Titles and Abstracts *On the Infinite*

October 17, 2017

Yves André, mathematics, CNRS-Université Pierre et Marie Curie-Université Paris Diderot

- Title: Stories of the geometric infinite
- Abstract: Various infinitistic narratives are considered, from Tempier's theological condemnations to Poncelet's projective geometry and beyond, through the Renaissance painters and Desargues.

Andrew Arana, Philosophy, University of Paris 1 Panthéon-Sorbonne

- Title: Seeing the Infinite
- Abstract: In projective geometry we study spaces in which there are points at infinity, where parallel lines meet, in addition to "regular" non-infinitary points. In complex projective geometry, we add imaginary points to those. Geometry has classically been conceived as a science closely connected with the visual, both its subject matter and its methods. Yet imaginary points and points at infinity seem to pose problems for this conception. Geometers since the nineteenth century have tried to overcome these problems, finding new ways to "see" in geometry. In this talk I will discuss this work, which occasions both advances in geometry and in our understanding of visual thinking in mathematics.

Joan Bagaria, mathematics, Universitat de Barcelona

- Title: Symmetries of Infinity
- Abstract: We shall show that Infinity is not characterized by its size, but rather by its inner symmetries. In particular, the theory of large cardinals, which studies the Higher Infinite, may be viewed as the study of the symmetries of the set theoretic universe.

Emily Brady, Institute for Geography and the Lived Environment, School of Geosciences, University of Edinburgh

- Title: Aesthetics and Infinity

- Abstract: Infinity in aesthetics plays out in concepts of limitlessness and boundlessness, as well as more concrete aesthetic categories such as the sublime. This presentation considers aesthetic experience of spatial and temporal 'infinity' in both the environment and the arts. Deep time and the temporal sublime are evidenced in geological phenomena and the cosmological experience of the vast starry sky at night. Artists have engaged with spatial and temporal limitlessness in important land artworks by Nancy Holt, Robert Smithson, and others. Limitlessness and boundlessness, conceptually and aesthetically, throw up significant ethical questions too. Ideas of infinity connect to notions of human freedom—but with that freedom there are also limits drawn, for example, through notions of epistemic and moral humility. This ethical dimension will be explored to foreground the importance of this recognition of limits.

Maria Clara Cortés, Instituto de Investigaciones Estéticas, Universidad Nacional de Colombia

- Title: Polluted Infinities
- Abstract: In this talk I will explore the idea of *polluted infinities*, based on two conditions: the duality *object/abstraction* and the relation *body/infinite*.

  I will focus on works by artists (such as Yves Klein, Álvaro Barrios, Piero Manzoni and Lygia Clark) who have crossed conceptual, formal and disciplinary boundaries, opening new understandings of Infinity in contemporary art.

Briony Fer, Department of History of Art, University College London and FBA

- Title: Infinity and the work that art does
- In this talk I want to talk about the concept of infinity in the context of modern art, as an insistent yet contested idea that can be tracked from Marcel Duchamp through Louise Bourgeois to many artists working today. The paper concentrates on the work of the Mexican artist Gabriel Orozco, especially his approach to multiple series as they proliferate indefinitely as so many different versions of themselves. The affective register triggered by what Valéry called 'aesthetic infinity' is considered in the light of their psychic as well as systemic and artistic complexities. The capacity of infinities to multiply both inwards and outwards, spatially and temporally, presents us with a critical problem of scale, one that is arguably particularly pressing right now as the ?infinite immensity? of virtual and digitized spaces and the seductions and terrors that attach to them seem to engulf and overwhelm the material work that art does.

Sebastian Gandon, Université Blaise Pascal - Clermont-Ferrand II, Clermont-Ferrand

- Title: The Self and the Infinite
- Abstract: In *The World and the Individual* (1898), the American philosopher Josiah Royce claims that Dedekind's theory can be seen as a development of a line of thought first outlined by Fichte and Hegel: the so-called "ideal Self" is infinite, and arithmetic is the theory of its bare structural form. I intend in my talk to explain Royce's intriguing idea.

Wilfrid Hodges, mathematics, Queen Mary, University of London Emeritus and FBA

- Title: Avicenna's proofs of God's existence and uniqueness
- Abstract: Avicenna (11th century Persia) famously gave proofs of God's existence and uniqueness, which formed the direct inspiration for Aquinas's even more famous proofs. The proofs talk about finite and infinite, and Avicenna clearly intended them to be robust in some logical sense. So we expect to be able to correlate his own logic with the moves in his theological proofs. Nobody has yet found any convincing correlation. In particular there is no visible correlation between Avicenna's modal logic and the properties of 'necessary' used in his theological proofs. My present hunch is that there is a connection through Avicenna's theory of the relationship between cause and logical demonstration, and that the key logical principle behind the theological proofs is a metalogical principle about the finiteness of chains of demonstrations. This suggestion is very tentative.

Hanna Johansson, Academy of Fine Arts, University of the Arts, Helsinki

- Title: Art and Infinite Reproduction
- Abstract: Contemporary art has since the middle of 20th century studied repetition in several ways. One of these is art that studies ecological systems; from life- and energy-systems to breeding-systems and other systems that produce life. What these ecological works share with each other is the aim to produce self-circulating systems that would continue endlessly. In my paper, I will first briefly looks at the epistemologies of these works; from Hans Haacke's system works in 1960s to contemporary art like Pierre Huyghe's or Koen Vanmechelen's working processes that use both mechanical and natural ecosystems, but apply them to reproduction of life. Secondly, I focus on recent works that use the endless reproduction as their core medium. What kind of endlessness do these ecological or biological works create? And what happens to the concept of infinity when it is applied to the biological life that both continues and transforms itself at the same time?

Menachem Magidor, mathematics, Hebrew University

- Title: Coping with independence: the higher infinities
- Abstract: TBA

Maryanthe Malliaris, mathematics, University of Chicago

- Title: Realizing infinity
- Abstract: What happens when mathematics realizes infinity.

Philip Ording, mathematics, Sarah Lawrence College

- Title: Horizontal Coordinates and the Art of Carl Andre
- Abstract: "Infinity and eternity have no scale," American artist Carl Andre (b. 1935) asserted, "and for me scale is the essence of art." Despite this, Andre's work and writing summon a consciousness of the infinite (and the infinitesimal), at times through the use of mathematical terminology. This talk will present a number of different mathematical readings—in terms of structure, formalism, and ornament—of works by Andre, including the floor pieces in brick, wood, or metal for which the prominent artist of American minimalism is known.

Juhani Pallasmaa, Architect, University of Technology, Helsinki, Professor emeritus, Writer

- Title: Infinity and Limits
- Abstract: We exist in the medium scale of the boundless continua of space and time. We are suspended between atomic minuteness and cosmic immensity, between a sub-atomic eye blink and endless eternity. The human scale in the totality of infinity is illustrated in Charles Eames' film "The Powers of Ten". The human mind is bound to hover between the desire for home and the threat of the Fall of Icarus, the comforting womb of time and the terror of its endlessness. Poetry, art and architecture mediate and express the emotions of being suspended between these polarities. This imaginative depth is expressed by the radiant yellow carpets and pyramids of pine pollen by Wolfgang Laib, as well the ecstatically endless depths of the Baroque spaces of Tiepolo and Bernini, and the momentariness of a note of Mozart, or the cosmic age of light that has travelled from a distant planet through the Universe for thousands of light years before it hits my retina in James Turrell's Roden Crater Project. Infinity can be experienced in the bottomless bleu of Yves Klein and the apparently shapeless fractile drip spaces of Jackson Pollock, whereas the existential melancholy of Marc Rothko's dark canvases at the Rothko Chapel evoke eternity. Every surface, line and molding in Michelangelo?s architecture makes us feel the infiniteness of human melancholia.

While mathematics and physics are engaged in the operational concept and reality of infinity, art stretches towards endlessness through emotion and sensory experience. We are also suspended between freedom and limits, between choice and necessity. We yearn for freedom, but can only think and work in relation to limits. As Leonardo knew, "Strength is born of limits and it dies in freedom". Yes, in the existential reality of making art, limits are more real than infinity. In the arts, infinity and eternity are concealed in Utopia and desire, the ineffable, spiritual and the sublime, and beauty creates a realm of timeless reality. Imagination and intuition expand the realm of the sensory beyond the limits of the material world.

"Our minds are finite, and yet in the circumstance of finitude we are surrounded by possibilities that are infinite. The purpose of life is to grasp as much as we can of that infinitude." (Alfred North Whitehead)

Marja Sakari Chief Curator (PhD), KIASMA

- Title: From Repetition to Disappearance in Infinity
- Abstract: Many contemporary artists use repetition in their works to give an illusion of endless continuation. Yayoi Kusama uses mirrors in her Infinity mirror rooms to make the reflections continue in endless repetition and to disappear in infinity. Artists like Olafur Eliasson and Ann Veronica Janssens, in turn, use colored fog to make the dimensions of the space disappear and give the impression of endless continuation. Roman Opalka used endless series of numbers from one to infinity in his paintings, diminishing the amount of color in each painting, so that, at the end the canvas would have been just white. In my paper, I try to reflect on the philosophical dimensions of the means that artists use to manifest infinity in their works. What is the relationship of perceptual limitlessness and disappearance to infinity?

SMITH, artist, Paris; and **Jean-Philippe Uzan**, Institut d'Astrophysique de Paris, Université Pierre et Marie Curie

- Title: "Désidération": Experimenting Intrication
- Abstract: *"And the beauty of the world, far from residing in a clearly limited construction, was to consist on the contrary in having no limits: mankind developed an aesthetics of the infinite. Desideration calls for an aesthetics of the infinite, an aesthetics of the finite, an in-finite, im-perfect aesthetics."* [Cosmos and imagination, Hélène Tuzet (1965)]

  The artist SMITH and the cosmologist Jean-Philippe Uzan usher in the history of a new humanity, on a quest for an organic link with the stars, involving the creation of a cosmic hybridization protocol. The duet invites us to immerse into a cosmic, anthropic and anthropological search that shakes up our representations of the finite and the infinite, or the existence of space and time.

John Steel, mathematics, University of California at Berkeley

- Title: Infinite Games
- Abstract: We consider games of the following sort. There are two players, I and II, and a payoff set A. The players alternate making moves, and at the end of the game have produced an infinite sequence s of moves. Player I wins if and only if s is in A. This game is called G_A, and it is said to be *determined* if one of the two players has a winning strategy.

  For which A is G_A determined? The question turns out to be a basic one in the foundations of mathematics. Its answer is intimately connected to the existence of infinities much larger than the countable infinity involved in the description of the game.

  We shall attempt to explain this further, in a non-technical talk aimed at a broad audience.

Vladimir Tasic, mathematics, University of New Brunswick

- Title: Mathematics as an Ethos of Infinity
- Abstract: The work of Badiou can be seen as invoking mathematics to recoceptualize the role of infinity in philosophy. Infinity is not something that imposes the paralyzing ethics of a debt that can never be settled (Levinas). Mathematics as a "science of being" on this view provides a way of thinking infinity as an active, positive, rational principle: an ethos of persevernace and "infinite" commitment to a truth-procedure. This "model" applies also in art and politics.

Andres Villaveces, mathematics, Universidad Nacional de Colombia

- Title: Infinity, between E-mergence and De-finition
- Abstract: I will center my talk on the problem of how infinity emerges: what triggers this emergence, how infinity unfolds, and the connection of this unfolding with a logic that tries to define it. The first part of the talk will explore two classical examples; then I will jump to more recent appearances of this phenomenon.

  I will focus along the lecture on the interaction between the construction of certain logics (understood in a wide sense as a way of "capturing" and "defining") and the emergence of infinity.

  Some of the authors revisited along the way will include Florensky (emergence of infinity in his "Peano/Hilbert" theory of perspective), Heller-Roazen (logics for infinite judgments) and Shelah (logics for reflection phenomena).

Philip Welch, mathematics, University of Bristol

- Title: On Encountering the Mathematical Sublime
- Abstract: Is there an aesthetic category of the sublime in mathematics?

Hugh Woodin, Departments of Mathematics and Philosophy, Harvard

- Title: The Universe far Beyond and the Beauty of the Unexpected
- Abstract: The mathematical study of infinity, this is Set Theory, has uncovered convincing evidence that the subject is not just a human invention. Further the road toward this rather startling claim is paved with a series of completely unexpected discoveries and connections. The emerging picture is one of haunting beauty.