. In parallel with live entertainment, debate sessions with experts, philosophers of science and artists who have explored the intersection between art and science, have promoted a constructive dialogue among various communities, all engaged in a novel form of creative knowledge to further enhance the experience offered by the art gallery. Completing the experience were the Quantum Nights, a series of playful activities and workshops designed for children, offering opportunities to explore, learn, and discover that in Putignano, science has never been so... paradoxically entertaining.

**Impact on the city (Max 300 words):**

Explain how the activity has influenced public awareness, engagement, or understanding of quantum science in your city

The aim of the project was to awaken a sense of wonder, guiding the audience through an immersive journey among papier-mâché artworks that seemed to emerge from a dream. **Art**, with its ability to engage emotions and overcome linguistic barriers, evokes the elusive nature of reality, making complex scientific concepts accessible. It transforms abstraction into visual concreteness, promotes unconventional awareness and intuitive understanding, induces new perceptions of reality to stimulate engagement, curiosity,

imagination, openness. **Quantum science**, with its philosophical implications and inherently counter-intuitive nature, offers the perfect framework for inspiration and awe. It pushed art creators towards unexplored paradigms and encouraged visitors to enquire about science. Yet, thanks to the mutual contamination between science and art, this exhibition has become something more: a way to reclaim one's role in the universe (***The Observer and the Observed***) while rejecting individualistic tendencies (***Universal Love***); a tool for defining the reality that surrounds us (***The Seed of Reality***); a moving expression of hope for reconstruction (***Senbazuru***); a form of social critique, a pretext for analyzing contemporary reality and recognizing its cruel paradoxes - hands that remain unblemished yet are conscious witnesses to the most ferocious crimes (***Still Life***); an opportunity to patiently construct tireless messages of peace through the gentle medium of papier-mâché (***Shadows – Quantum Freedom***). The master artisans' inspiration grandly contributed to unlock an intuitive understanding of quantum science in the visitor through a virtuous process of intimate learning, where the papier-mâché became a subtle link to combine admiration for artisanal creativity with suggestions on the mystery of the quantum physics, stimulating the scientific interest towards the microscopic world even among children. Immersive environments, featuring interactive elements and exciting narratives, have challenged conventional thinking to view reality from an unusual perspective and reveal the magic hidden within the laws that govern the universe.

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