# THE VISUAL SCIENCE OF ART CONFERENCE 2018

24-26 August 2018
Trieste, Italy

Organized by Rossana Actis-Grosso and Daniele Zavagno
University of Milano-Bicocca

# Conference Program

# Friday August 24

10:00 -11:15    Conference registration

11:15 -11:30    Conference welcome address

**11:30 -12:30**    **Symposium**
                *Art and expression (In memory of Alberto Argenton)*
                Organizer: Ian Verstegen

11:30-11:50    Benjamin Van Buren - *Ownership of Expressive Properties*
11:50-12:10    Ling Zhu - *Visual Tension and the Expressiveness of Art*
12:10-12:30    Riccardo Luccio - *Psychology of Art vs Psychology of Expression?*

12:30 -14:00    Lunch time

**14:00-17:40**    **Art workshops**
                Chair: Rossana Actis-Grosso and Daniele Zavagno

14:00-14:40    Patrick Hughes - *Developing reverspective in form and imagery*
                Thomas Papathomas - *Patrick Hughes's reverspectives as research tools in visual perception*
14:40-15:20    Youjia Lu, Marco Bertamini - *Indeterminate Self*
15:20-16:00    Silvio Wolf, Inna Rozentsvit - *Thresholds: The artist as the medium*
16:00-16:40    Wendy Morris - *This, of course, is a work of the imagination*
                Johan Wagemans, Vincent Janssens, Nelke Jorissen, and Nathalie Vissers - *A museum study with some imagination too, perhaps*

**16:40-17:40**    **Art Workshop poster time**

**17:50-19:00**    **Keynote lecture**
                **Michael Kubovy:**
                ***The place of contemplation in a world of arts***

Three topics have preoccupied psycho- and neuro-aestheticians: perception, preference, and pleasure. In this talk, I intend to examine two topics that scholars have not treated with sufficient care: the scope of their subject matter, and the nature of pleasure. In particular, I will inveigh against the following widely accepted view (as articulated by Skov & Nadal, 2018): "assuming that art is special is to cling to the idea that some aspect of our species' mental constitution makes us unique, special, and meaningful. This assumption continues to relegate scientific aesthetics to the periphery of science and hampers a naturalized view of the human mind." I will argue that although there are reasons to believe that aesthetic experiences are sui generis complex and temporally extended contemplative activities, one need not assume that they are based upon art-specific psychological and neural processes inconsistent with the naturalization of mind. In addition, I will criticize the view (also widely accepted) that aesthetic valuation is the function of a cortical reward network that doesn't care whether one is enjoying a fine wine or admiring Leonardo's Last Supper. To this end, I will revisit my chapter "On the Pleasures of the Mind" in Kahneman et al. (1999).

# Saturday August 25

**09:00-10:00**    **Talk session 1:** *Aesthetic experience*
Chair: Claus-Christian Carbon

09:00-09:15    Sadia Sadia - *The sacred ground: Enhancing and constructing the transcendent state in the installation environment*

09:15-09:30    Aenne Brielmann and Dennis Pelli - *Beauty and pleasure: Beauty correlates with valence and anhedonia, but not arousal and depression*

09:30-09:45    Claudia Menzel, Kana Schwabe, Catarina Amado, Gregor U. Hayn-Leichsenring, Caitlin Mullin, Johan Wagemans, Gyula Kovács, and Christoph Redies - *Artistic composition in abstract images can be detected fast and automatically*

09:45-10:00    Claus-Christian Carbon - *Aesthetic appreciation: The power of Zeitgeist*

**10:00-11:00**    **Talk session 2:** *Dynamics and order*
Chair: Stefano Mastandrea

10:00-10:15    Hanna Brinkmann, Eugene McSorley, Raphael Rosenberg and Louis Williams - *Does "action viewing" really exist? The relationship between dynamic paintings and gaze behavior*

10:15-10:30    Claudia Muth and Claus-Christian Carbon - *Shifting in and out of semantic (in)stability. A dynamic view on interest in visual ambiguity, indeterminacy, and disorder*

10:30-10:45    Andreas Gartus, Helene Plasser, and Helmut Leder - *Need for cognitive closure affects preferences for symmetry*

10:45-11:00    Stefano Mastandrea and John M. Kennedy - *Flying gallop or running pony? The perception of movement in horse's gaits from Gericault and Wright paintings*

**11:00-12:00**    **Coffee break and Poster time**

**12:00-13:00**    **Symposium**
***Representation of events and dynamic content in the visual arts (In memory of Manfredo Massironi)***
Organizer: Rossana Actis-Grosso

12:00-12:20    Hermann Kalkofen and Micha Strack - *Today's neglect of person repetition in narrative pictures*

12:20-12:40    Ian Verstegen, Tamara Prest, Laura Messina Argenton, and Alberto Argenton (†) - *Pictorial continuous narratives: Perceptual-representational strategies*

12:40-13:00    Rossana Actis-Grosso - *Dynamic contents in the visual arts: the tricky passage between simultaneity and succession*

13:00-14:30    Lunch time

| 14:30-15:35 | **Talk session 3:** *Mixed session* |
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| | Chair: Jasmina Stevanov |

| 14:30-14:45 | Judith Haziot Schreiber - *Visible facture in painting, from Art history to Cognitive sciences* |
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| 14:45-15:00 | Irina Shoshina, Nikolai Matveev, Daniel Fridman, Evgenia Sitkina, and Elena Isajeva - *Contemporary audio-visual art and mechanism of global and local information analysis* |
| 15:00-15:15 | Johannes M Zanker and Jasmina Stevanov - *A direct and fast comparison method to measure perceived complexity* |
| 15:15-15:35 | Laurens Meeus - *Image processing in art investigation: recent developments and a case study on the Ghent altarpiece* |

| 15:35-16:35 | **Coffee break and Poster time** |
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| 16:35-17:35 | **Business Meeting** |
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| 17:50-19:00 | **Keynote lecture** |
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| | **Ian Koenderink** |
| | *Macchie, passages and edges lost and found* |

In the visual arts, one often composes a spatially organised array of elements. These elements are often patches ("macchie") and edges. These are mutually complementary and often imply each other. "Edges" may either divide or unite macchie, whereas macchie may imply edges. Edges may be common boundaries as in cloisonnism, one one-sided as in outline. Composition often requires that edges be "lost", either to avoid a silhouette effect, or to merge macchie that are semantically distinct, like figure and ground. This leads to planned "passages" or various modulations of edge quality, the "lost & found" quality being most common. In this talk, I will relate such artistic devices to the concept of "edge" in biological and human vision.

# Sunday August 26

**09:00-10:00**  **Talk session 4:** *On artists and more*
Chair: Johan Wagemans

09:00-09:15    Elodie Fourquet - *Perspectives on the Canvas*
09:15-09:30    Russell D Hamer - *Surreal artist as visual neuroscientist: Perceptuo-cognitive analysis of selected works of René François Ghislain Magritte*
09:30-09:45    Christopher Tyler - *Did Leonardo Da Vinci have strabismus?*
09:45-10:00    Gül A. Russell - *Magritte transforms Alberti's "window": "The eye is a false mirror"*

**10:00-11:00**  **Symposium**
***Teaching Psychology of Art: Ideas and issues***
Organizer: Daniele Zavagno

10:00-10:20    Carmelo Calì - *Questions for the psychology of the artful mind*
10:20-10:40    George Mather and Robert J Lee - *Sensation and perception in visual art*
10:40-11:00    Claus-Christian Carbon - *Teaching and Researching: Two sides of a coin*

11:00-11:30    Coffee break

**11:30-12:45**  **Talk session 5:** *Perception and techniques*
Chair: Rossana Actis-Grosso

11:30-11:45    Christoph Witzel, Alexander Nowak, Andrea van Doorn, Jan Koenderink - *What are "complementary colours"?*
11:45-12:00    Mitchell van Zuijlen, Paul Upchurch, Hubert Lin, Kavita Bala, Sylvia Pont, and Maarten Wijntjes - *Human skin depiction over the ages*
12:10-12:15    Cristina Spoiala, Huib de Ridder, and Maarten Wijntjes - *Translucency in sea paintings*
12:15-12:30    Stefanie De Winter, Nathalie Vissers, Christophe Bossens, Silke Renders, and Johan Wagemans: *Split-Second Art: Investigating Frank Stella's Moroccan Paintings (1964) with a Short Exposure Experiment*
12:30-12:45    Qasim Zaidi, Erin Koch, Famya Baig - *Picture perception reveals mental geometry of 3D scene inferences*

12:45    **VSAC 2018 closing remarks**

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### Best Poster Awards
We are very pleased to announce that the Interdepartmental Centre for Research in Art and Cultural Heritage of the University of Milano-Bicocca (BiPac, Centro Interdipartimentale di Ricerca per il Patrimonio Artistico e Culturale) is sponsoring two travel grants of €250 each for the two best posters presented by young researchers (undergraduate, postgraduate, and Ph.D. students).

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### Welcome Cocktail
The Welcome Cocktail will be held at:

Caffè degli Specchi
Piazza Unità d'Italia 7
on Friday August 24th at 19.45

# Posters

All posters should be put up on Saturday morning before 10:00
<span style="color:blue">Odd</span> numbered posters: *Authors MUST attend their poster during the <span style="color:blue">morning</span> poster session*
<span style="color:red">Even</span> numbered posters: *Authors MUST attend their poster during the <span style="color:red">afternoon</span> poster session*

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| **Architecture, street art, and installations** | **1** Miriam Ruess, Sonja Ehret, Joana Post, and Roland Thomaschke – *The influence of room architecture on the perception of time*<br>**2** Richard Jedon, Federica Casetti, Elnaz Ghazi, Natalia Olszewska, Leonardo Poli, Antonio Sorrentino, and Nour Tawil – *Neurophenomenological approach to architectural design*<br>**3** Ute Leonards and Emily Barnett – *Graffiti Street Art – the impact of environmental context on perceived aesthetics and neighbourhood liveability*<br>**4** Bilge Sayim and Ivana Franke – *Towards a Phenomenology of the Unknown: 'Impossible' Objects in a Contemporary Art Installation*<br>**5** Haruyuki Kojima, Suguru Hashimoto and Manila Vannucci – *Aesthetic judgment of Western and East-Asian buildings: behavioral and electrophysiological evidence*<br>**6** Inna Rozentsvit and Silvio Wolf: Art-Eco-Wellness – *Art and nature through the lens of visual science and neuropsychoanalysis*<br>**7** Emika Okumura, Shinichi Koyama and Toshimasa Yamanaka – *Frequency analysis of words in the text of architecture magazines related to the sensibility of visual dynamics* |
| **Aesthetics, design, and technology** | **8** Sarah Heiligensetzer, Thorsten Schmittlutz, and Claus-Christian Carbon- *Creativity and Complexity: Creative solutions are more complex but need also more time*<br>**9** Alessandro Soranzo and Jie Gao – *Individual differences in aesthetic preferences for Interactive Objects: a Q-methodology study*<br>**10** Sandra Utz, Amelie Reichenbecker, and Claus-Christian Carbon – *Evaluation of dynamic preferences using the Repeated Evaluation Technique (RET) – The impact of innovation, complexity, attractiveness, and personality on the perception of fashion*<br>**11** Uwe Christian Fischer, Jelisaweta Vlasova, Claus-Christian Carbon, and Stefan A. Ortlieb – *Coping with kitsch? People with different coping-styles respond differently to decorative everyday objects*<br>**12** Katerina Malakhova: Creating images based on individual visual preferences<br>**13** Marius Hans Raab, Feliciana Wolff and Claus-Christian Carbon – *Character design in video game art: Stereotypical facial aesthetics elicits emotional distress in morally demanding situations*<br>**14** Katja Thömmes – *Predicting Instagram Likes with image features concerning content and composition* |
| **Crossmodal … and maybe more** | **15** Pinaki Gayen, Junmoni Borgohain, and Priyadarshi Patnaik – *The influence of music on art making: An exploration of inter-medial connection between music interpretation and visual attribute depiction in figurative paintings*<br>**16** Liliana Albertazzi, Luisa Canal, Paolo Chistè, Iacopo Hachen, and Rocco Micciolo – *Synesthesia and ideasthesia at the crossroads: Kandinsky and Schönberg as a case study*<br>**17** Slobodan Marković and Katarina Rančić – *The affective and perceptual aspects of music- paintings congruence* |

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| **Aesthetic studies** | **18** Jelena Blanuša and Slobodan Marković – *Aesthetic appraisal of curviness and angularity in abstract paintings*<br>**19** Catherine Viengkham and Branka Spehar – *Fractal-scaling properties predict individual preferences across synthetic images and art*<br>20 Eline Van Geert and Johan Wagemans – *Aesthetics and good Gestalt: a close but complex relationship?*<br>**21** Dragan Jankovic: Aesthetic development – *Perception-to-cognition shift in the criteria of aesthetic evaluation of visual artworks*<br>**22** Jelisaweta Vlasova, Uwe C. Fischer, Claus-Christian Carbon, and Stefan Ortlieb – *Home sweet home: Is kitsch more popular with people who value security over arousal?*<br>**23** Oliver Toskovic – *Are angels spherical? Aesthetic experience in a field of perceptual forces*<br>**24** Giacomo Bignardi, Dirk Ja Smit and Tinca Jc Polderman – *Genetic influences on visual aesthetic preferences: Towards a new etiological perspective in visual empirical aesthetics*<br>**25** Felix Binder, Aenne Brielmann, and Joerg Fingerhut – *The Golden Ratio is not always preferred in art*<br>**26** George Mather – *The fractal dimension of modern art*<br>**27** Vicente Estrada, Anjan Chatterjee, Stacey Humphries, and Markus Müller – *Both artworks and computer-generated images with equivalent physical properties evoke similar aesthetic subjective judgements*<br>**28** Marina Iosifyan – *Understanding Intentions and Aesthetic Appreciation of Cinema* |
| **Perception, and art** | **29** Anya Hurlbert, Mitchell Van Zuijlen, Cristina Spoiala, and Maarten Wijntjes – *Painting the time of day: colour determines perceived circadian phase in visual art*<br>**30** Andrea van Doorn, Jan Koenderink, and Johan Wagemans – *Lost edges*<br>**31** Jan Koenderink, Andrea van Doorn and Karl Gegenfurtner – *Colour symmetries*<br>**32** Rob van Lier and Vebjørn Ekroll: Amodal presence and absence in visual art – *Magritte, Baldessari, Catalano, Picasso*<br>**33** Arefe Sarami, Johan Wagemans and Reza Afhami – *The effect of perceptual organization on perception of an abstract painting by Kazimir Malevich*<br>**34** Marco Bertamini and Letizia Palumbo – *Can a preference for smooth curvature be explained by visual system tuning to smoothness in shape processing?*<br>**35** Shinichi Koyama, Shiho Sasano, Manami Furuno, Emika Okumura, and Toshimasa Yamanaka – *Disgust to the cluster of dots (trypophobia) is mediated by arm-likeness of the background object* |
| **Portraits, selfies, self, and emotions** | **36** Francesca Siri, Martina Ardizzi, Francesca Ferroni, Maria Alessandra Umiltà, and Vittorio Gallese – *The emotional sides of Portraits and Self-Portraits*<br>**37** Olga Daneyko, Elena Sessi, Rossana Actis-Grosso, and Daniele Zavagno: When you look upon a star: The perception of glance direction in classic Hollywood portraits<br>**38** Andjela Keljanovic and Tijana Todic-Jaksic – *Relation of physical self-concept with the experience of attractiveness and femininity of own body*<br>**39** Leon Lou – *Head-to-mirror proportion error decreases in self-portraits that include background objects*<br>**40** Tobias Matthias Schneider and Claus-Christian Carbon: One Thousand and One Selfies – *About the rules, specificities and curiosity of selfies and the impact on attractiveness, sympathy and perceived competence*<br>**41** Maria Elisa Della Torre, Daniele Zavagno, and Rossana Actis-Grosso – *Do Asperger individuals perceive E-Motions in artworks?*<br>**42** Neil Harrison – *Grid lines improve the accuracy of face depiction for novice drawers*<br>**43** Camilla Martina Succi, Olga Daneyko, and Daniele Zavagno – *The Mona Lisa effect? It works with distance* |

# Conference Abstracts

**Dynamic contents in the visual arts: the tricky passage between simultaneity and succession**

- Rossana Actis-Grosso rossana.actis@unimib.it (Department of Psychology, Milano-Bicocca University, Italy)

The way in which the visual arts represent the passage of time by means of static images has been referred to in different ways, depending on the focus of interest, by different authors (i.e. continuous narrative, stories told through images, representation of events). However, Massironi (1982, 2002) is the only author who systematically pointed out perceptual and cognitive constraints involved in perceiving images and linking them as successive representations of the same event evolving over time. Starting from a study based on artworks – mainly of the fourteen century – where only the keycharacter is shown twice within a single scene (Actis-Grosso & Zavagno, 2008), a series of experiments will be presented, focused on time and motion as a balance between (a) simultaneity (i.e. two persons/objects coexisting in two close spatial positions within the same perceptual scene) and (b) succession (i.e. a single person/object being in two close spatial positions in successive moments of time). It is proposed that the fact that the repetition of the keycharachter could be perceived as (a) or (b) is connected with perceptual features painted on (i) the scene, such as element of spatial separation, or on (ii) the keycharacter, such as the color of his/her dress, which eventually lead to the development of comics as the optimal way to represent the passage of time.

**Synesthesia and ideasthesia at the crossroads: Kandinsky and Schönberg as a case study**

- Liliana Albertazzi liliana.albertazzi@unitn.it (University of Trento, Italy)
- Luisa Canal (University of Trento, Italy)
- Paolo Chistè (University of Trento, Italy)
- Iacopo Hachen (SISSA Trieste, Italy)
- Rocco Micciolo (University of Trento, Italy)

Our study investigated the existence of naturally biased associations in the general population between a series of Kandinsky's paintings (15) and a series of Schönberg's musical selections (14). The first part of the experiment aimed to evaluate the proximity between complex images and musical clips as regard perceptual characteristics relatively to 11 pairs of adjectives tested on a continuous bipolar scale. The second part tested a direct association between paintings and clips. A total of 32 participants (not synesthetes) from different Departments of the University of Trento volunteered for the Experiment. The results show that certain pairs of painting/clips were evaluated as semantically more similar, while others were evaluated as semantically more different. Analogously, the results of the direct association between clips and paintings showed the presence of both attractions and repulsions among the stimuli. In charge of the associations were perceived concrete and abstract dimensions that enabled the perceiver to identify a common configurational structure in both the perceptual spaces. From this viewpoint, the dichotomy between bottom-up (sensory to sensory integration) and top-down (language driven) dimensions, still dominating the debate on synesthesia and cross-modality, might be reconsidered.

**Can a preference for smooth curvature be explained by visual system tuning to smoothness in shape processing?**

- Marco Bertamini m.bertamini@liv.ac.uk (University of Liverpool, United Kingdom)
- Letizia Palumbo (Liverpool Hope University, United Kingdom)

It is well established that smooth shapes are preferred to angular shapes, both in the case of abstract stimuli and familiar objects (e.g. Bar & Neta, 2006; Bertamini et al., 2015). Preference may be expected to depend, directly or indirectly, from sensitivity.

Directly if processing fluency is inherently positive in valence, or indirectly if saliency is used as a way to decide between alternative stimuli. We used abstract shapes and compared polygons (curvature discontinuities) and a smoothed version of polygons (no vertices). Polygons are simpler and are defined by a small set of vertices, while smoothed shapes have a continuous curvature change along the contour. For a detection task we found faster responses to smooth shapes, not mediated by complexity. In two other tasks observers compared two shapes (detection of repetition) and looked for bilateral symmetry. In both cases responses for smoothed stimuli were faster. Overall, there was evidence that smooth shapes with continuous change in curvature along the contour are processed more efficiently, and they tend to be classified as targets. We discuss this in relation to shape analysis and to the preference for smoothed over angular shapes.

**Genetic influences on visual aesthetic preferences: Towards a new etiological perspective in visual Empirical Aesthetics**

- Giacomo Bignardi giacomo@bignardi.it (Dept. Complex Trait Genetics (CTG), Vrije Universiteit Amsterdam, The Nederlands)
- Dirk Ja Smit (Psychiatry department Academic Medical Center Amsterdam, The Netherlands)
- Tinca Jc Polderman (Dept. Complex Trait Genetics (CTG), Vrije Universiteit Amsterdam, The Nederlands)

While there is a growing body of research aiming to explain individual aesthetic preferences, the longstanding motto "there is no accounting for taste" seems to survive. In this study, we investigated the genetic and environmental influences on visual aesthetic preferences (VAP) by means of a twin design. Data of 558 MZ and 216 DZ same-sex Australian adult twin pairs on perceived attractiveness of images of three different categories, namely: abstract objects (O), sceneries (S), and faces (F), were analyzed. We calculated twin correlations and applied univariate and multivariate structural equation modeling. We found genetic factors to play a role in VAP in each category, with heritability estimates of 35% for O, 27% for S, and 33% for F. Interestingly, we found significant genetic correlations between the categories varying from 0.5 to 0.6. Our study is the first to indicate that VAP are not shaped by the environment alone but are also under genetic influences. In addition, our results suggest that there might be a common underlying genetic base for VAP in general.

**The Golden Ratio is not always preferred in art**

- Felix Binder felix.binder@fu-berlin.de (Berlin School of Mind & Brain, Germany)
- Aenne Brielmann (NYU Psychology, United States)
- Joerg Fingerhut (Berlin School of Mind & Brain, Germany)

Popular and experimental science often claim that people prefer art in which the depicted bodies adhere to the Golden Ratio, which is therefore called the "ideal proportion". However, studies that make this claim use a narrow set of stimuli: classic art or geometric figures. We challenge the view that "ideal" proportions always increase liking. Stimuli in our study were paintings and sculptures from a variety of centuries. Half of the artworks originally displayed bodies with ideal proportions, half with non-ideal proportions. Images with ideal proportions were distorted to deviate from ideal, and images with non-ideal proportions to display ideal ones. German (N=123) and US-American (N=120) participants saw either images with "ideal" or non-ideal proportions and rated them in terms of beauty, interest, being moving, and distortion. Neither Germans nor US-Americans gave different beauty, interest, or being moved judgments to images with ideal versus non-ideal proportions. Additionally, we ran a follow-up study with a set of unproportional 20th century sculptures, also manipulated to be proportional, and we will present data on this. Thus, we show that non-ideal proportions can be just as aesthetically pleasing as ideal ones. We refute the claim that the Golden Ratio automatically results in greater liking.

**Aesthetic appraisal of curviness and angularity in abstract paintings**

- Jelena Blanuša jelena.blanusa@gmail.com (College of vocational studies in Subotica; Laboratory for experimental psychology, Faculty of Philosophy, Belgrade, Serbia)
- Slobodan Marković (Department of psychology, Faculty of Philosophy, University of Belgrade, Serbia)

The purpose of this study was to investigate the aesthetic appraisal of curviness and angularity in complex, contemporary abstract paintings. In the pilot study, 128 paintings were rated on curviness-angularity, complexity and symmetry. Sixty-four paintings were selected for the main experiment. Stimuli had similar complexity and symmetry ratings and different on curviness-angularity ratings. In the main experiment, twenty-six participants were asked to rate the painting on 7-point beauty scale. The results showed no differences between curved and angular paintings. However, differences associated with curviness have been obtained regarding to the author: preference for curviness was obtained for four painters, preference for angularity was obtained for two painters and for two painters difference was not obtained. The results suggest that aesthetic preference for curviness could be reduced in complex compositions such as abstract paintings, and that aesthetic appraisal depends on the complexity and painting style.

**Beauty and pleasure: Beauty correlates with valence and anhedonia, but not arousal and depression**

- Aenne Brielmann aenne.brielmann@nyu.edu (New York University, United States)
- Denis Pelli (New York University, United States)

Philosophers, psychologists, and common sense agree that beauty is a kind of pleasure. Here, we assess the relationships between the intensity of beauty, valence (pleasure vs. displeasure), arousal (calm vs. excited), anhedonia, and depression. We use the 900 OASIS images and their normative valence and arousal scores. In this study, 757 participants rated how intensely they felt beauty from each image. If beauty is a kind of pleasure, the inability to experience pleasure (anhedonia) should prevent the experience of beauty. To test this, we obtained self-reports of anhedonia (TEPS), as well as depressive symptoms (PHQ-9) and current mood. We find that beauty ratings are highly correlated with valence (r=0.75) but mostly unrelated to arousal and depressive symptoms. In addition, the worse the mood or anhedonia participants report, the less beauty they experience from images that typically elicit high beauty. We thus provide the first normative ratings of beauty on a large set of images. Our results suggest that beauty is closely related to the experience of pleasure, but unrelated to arousal. Consistent with the association to pleasure, the feeling of beauty produced by nominally beautiful images is negatively correlated with low mood and anhedonia.

**Does "action viewing" really exist? The relationship between dynamic paintings and gaze behavior**

- Hanna Brinkmann hanna.brinkmann@univie.ac (Department of Art History University of Vienna, Austria)
- Eugene McSorley (University of Reading, United Kingdom)
- Raphael Rosenberg (Department of Art History University of Vienna, Austria)
- Louis Williams (University of Reading, United Kingdom)

Abstract painting is stylistically very diverse. There are static works, i.e. by Piet Mondrian or Yves Klein, others are highly dynamic, such as Jackson Pollock's "action paintings". Art historians have assumed that such differences are echoed in the eye of the beholder. With regard to Pollock, Küster (2008) for example states that "there is no 'action painting' without 'action viewing'", further suggesting that the action of the production process is not only perceived by the beholder but is also mirrored in their viewing behaviour. In an interdisciplinary eye-tracking study we showed 30 different abstract paintings to 40 participants (20 psychology students, 20 student artists). We investigated the perceived (rated) dynamism of the paintings and its relationship with a) number of fixations, b) average fixation duration, c) average saccade velocity, and

d) pleasantness ratings. The number of fixations made, the average saccade velocity and pleasantness ratings were found to increase with an increase in perceived dynamism ratings.

## Questions for the psychology of the artful mind

- Carmelo Calì mailto:mcarmelo.cali@unipa.it (Dipartimento di Scienze Umanistiche, Università degli Studi di Palermo, Italy)

Arnheim submitted that art is as subject to psychology as any other form of cognition and that the study of mind needs the psychology of art, although it was hardly providing comparable findings to those of general psychology. Notwithstanding the evidence gathered on cognition, art seems yet to elude a thorough psychological explanation. I discuss some questions that ensue and are puzzling for teaching psychology of art. In classic and modern art perceptual features are turned into pictorial and musical elements according to rules and media constraints, which require the recognition and adaptation of the beholder. Which aspect shall psychology account for? Futurism and Kinetic Art demand for extending the scope of perceptual features, Duchamp and Man Ray artworks trigger conceptual knowledge. Contemporary music abounds with similar examples. Does that variety suggest a view of the mind? Does picking one kind of artworks bias the theory? Prehistoric art was ritual and pro-social, minimalistic and environmental art are the extreme ends of how artworks may embed cognition. Should psychology of art deal with the creative use of cognitive modules, with cross-domain functions or rather search for aesthetic cognition? I argue that refining Metzger's theory of qualities affords advantages in addressing those questions.

## Aesthetic Appreciation: The power of Zeitgeist

- Claus-Christian Carbon ccc@experimental-psychology.com (University of Bamberg, Germany)

Aesthetic appreciation of an object is triggered by the object but is not a property of the object as such as it is always processed by a human characterized by specific motivation, knowledge and expertise. Many research attempts, nevertheless, focus on specific object properties such as specific proportions or image statistics analyzing the distribution of spatial frequencies. In opposition to this, analyzing the appreciation of objects over longer periods of time reveal that the aesthetics of objects are susceptible of Zeitgeist-related effects. Extreme examples might be artworks or fashion products which were fully dismissed by first generation viewers but highly admired in later times. The present work refers to a rich series own data on such developments from the domains of artworks, religious depictions, product design, and music pieces referring to human-made items up to natural stimuli such as erotic depictions of female bodies. Data pattern of all investigated domains show clear changes, sometimes even cycles of returning concepts and properties, pointing to potential prediction models. Such models will allow the prediction of Zeitgeist and associated aesthetic appeal. It also illustrates that object-related views on aesthetic appreciation are potentially problematic, primarily because appreciation is very Zeitgeist- and personal experience-bounded.

## Teaching and Researching: Two sides of a coin

- Claus-Christian Carbon ccc@experimental-psychology.com (University of Bamberg, Germany)

Psychology of art, more generally: the study of aesthetics, is an emerging, popular and highly appreciated field in psychology. Teaching this field is joyful but is also quite challenging as most of the interest is of very practical quality: Students often are interested in phenomena, not so much in theories. Therefore, starting with phenomena just like in perceptual psychology is a valuable strategy to get the attention, the interest and the motivation to dip into deeper theoretical spheres of this field. References to everyday life phenomena accompanied with own empirical data are the starting points to develop new theories and to link to already existing theories from a variety of research fields such as psychology, art history and neuroscience. Finally, teaching will

strongly rely on researching, and research can strongly benefit from inputs from teaching, because they are two sides of a coin.

## When you look upon a star: The perception of glance direction in classic Hollywood portraits

- Olga Daneyko Olga.Daneyko@shu.ac.uk (Sheffield Hallam University, United Kingdom)
- Elena Sessi (University of Milano-Bicocca, Italy)
- Rossana Actis-Grosso (University of Milano-Bicocca, Italy)
- Daniele Zavagno (University of Milano-Bicocca, Italy)

The results of a pilot experiment are presented in which we studied the perception of gaze direction in classic portraits of Hollywood stars from the 1940-50ies. Two photographic portraits for each of six female and six male actors were selected so that one showed the actor looking directly into the camera (i.e. looking at the observer), while the other showed a diverted or ambiguous gaze direction despite the frontal pose. We hypothesized an effect of observation distance on gaze direction, with a greater percentage of positive responses (the actor is looking at me) for the diverted/ambiguous gaze directions at a greater observation distance. Sixty participants were randomly assigned to two groups; one saw the pictures from a distance of 50 cm, the other group from a distance of 450 cm. Pictures were displayed on a high-resolution LCD monitor. With a two alternative forced choice procedure, participants were asked to determine as quickly as possible whether the actor was looking at her/him or not. Responses and response times were collected. In general, results did not confirm our hypothesis with the exception of a few cases. RTs, as expected, were significantly affected by observation distance.

## Do Asperger individuals perceive E-Motions in artworks?

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Autism Spectrum Disorders (ASD) have been associated with impairment in emotion recognition and in motion perception. In this study we explore the perception of E-Motion (i.e. the association between emotion recognition and different degrees of implied dynamicity) in ASD. To this aim we selected eleven static artworks from which we derived twelve human figures that convey different emotions in different proportions. Images were manipulated to produce two sets of stimuli: headless bodies (Set 1) and bodiless heads (Set 2). Participants (24 ASD and 21 neurotypical) were asked to nominate the perceived emotion and to rate it for its intensity and its dynamicity. Results showed different evaluations in terms of type of emotions and level of dynamicity for both sets, although overall emotion recognition and dynamicity evaluation were the same for AS and neurotypical. However, a difference emerged in the use of specific words to indicate particular emotions across the two groups.

## Split-Second Art: Investigating Frank Stella's Moroccan Paintings (1964) with a Short Exposure Experiment

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In his search to create the most 'instantaneously capturable' painting, Frank Stella started to use Day-Glo paints as vehicles to communicate his simple, striped designs. Up to this day, art criticism has neglected the impact of these fluorescent colors on this concept of 'split-second' art. By presenting participants with Stella's designs

(fluorescent and conventional variants) for short presentation times (around 10ms), we aimed to find out whether fluorescent color combinations are seen faster (i.e. better performance in identifying target among distractors) than their conventional counterparts. Preliminary results show that color type (fluorescent vs. conventional) and color combination (low-contrast: orange-green; blue-red vs. high-contrast: yellow-red; blue-yellow) interact in their visual impact. For the high-contrast pairs, the fluorescent colors are somewhat easier (91% correct) than the conventional colors (88% correct), in particular in the first block of trials. For the low-contrast pairs, the fluorescent colors were much more difficult (76% correct) than the conventional colors (86% correct), probably because of the vibrating effect near isoluminance. Further analyses will include reaction times to account for ceiling effects that might have obscured more pronounced differences. It seems that to be 'instantaneously capturable' not only fluorescence plays a role but the proper contrast matters as well.

**Both Artworks and Computer-generated Images with Equivalent Physical Properties Evoke Similar Aesthetic Subjective Judgements.**

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One major concern of Empirical Aesthetics has been to find a proper way to characterize complexity on artworks. It remains unclear whether complexity has to do with the shapes' configuration or with the chromatic dimension. Nevertheless, it has been proven that modulation of HSV color space can influence perception of naturalness and warmness when diverse landscapes are exposed (Berman, Hout, Kardan, & Hunter, 2014; Lyssenko, Redies, & Hayn-Leichsenring, 2016; Redies, 2012). In this project we were interested in evaluating if the aesthetic judgments (such as complexity) are influenced by either modulation on HSV scores or by shapes configuration changes. 100 paintings from Neo-Plasticism and Abstract Expressionism art modern movements were selected and presented in a digital format. For each painting, three new images were created based on the previously mentioned scores: a) Hue, b) Saturation and c) Values. Subsequently, participants were asked to aesthetically evaluate both actual paintings and the computed-generated images. Results indicate that Value scores mediate perception of complexity, interestingness and locomotion. Finally, perception of beauty was dependent on all three chromatic components. Our research supports one very important empirical aesthetics assumption: physical properties of artworks are relevant for aesthetic appreciation.

**Coping with kitsch? People with different coping-styles respond differently to decorative everyday objects**

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According to Norman (2004) kitsch helps us to deal with uncertainty and negative emotions. Consequently, we would expect people with different coping-styles to show different reactions to kitsch: Sensitizers who are intolerant of uncertainty and highly vigilant about threatening information as they have little confidence in their abilities should find kitsch more likable than repressors who tend to overestimate their abilities and habitually avoid or deny threatening information to evade strong affect. In a rating study, 56 participants (14 male) completed a standardized coping-style inventory (ABI; Krone & Egloff, 1999) prior to rating 208 images of decorative everyday objects from the Bamberg Repository of Contemporary Kitsch (BaRoCK) in terms of liking and kitschiness. For data analysis the sample was split into four groups based on cut-off values from the ABI-manual: sensitizers (n=17), repressors (n=19), ineffective copers

who scored high on vigilance and cognitive defense (n=18), as well as non-defensive individuals with low scores on both dimensions (n=2; excluded from data analysis). A comparison of sensitizers, repressors and ineffective copers revealed complementary responses with regard to kitsch and liking: Sensitizers rated kitsch objects as more likable and less kitschy than typical repressors. Ineffective copers showed a similar response pattern as repressors.

## Perspectives on the Canvas

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Renaissance artist-mathematicians created a picture geometry (linear perspective) that simulated depth on a planar surface using 2D geometrical computation directly on the canvas. In doing so they invented projective geometry well before it was formalized in the seventeenth century (Kubovy 1998). Their seminal construction was the tiled floor, a 'compositional device' (Edgerton, 1966) that guided the interplay of 3D location with 2D position on the canvas and quantified foreshortening. My research shows that the 3D projective geometry of the pinhole camera is unnecessarily general, since 2D projective geometry algebraically formalizes the geometric constructions of Renaissance artists. The 2D formalization requires choosing the view geometry before the placement of picture elements, replicating the working methods of Renaissance artists. While it is contrary to the practice of computer graphics and snapshot photography, in which 3D placement in the scene comes first, the working methods of realistic artists better controls the still image composition. Combining 2D computations with cartoons, another working practice of artists, encourages a 'pluralist' approach to evoking depth. The flat canvas is then a 'collage of constructions' (Elkins 1994), each cartoon using a perspective that best represents its picture elements, the whole space unified by the overall picture geometry.

## Need for cognitive closure affects preferences for symmetry

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For abstract geometric patterns, symmetry is the most important predictor of aesthetic judgments. However, there also exist substantial individual differences in the preference for symmetry (and complexity). We investigated individual differences of preference for symmetry in three experiments. In all experiments, participants completed a questionnaire measuring individual (dispositional) need for cognitive closure (NCC) and afterwards rated 250 abstract black-and-white patterns differing in symmetry and complexity for liking. The first experiment was an online study with 80 participants, while experiment two and three were lab experiments with 108 and 116 participants. In the lab experiments, we additionally manipulated (situational) NCC by memory span tasks using different levels of cognitive load. In accordance with our hypotheses, we found a strong positive influence of symmetry on liking of abstract patterns together with considerable individual variation. Furthermore, we found a small, but consistent interaction of symmetry and dispositional NCC. However, we did not find an interaction between symmetry and cognitive load. Recently, a relation between need for cognitive closure and preference for figurative over abstract art was shown. Here, we found evidence that NCC also affects preference for symmetry. Thus, our results support the relevance of NCC for predicting individual differences in aesthetic preferences.

**The Influence of Music on Art Making: An Exploration of Inter-Medial Connection between Music Interpretation and Visual Attribute Depiction in Figurative Paintings**

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Music evokes emotional responses; it also evokes visual imagery that might have some relation with the emotions evoked. In order to explore this inter-medial relationship, an experimental study was conducted with 70 students aged between 18 to 22 years. Two Indian instrumental rāga music clips were pre-selected on the basis of ratings by audience as happy and sad. Both the music clips were played separately in two different class rooms and the participants were asked to respond to these through figurative visual images. They were also asked to describe what they have depicted and to give them titles. The paintings were content analyzed in terms of their themes, use of colors and lines. Findings revealed that sad music made the students depict sad and calm emotional contents with dull-dark colors in paintings and happy music made them depict happy emotional contents with light and bright colors. Inter-medial relationships related to tempo and some other aspects of musical features were identified in the paintings depicted. Findings revealed that emotions play a key role as a bridge in connecting the two mediums.

**Surreal Artist as Visual Neuroscientist: Perceptuo-Cognitive Analysis of Selected Works of René François Ghislain Magritte**

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Magritte, the famous Belgian Surrealist, played masterfully with aspects of visual perception that we in the field of Sensory-Perceptual neuroscience have studied for many years. His art draws us into reflections on the very nature of perception, on what is seen and what is hidden, on the 'silent' and hierarchical nature of object segregation and scene construction that reveal a dynamic interplay between the stream of bottom-up sensory information modulated quickly and automatically by top-down neural influences. Magritte reveals to us our unconscious perceptual "rules", and examines, almost as a scientist, the very nature of representation itself. His works reveal layers of surprising effects of interest to both artists and scientists alike. I will discuss 4 works selected from Magritte' huge oeuvre that vividly illustrate the neuro-perceptual impact of his approach. Also, I touch on the communicative, discursive features, the cognitive and emotional conversations Magritte initiates between him and us, the viewers, regarding meaning and shared human experience. As expected, the meanings evoked from Magritte's conceptual palette are not literal, and decidedly resonant with delicious ambiguity, borne by the magical interplay between Magritte's imagination and our automatic perceptions, expectations, and idiosyncratic memories.

**Grid lines improve the accuracy of face depiction for novice drawers**

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Typically, non-experts draw the eyes higher on the head than they are located in reality. To improve accuracy in placing facial features, many drawing instruction books recommend using grid lines. However, it has not been empirically tested whether grid lines indeed improve accuracy. Here we tested whether grid lines (either only on the model, or both on the drawing and the model) improved the accuracy of eye positioning. All participants firstly copied a model face. In a control group (N = 15), participants copied the model face again without gridlines. A second group (N = 15) were required to copy the model face which had superimposed grid lines. A third group (N = 15) copied the model face with superimposed grid lines onto a rectangle with grid lines. In the control group, and in the second group, participants made systematic errors in the eye placements (eyes too high) in both the first and the second drawings. However, participants in the third group made significantly fewer errors (p < .05) in the drawing

where they used grid lines. These results show, for the first time, that grid lines can improve the accuracy of eye placement in drawings of faces by non-experts.

## Visible facture in painting, from Art History to Cognitive Sciences

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Whereas during centuries, the pictorial illusionism of the Renaissance attempted to erase all traces of the facture in paintings, the XIXth century knew a revolution of the representation. The physical presence of the artist became much more visible: apparent facture, brushstrokes, partially "random" aspect, etc. The lecture will show that discoveries in cognitive sciences on perception were anticipated by great painters, especially B. Morisot, V. Van Gogh, and F. Bacon, who contributed to change radically the habits of seeing. They found out that an incomplete image, which keeps the trace of its making doesn't hinder its understanding, quite the contrary. Van Gogh and Bacon noticed that such a way to paint, leaving imperfections and visible matter, gives a more vivid result and produces on the spectator a more immediate effect than an image rationally mastered from the beginning to the end. Indeed, the trace of the gesture gives motor information that the brain can grasp. Our perception completes the gaps of unfinished visual information, because our brain, originally developed for our survival, is used to build scenarios from what is only probable. Surfaces where the texture is visible allow us to get inside the process of materially manufacturing the work.

## Creativity and Complexity: Creative solutions are more complex but need also more time

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To create art means to be creative, but how creativity is gained, how we can induce and train creativity and how we can measure creativity is a matter of unsolved research. In our study, we employed two different established creativity tests (VKT, TSD-Z) and compared them with a self-made creativity test based on generating scenes with a double set of tangram puzzles. 49 participants passed created 708 different figures in sum. Creativity and complexity of these creations were assessed in a subsequent study by 5 further participants in 2 randomly ordered blocks. We observed a strong correlation between the ratings of creativity and complexity (R=.618, p<.0001)—this pattern was not only available for an overall analysis, but was evident also when correlations were calculated on the individual level. Interestingly, high productive people, often called "creatives", produced simpler scenes that were also evaluated as being less creative.

## Developing reverspective in form and imagery

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After inventing reverspective in 1964 I continued to use it off and on, but I did not think of any version of the basic design of a room in central perspective. I created variations on the theme in 1987 when I made a door picture in reverspective and used the point of infinity in some works. A breakthrough came in 1991 when I added two more planes to a room in reverspective and the illusion of movement appeared. In the 1990s I began to make pieces in which a set of doors seemed to open and close, and I cut into protruding planes to make negative boxes. Emulating the hollow-mask illusion I found about twenty-five different boxes I could use. These more complex shapes led me to putting both forced and reverse perspective into my sculptured painting. I have also experimented with making the whole rectangular shape as a trapezoid, so it is itself in perspective. Simultaneously with making new shapes I have been examining imagery,

including bookshelves, Venice, domestic spaces, buildings – the whole built environment. I have found Photoshop very useful, and learnt a lot about colour, chiaroscuro, and reflection.

**Painting the time of day: colour determines perceived circadian phase in visual art**

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Turner's paintings - "The Morning after the Deluge", a cyclone of brilliant colours, converging on yellow and white in the centre, and "The Evening of the Deluge", blackness encircling a grey-blue core - suggest an implicit rule in painting that links colours to time of day. Is this rule upheld in paintings and does it reflect assumptions that the human visual system embeds about the colour of natural illumination? We performed an online experiment to address these questions. Participants (n=50) viewed 104 unlabeled individual paintings, all lesser-known 17th-20th century Western European architectural or natural landscapes, and chose the time of day each depicted (morning, noon, afternoon, evening or night). Responses varied significantly with painting; for example, morning/evening distributions ranged from 73%/11% to 11%/65%. Mean time-of-day response scores correlated significantly ($p < 0.0005$) with image mean chromaticity (expressed as correlated colour temperature, CCT) and luminance; "morningness" corresponded to darker, bluer images and "eveningness" to brighter, yellower images. Whether luminance or chromaticity is the driving factor is indeterminate, but the fact that basic image statistics predict perceived time of day suggests that people (and painters) assume that natural light colour varies regularly over time.

**Understanding Intentions and Aesthetic Appreciation of Cinema**

- Marina Iosifyan m.a.iosifyan@gmail.com (Lomonosov Moscow State University, Russia)

Theory of mind (ToM) is the ability of one to understand the beliefs, emotions, and intentions of another. ToM plays an important role in art perception because it enables understanding intentions of both fictional characters and the artist who created them. ToM may be vital for aesthetic judgement of art. However, we found very few studies focused on this subject. Here we investigated the role of ToM in aesthetic judgment of cinema. For that purpose, participants (N = 26) were asked to watch eight short feature films and judge them aesthetically (like/don't like). During the second round of watching the same films participants were asked about how well they understood the intentions and emotions of the characters and the intentions of the film director (not at all/very well). Regression analysis showed that understanding of the characters' emotions and the intentions of the film director explain 52% of variance in aesthetic judgment. Participants considered films being more aesthetic, if they thought they understood well the emotions of the characters and the intentions of the film director. These findings confirm the role of ToM in aesthetic judgment. Supported by RFBR grant #18-013-01221

**Aesthetic development: Perception-to-cognition shift in the criteria of aesthetic evaluation of visual artworks**

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Previous studies suggested that the same artworks can induce wide range of different responses depending on the age and expertise of the beholders. In the present study we investigated the semantic structure of responses to visual artworks in children (9-year-olds), adolescents (14-year-olds), adult non-experts and visual art experts. Participants rated their aesthetic experience of twenty abstract and representational artworks and were asked to report what they had in mind while making aesthetic evaluation. The results showed that respondents of different ages and expertise use different criteria

during aesthetic evaluation of artworks. Children mostly based their aesthetic evaluation on perceptual characteristics of artworks (colours, shapes, objects, themes), experts relied mostly on cognitive meanings constructed during observation of artwork (elaboration, interpretation, formal aspects of artworks) and adult non-experts used equally both sets of criteria. The results also showed that increase in cognitive criteria was followed by decrease in perceptual criteria, both with age and expertise in similar manner. This finding supports the hypothesis of perception-to-cognition shift in the criteria of aesthetic evaluation of visual artworks, a trend which seems to be common to aesthetic development during childhood and later development of expertise in adulthood.

### Neurophenomenological approach to architectural design
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Karsten Harries (1997) claimed that we can't reach the old qualities of design. The idea of Vitruvian's venustas was misinterpreted and lost throughout the years, and emotions -which are the basis of consciousness- were totally neglected to the benefit of "aesthetics". Nowadays, modern science is starting to acknowledge the importance of emotions and human cognition, bringing us to possibilities of new design qualities (Veselý, 2004). We, as the first graduates of a worldwide unique master's program connecting cognitive science and architecture, are following the Bauhaus school and trying to close the gap between sciences and architecture through developing an innovative interdisciplinary approach. In our research on various architectural buildings across Europe we used questionnaires to understand emotions connected with a place. Based on the results we adjusted various architectural elements of the buildings based on the ideas of multisensory and embodied perception. With the use of EEG we measured differences in the reactions to the original and changed object. Through these tools of qualitative measurement and brain imagining technique we are developing a neurophenomenological approach. Our goal is to create a basis for human-wellness-centred architecture which goes beyond standards and stereotypes and focuses on the well-being of users.

### Today's neglect of person repetition in narrative pictures
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Person repetition in pictures is a time-honoured artistic device, examples of which date back to the first millennium B.C., at least. The continuous style, as it has been called by WICKHOFF (1912), prevailed over pictorial arts according to this author till to the midst of the 2nd millennium AD. Whereas this manner of pictorial narration needs person repetition, repetition of persons per se is not necessarily narrative (cf. the Portrait of a Goldsmith in Three Views by Lorenzo LOTTO, ca 1530), which may be named a presentation. In 2012 we conducted an eye-movement experiment on person-repetition-detection in 12 continuous pictorial narratives. At this symposium we will present the data in a more condensed way: lay perceivers detected person-repetitions while thinking aloud, practically only when prompted by a person- comparison instruction. The latter evoked more saccades between the repeated persons, which (especially for pictures with high type-toke-ratios, where tokes are persons in total depicted per picture) facilitates person-repetition detection.

**Relation of physical self-concept with the experience of attractiveness and femininity of own body**

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The aim of this research is to examine relation between the physical self-concept and the experience of attractiveness and femininity of own body. Research involved 107 female students, age 18-25, AS=20,5 SD=1,6. As instruments, Physical Self Description Questionnaire and scale of Attractiveness and Femininity, were used. The results indicate that experience of the femininity of one's own body is related to satisfaction and positive thinking about physical appearance and the experience of the body's limber and strength. Femininity is related to the awareness of the physical appearance and characteristics that do not involve active engagement in physical activities (pleasure of physical characteristics and abilities as they are). Attractiveness is related with the practice of sports and various forms of physical activities. It can be said that satisfaction with someone's own appearance and the consequences of regular physical engagement are closely related to experience of attractiveness.

**Colour symmetries**

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There are various symmetries of colour space that might find application in pictorial composition. The best known is perhaps central symmetry (inversion), which leads to complementary colour schemes. Another important symmetry, used in most paintings, is the cool-warm reflection in the green-white-purple-black-plane. Such symmetries are important in choosing dyadic or triadic colour schemes. There is also an interaction with the possibilities of chromatic edge strengths of analogous colours. It seems a priori likely that such symmetries largely define the skeletal structure of colour space, yet the conventional wisdom from colorimetry hardly provides a handle. We use our investigation of colour synthesis to identify symmetries in the space of object colours.

**Disgust to the cluster of dots (trypophobia) is mediated by arm-likeness of the background object.**

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Some researchers have hypothesized that disgust to the clusters of dots ("Trypophobia," Cole & Wilkins, 2013) increases when they are presented on the skin because they remind us of scars and sores (e.g., Skaggs, 2014). However, few empirical studies have examined the role of the background object in the generation of disgust. In the present study, we investigated whether the arm-likeness (shape and color) of the background object influences the disgust to the clusters. In the experiment, participants rated disgust of each stimulus using a 9-point Likert scale. A stimulus consisted of a picture of an arm or a rectangle with or without a cluster of black dots on it. The color of the arm or rectangle was 5YR, 5RP, 5PB, 5BG, and 5GY. After the experiment, they completed a questionnaire measuring trypophobia proneness (Trypophobia Questionnaire). Participants reported the strongest disgust to dots on the arm ($p < .05$) in 5YR ($p < .05$). The intensification of disgust in the stimuli with a cluster was correlated positively with the TQ scores ($r = .50$, $p < .05$). We concluded that arm-likeness of the background object plays a significant role in the generation of disgust to the clusters of dots.

**Aesthetic judgment of Western and East-Asian buildings: behavioral and electrophysiological evidence**

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A recent study has shown that both East Asian (Japanese) and Western (Italian) participants judged high-ranking Western buildings as more aesthetically appealing than low-ranking buildings (Vannucci, Gori & Kojima, 2014, Cognitive Neuroscience). Here, we aimed to replicate and extend these previous findings by investigating in Japanese participants aesthetic judgment for both Western and East-Asian high and low-ranking buildings. In the study we combined behavioural and event-related potential (ERP) data. Twenty healthy participants performed an aesthetic judgment task, with line drawings of both Western and East-Asian (Japanese) high- and low-ranking buildings (stimulus duration: 100 ms). Event-Related Potentials (ERPs) were recorded during the task. High-ranking drawings of both Western and East-Asian buildings received higher aesthetic evaluations than low ranking ones. Moreover, ERPs differentiated, in both Western and Eastern pictures, between high- and low-ranking buildings; the second positive potentials (P2) were larger in amplitude to high- than to low-ranking buildings in the central and/or frontal regions. However, the ERP patterns were different between Western and Eastern drawings. The dissociation between behavioural and electrophysiological findings suggest for a role of cultural factors in aesthetic judgments.

**Capturing the Translation of Artist's Philosophy in Neo Tantric Abstract Visual Art**

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Neo-tantric art is a class of modern Indian abstract art characterized by repetitive geometric patterns, vibrant colors and derives inspiration from ancient spiritual practices. We analyze a series of neo-tantric paintings from the foremost modern Indian artist, Sayed Haider Raza. In his series, 'Bindu', two key elements are highlighted; the 'Primordial Bindu' which originated from his experimentation with concentric colored rings and 'Prakriti', the elements of nature represented by three vibrant colors (red, yellow, orange). Raza's paintings are heavily influenced by tantric and other spiritual philosophy and relates them to visual forms and colors, for example, he emphasises that 'Bindus' are representations of silence extending in time and space to infinity, while other shapes represent different melodic rhythms and could have less saliency than the 'Bindus'. We hypothesize that Raza's philosophy is reflected in gaze patterns of naive participants while viewing his paintings. Visual perception literature shows that colors representing 'Prakriti' and 'Bindus' i.e. the curved objects, would have perceptual preference. Results of our pilot study show that 'Bindus' do capture more attention than the vibrant colors and other shapes. Through this study, we aim to understand how an artists' philosophical intentions can be transmitted through the visual features.

**Graffiti Street Art – the impact of environmental context on perceived aesthetics and neighbourhood liveability**

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Graffiti street art is increasingly recognised as an art form in its own right, potentially aiding gentrification of urban areas. An integral feature of graffiti is the context in which it is placed, but little is known about the interaction between perceived aesthetics of graffiti and its urban location. We examined a) whether perceived aesthetics of graffiti change in different urban contexts, and b) how perceived aesthetics influence the perception of neighbourhood liveability. After having been labelled for their likeability, graffiti images were photo-shopped into different urban contexts and rated by participants (n=119) for aesthetic appreciation and neighbourhood liveability. Image

context manipulations followed a 2 (affluence) x 2 (presence of rubbish) within-subject repeated measures design, with equal amounts of liked and disliked images per context. While aesthetic perception of liked graffiti remained unaffected by context, disliked graffiti was perceived as more aesthetically pleasing when presented in an affluent neighbourhood without rubbish. Furthermore, the more aesthetically pleasing the graffiti, the higher were the ratings for perceived neighbourhood liveability - an effect that was visible over and above effects of neighbourhood affluence. These data offer new insights into the interaction of aesthetics, context and importance of art in everyday settings.

**Head-to-mirror proportion error decreases in self-portraits that include background objects**

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The image of oneself on a mirror, being half of the size of its origin, is surprisingly small (Gombrich, 1960; Bertamini & Parks, 2005). We demonstrated a robust linkage between the size perception of the mirror image and the tendency to inflate the size of one's image relative to the mirror frame in self-portraits by inexperienced drawers. Furthermore, the proportion errors in both the horizontal and vertical dimensions were found to decrease when background objects have to be included in the self-portraits. The results are taken as evidence for a reliance of accurate observational depiction on an extended proximal mode of vision that involves visuocognitive skills for mental comparisons between a target image and its pictorial references (Lou, 2017).

**Indeterminate Self**

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Does a person possess a notion of his/her Self in order to be free or a person becomes free as a result of not being possessed by the notion of his/her Self? Being free seems to necessitate a Self that is not determined by its subjectivity: an indeterminate Self. My artistic research explores how to use video medium to evoke an immediate experience of an indeterminate Self. It examines the notion of indeterminacy in visual perception, quantum superposition, the medium of video art and psychoanalytical/metaphysical conceptions of the Self. In a corresponding artistic project, I experiment with a video editing technique which I named 'Super(im)position' to explore the disruption in perception/reception of a video self-portrait. This video technique involves a rapid intercutting between two video tracks resulting in an optical illusion as if the two videos coexist in a superimposition. Conceptually, Super(im)position proposes an (un)conscious perception to 'see' the coexisting actuality/virtuality. With its capacity to digitally manipulate time, creating illusory superimposed images, and inducing strobe effect in projection space, Super(im)position aims to test three hypothetical circumstances: Shifting Perception of Time; Superimposed Altered State of Consciousness; and Flick-induced Hallucination, in which the Self becomes indeterminate through the medium of video art.

**Psychology of Art vs Psychology of Expression?**

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It is commonplace to say that art is an activity of human culture absolutely determined by the history of the culture that produces it. There are cultures that do not know activities that can be defined as artistic, in the sense in which we define the term in our culture. And in our culture, the concept of art has profoundly changed not only over centuries (see "the Parisian" of Knossos), but also in the space of a few decades (see the fountain of St. John Nepomuk in Kranj). But every form of art implies an expression, either produced by the artist, or induced in the user. On the other hand, the expression is relatively independent from cultural conditioning. The expressive value of takete and maluma is the same in every culture and in every age. And the same independence holds for its articulations, namely (see Argenton, 2008) the fact that it is an innate disposition,

which represents a phenomenal priority, which consists in its "way of being", which is a property of all percepts, which is intermodal. If what is said is true, the matter is whether the idiographic approach widely adopted by psychology of art and the nomothetic one proper to psychology of expression can merge together converging on the same object of study (to the degree possible), or if the two domains have to remain irreducible to one another.

### Creating images based on individual visual preferences

- Katerina Malakhova katerina.malahova@gmail.com (Pavlov Institute of Physiology, Russia)

Neural networks are successfully used to recognize objects on images, and, lately, they are also used to deal with the converse problem - generate images based on high-level representations of the content. The latter task is a challenging problem since there is no one-to-one mapping between the idea of an object and its visual appearance. In this work, I show how a generative model can be trained to produce more visually pleasant images based on individual ratings of few previously seen pictures. The proposed model consists of two deep networks, working together: an encoder, which defines a vector representation of visual preferences based on features extracted by a convolutional neural network and a generator - Generative Adversarial Network, which produces the final image from a given high-level representation. The model can be used to create interactive and personalized art installations.

### The affective and perceptual aspects of music-paintings congruence

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The purpose of the present study was to investigate the effect of congruency between music and paintings on the aesthetic preference of paintings. Congruency was specified as the similarity in perceived regularity and the complexity of jazz compositions and abstract paintings (the ratings of regularity and complexity in both sets of stimuli were obtained in the Pilot study). In the main experiment 32 participants rated the aesthetic pleasantness of the paintings with congruent, incongruent and no music background. In addition, they rated the music-paintings matching (how well the music goes with the painting). The results show no effect of congruency on aesthetic pleasantness ratings. The effect on perceived matching was significant: matching is higher in the congruent compared to the incongruent condition. These findings suggest that congruency has a strong effect on the perceptual aspect of music-paintings compatibility (visuo-auditory similarity) and no effect on the affective aspect (hedonic similarity).

### Flying gallop or running pony? The perception of movement in horse's gaits from Gericault and Wright paintings

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The flying gallop Gericault pose of the early 1800s was popular and effective in conveying high speed. In two experiments findings showed that the more the legs are extended the faster the movement is perceived (Mastandrea & Kennedy, in press). Yet the flying gallop pose in a print by W. Summers (1871, "Tattenham Corner") was only rated 3 on a 10 points realism scale. Here, we suggest artists and the public were unwilling to cease using the pose despite the photographic evidence. The result is seen in George Wright's picture from soon after the 1870 photographic evidence: include both poses in one picture but give the running-pony pose prominence. It is foregrounded in a Wright picture, overlapping the flying gallop pose. Observers rate the poses as similarly realistic. We show the Wright solutions and paintings as late as the 1885 Derby using only the fake Gericault gait. We speculate that underlying the popularity of the Gericault gait was the understanding by non-equestrians that it was unrealistic. That is, the common reaction was that the pose suggested high speed, and was metaphoric, not literal. This helps make sense of the debate in the 1800s on the status of the pose.

**Sensation and perception in visual art**

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- Robert J Lee (School of Psychology, University of Lincoln, United Kingdom)

Vision science can help us to understand visual art, and the study of art can in turn open up new avenues for scientific investigation. Art is therefore an ideal 'real-world' context in which to engage students in discussions about perception, and about psychology more broadly. The distinction between sensation and perception is often taught in psychology courses, but receives little attention in current research. It is particularly useful to discuss the distinction in the context of visual art. Many artworks rely on sensory qualities for their impact on viewers. Sensations of colour, depth, movement, lightness, texture and so on are foregrounded in Op Art (e.g. Duchamp, Riley, Sedgley), in abstract art more broadly (e.g. Cruz-Diez, Pollock, Rothko) and in some large-scale installations (e.g. Balka, Höller, Turrell). Representational art draws in higher-level perceptual and cognitive experiences mediated by recognisable human, animal and made forms in complex visual scenes, though this art also often makes subtle use of sensory qualities such as scale, salience and complementarity (Escher, van Gogh, Raphael, Seurat, Vermeer). Interactive demonstrations and exercises are a very effective way to show students the powerful sensory and perceptual tools available to artists, and so deepen their appreciation of the close links between vision science and art.

**The Fractal Dimension of Modern Art**

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BACKGROUND Are the boundaries between traditional representational painting and Modern art indistinct, or was Modernism a radical new visual direction in Western art? Some artists and art historians regard the boundaries as indistinct, because all painting is an abstraction from reality. The Fractal Dimension (FD) of 542 paintings dated 1285-2008 was measured in the search for clues to the answer. RESULTS Trends in FD over time indicate that Modernism started around 1878, with Neo- and Post-Impressionism: The FD values of 323 artworks up to 1878 are close to the values found in photographs of similar subjects, whereas the FD of 219 paintings after 1878 are significantly more diverse. The Modern paintings can be divided into abstract (93) and representational artworks (126). They are both significantly more diverse in FD than the pre-Modern artworks. Modern abstract art is also significantly more diverse than Modern representational art. Aesthetic ratings of Modern art are not as diverse as their FD values. CONCLUSION Measurements of FD indicate that Modern art truly was a significant departure from pre-Modern art, and beauty ratings are not closely dependent on image statistics. Perhaps Modern art places more emphasis on non-visual, conceptual qualities rather than visual aesthetics.

**Image processing in art investigation: recent developments and a case study on the Ghent altarpiece**

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Abstract coming soon.

**Artistic composition in abstract images can be detected fast and automatically**

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When creating visual artworks, artists arrange the pictorial elements deliberately in a specific composition. We studied original abstract artworks and compared them to images, in which artistic composition was destroyed by shuffling otherwise identical pictorial elements. To investigate whether participants detect differences between the original and shuffled images, we performed two experiments. First, we investigated whether rapid presentation of abstract images can lead to stable and consistent aesthetic evaluations. In a gist experiment, we observed that a 50 ms exposure time sufficed to reach stable and consistent ratings on how ordered and harmonious the stimuli were. Compared to the ratings for the long exposure time (3000 ms), the 50 ms ratings showed a similar dependence on self-similarity and image type. Second, by the use of electroencephalography, we tested whether the original artworks elicited a visual mismatch negativity when they were contrasted with the shuffled images. Specifically, we used a passive oddball paradigm to investigate the automatic detection of image type-specific properties. For both the original and shuffled images, we found significant deviant-standard differences. In summary, we show that the human brain can detect image properties that relate to composition in abstract artworks, in a fast and automatic fashion.

**This, of course, is a work of the imagination**
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Wendy Morris is a visual artist working with animation and video. In 2017 she made a solo exhibition at Mu.ZEE, a contemporary art museum of Ostend, Belgium. This, of course, is a work of the imagination is an installation of filmed works, drawing and objects that explore complex issues of collective memory. The history being remembered is the sinking of a troop ship in 1917 in which 600 black South Africans lost their lives. The focus of the artist is on the political sensitivities of who is remembered, who is remembering, and in what form this remembering occurs. The viewer to the exhibition is not given a linear narrative with which to navigate the exhibition but is rather confronted with a series of disparate drawn animation and video works that explore different aspects of the complex web of narratives, legends and historical investigations surrounding this tragedy. The belief of the artist is that an exhibition can require of a viewer a reasonable effort of engagement. In order to persuade the viewer to make this effort the artist invests every skill she possesses to create a set of powerfully aesthetic visual works that will catch and hold the viewer's attention.

**Shifting in and out of Semantic (In)stability. A dynamic view on interest in visual ambiguity, indeterminacy, and disorder**
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It seems straightforward that humans seek stability while shifting in and out of it, be it the constant effort to stay in balance on our feet, to keep viable by homeostasis, or to make sense by actively predicting and constructing semantic stability. Gombrich's concept of the Sense of Order linked these efforts suggesting that action and perception are driven by habitual routines whereas we would sometimes be "pleasantly upset" by deviations from expectations. Based on this idea, accounts of Predictive Processing and own previous work we suggest a dynamic view: Unfulfilled promises of insight can motivate people to deliberately expose themselves to Semantic Instability. We will provide evidence for interest in ambiguous, complex and disordered images, increased effects of perceptual insight on liking in indeterminate contexts, and for individual differences regarding traits and states in this respect. Whereas liking might be more strongly linked to gaining insight and perceptual order - especially in complex constellations - interest reflects the motivation to explore and might benefit from promised but unfulfilled opportunity for insight. Such general mechanisms could play a role for affective responses to artworks that play with perceptual habits and allow for engaging shifts in and out of Semantic Instability.

**Frequency analysis of words in the text of architecture magazines related to the sensibility of visual dynamics**

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Architecture, sculptures, and designed artifacts provide us impressions of visual dynamics (e.g., Arnheim, 1977). Experts can intuitively evaluate the structure and internal forces of objects using their own knowledge. We refer to that ability as the sensibility of visual dynamics, which can intuitively estimate mechanical properties. How do people cognitive the visual dynamics of objects? Previous studies have used a semantic differential (SD) method to explore that ability (e.g., Ogura et al., 2012), however, the evaluation items were different depending on research and participants were mostly the architecture students. Thus, we did text mining from architecture articles to explore the semantic words which eliminated the arbitrariness of the authors and can hardly get from normal interviews. We extracted 31 articles from Japanese architecture magazines, containing the word "dynamics" in the sentences and relating to the shape evaluation. The results showed that the word "dynamics" related to the realistic and functional words ("possible", "necessary", and "problem"). In addition, the frequent words were different depending on the different expertise background. Hence, we proposed the words which can be used for the SD method and concluded that we need to consider the participants' attribution for investigating of the sensibility of visual dynamics.

**Patrick Hughes's reverspectives as research tools in visual perception**

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In the summer of 1998, I was planning a research project on cue combination and top-down influences in depth-inversion illusions (DII). In addition to the hollow-mask illusion, I was planning to vary the geometry and the painted cues in the best-known DII geometry illusions: the "Ames window" and the "Mach book". That August, during Oxford's ECVP, I saw Patrick Hughes's reverspectives for the first time and I attended a panel discussion where Patrick explained how he had arrived at the idea of reverspectives. Had I undertaken my 1998 summer research plan, it is possible - but highly improbable - that I could have come up with stimuli that were very close to Patrick's reverspectives. But, once more, the artist was years ahead of the vision scientist. His art pieces were much richer than my planned stimuli; each reverspective has several combinations of elaborate Mach books and Ames windows that are most appropriate for studying cue combination and top-down influences. In addition to his original invention, Patrick has pioneered several ingenious innovations on reverspectives that are remarkable for their simplicity in demonstrating the power of linear perspective cues in influencing the ultimate perceived depth relationships in a scene.

**Character design in video game art: Stereotypical facial aesthetics elicits emotional distress in morally demanding situations**

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- Feliciana Wolff (SAE Institute, Germany)
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Stereotypical depictions of female beauty are commonplace in the visual art of computer games. The so-called Kindchenschema is often used to make female characters worthy of protection, but also: sexually more attractive. Is this just a trick to boost sales---or does this aesthetic style also influence the emotional in-game experience? Our participants (N=51) were shown a video game cutscene, confronting them with a blind passenger on a spaceship: The face of either a stereotypically beautiful or a rather unsightly young woman appeared. The player had to decide whether the girl gets killed. There was no effect of the girl's appearance on the decision, but deciding the beautiful girl's fate was associated with more negative

emotions and perceived as significantly more difficult (U = 177.50, r = -..40, p = .004), with indications that participants felt better (U = 234.50, r = -.25, p = .077) and also felt less pressure (U = 239.00, r = -0.23, p = .094) when deciding the unsightly girl's fate. We conclude that aesthetics of clichéd beauty in computer game art elicit stronger emotional reactions for morally difficult decisions. Thus, stereotypical depictions of women can contribute in making video games immersive and demanding.

## Art-Eco-Wellness: Art and Nature through the Lens of Visual Science and Neuropsychoanalysis

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According to psychogeography, "geographical environment, consciously organized or not, [affects] emotions and behavior of individuals" (Debord, 1955). The geo-spaces change how we perceive the world, as our world can feel constrictive and not allowing for play and imagination, or otherwise (Hart, 2004). While Einstein said once, "Imagination is power. Imagination is more important than knowledge. For knowledge is limited, whereas imagination embraces the entire world, stimulating progress, giving birth to evolution" - we still treat "unrealistic" imagination as secondary to "cognitive" logic, until we observe such psycho-visual phenomena as Marc Chagall's stained glass windows or Silvio Wolf's site-specific installation art. Then, imagination that percolates in a culture of wellness and applied in public spaces (e.g., Hadassah Hospital for Chagall's works and Jewish Theological Seminary for Wolf's works) can promote peace, mindful living, and feeling of freedom of introspection in a public space, transforming any traditional place into a space for communal wellness, without taking a long trip to Palm Village monastic communities (Radosevich, 2016). This workshop will offer the participants to examine imagination (our non-material mind's psychological capacity) and visual perception (our material brain's capacity for electro-chemical information processing) through the lens of modern neuroscience, neuropsychoanalysis, and neuropsychoeducation.

## The Influence of Room Architecture on the Perception of Time

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The study aims to specify how different room architectures are connected to certain dimensions of room atmosphere and, thereby, to the perception of waiting time in these rooms. 24 participants spent 90 minutes in a room that was specifically constructed with a distinctly contemplative character (a church), and – on a different day, another 90 minutes in an architectural contrasting room, a doctor's waiting room. Awareness of time, felt passage of time judgments, and estimated duration of waiting time were assessed. After waiting, participants also reported how they experienced the individual room's atmospheres along different dimensional scales. The results suggest that atmospheric qualities of the two room architectures – specifically the perceived valence, detachment and liveliness of a room – predict the awareness of time as well as the estimated duration during waiting in that room. Interestingly, participants' mood and emotion did not affect temporal experience.

## Magritte Transforms Alberti's "Window": "The eye is a False Mirror"

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A fundamental to conception in Western painting until the nineteenth century has been the painter's canvas as a "window" into a three-dimensional scene to match the appearance of the external world. This was introduced by Brunelleschi's "mirror" demonstration (1413), then formalised by Alberti's treatise "On Painting" (1435/36).

René Magritte (1898-1967) radically undermined that tradition, not by rejecting its conventions of linear perspective and veridical representation, but by adhering to them. Alberti's "window" had combined projective geometry, and visual optics of the camera obscura in analogy with the eye from which one observed and directly experienced the world. How Magritte destroyed the Alberti illusion will be shown by an analysis of his work between 1930 and 1967 where the "window" became central to his paintings, as well as of his writings (L'Art dissimulation 1962). His aim, was not only "to challenge" how we see paintings, but how we see "the real world" by revealing that the "eye was a false mirror". A further consideration will be the extent Magritte's views reflect, or foreshadow the growing understanding at the time that what we perceive is actively "constructed" by the brain, and not "mirrored" directly via the senses/retina.

## The Sacred Ground: Enhancing and Constructing the Transcendent State in the Installation Environment

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Why do people have profound, life-changing experiences within immersive works of art? What is the construction of this affect and how are these experiences enjoined? Can we identify the key drivers of this state and set about to consciously induce such a state in our viewers? Drawing on examples from the discipline as well as from her fine art practice, the author examines the construction of heightened emotional or 'transcendent' states as experienced within encompassing installation artworks. The paper draws on literature surrounding the experience of the epiphanic, of awe and the transcendent in relation to installation environments, incorporating light, moving images and sound. Most artists want to connect with their audiences on the most profound level possible. Many regard this connection as a matter of chance or accident. But what if it is not? The paper examines the precursors to that 'moment', and seeks to model the state of transcendent communion between the artist and viewer/experiencer/participant. The talk questions whether we can understand the structure and qualities of this 'transcendent' communion to the point where we arouse it with intentionality and finds that these interpretations and iterations may be effective in producing a predictive outcome.

## The effect of perceptual organization on perception of an abstract painting by Kazimir Malevich

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The research examined the effect of perceptual organization on the perception of an abstract visual work of art, Black Square and Red Square, by Kazimir Malevich (1915). The squares in this work have an obliquity at the upper edge which is not normally recognized. We systematically amended the artwork to examine the perception of the obliquity in the black square. The original artwork and five amended alternatives were shown, as stimuli, to two groups of participants: 32 graduate art students and 23 high-school students. The alternatives were obtained either by removing the red square (maintaining the original black square or replacing it by an exact geometric square), or by replacing each or both of squares with an exact square. Observers perceived the original black square as an exact square in the presence of the original red square. When the red square was removed or replaced with an exact one, however, the obliquity of the black square was detected. There were no significant differences between the results obtained from the two groups of participants. Our results show that the simultaneous presence and obliquity of the red square masked the obliquity of the original black square.

**Towards a Phenomenology of the Unknown: 'Impossible' Objects in a Contemporary Art Installation**

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In most everyday situations, we see and act upon objects as members of broad categories. Categorical perception requires that the perceived entity fits into available categories. Here, we made use of a contemporary art installation in which no immediate categorization was possible because no known external world categories corresponded to the visual input. Low intensity LED lights were positioned in different locations in a dark room, dimly illuminating partly moving metal structures interwoven with monofilament strings. Light of the LED's was reflected from the strings producing highlights in several locations. Movement of the observers and the structures created complex, ever-changing configurations of light. There were two observation conditions: First, participants were light-adapted, next, dark-adapted. Observers reported their experience in each condition by filling out a questionnaire and drawing what they saw. The results revealed several shared, and a number of idiosyncratic characteristics of visual experiences. Under light-adaptation, most observers experienced something 'unknown', and did not correctly identify the physical stimulus. When dark-adapted, the 'unknown' experience was replaced by accurate stimulus identification. Our results show that (mis-)perceiving highlights as objects can yield rare visual experiences, and illustrate the complexity of experiences when perceiving an 'unknown' impossible object.

**One Thousand and One Selfies: About the rules, specificities and curiosity of selfies and the impact on attractiveness, sympathy and perceived competence**

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Selfies belong to a long history of self-portraits, starting at around 1500. Nowadays selfies often aim to represent snapshots of a life, but in fact are very much staged and planned. One major factor that can be manipulated quite easily is the distance and perspective from which the self is portrayed. However, systematic research is still sparse, especially about the relationship of enactment and perception of the depicted person. We selected 1001 random Selfies using the Google Picture Search engine and analyzed the material regarding some standard variables from face and person perception research (e.g. the so-called face-ism index). Furthermore, we categorized the material regarding different types of selfies. Most selfies were face only shots (with around 25% of total pixels). We also observed a vast majority (80%) of Selfies being shot via a mirror notwithstanding the capability of typical cameras directly presenting the outcome of the shot indicating the motivation of taking a full-body picture. In fact, such full body depictions are quite common, often showing half-naked (male) bodies or full-naked (female) bodies. By applying a category system for contexts, we could also document a clear impact of scenarios and environment on essential personality assessments of the depicted persons.

**Spectral analysis of historical dyed textile**

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Colour degradation because of light is an important concern in the preservation and restoration of traditional crafts. We investigated the change in colour of dyed cloth with natural plant-based dyes under exposure to sunlight. Eleven pieces of cloth were dyed with seven natural dyes: Phellodendron amurense Rupr., Polygonum tinctorium Lour., Curcuma longa L., Rubia tirctorum L., Caesalpinia sappan L., Carthamus tinctorius L., and Mirica rubra Sieb.. These dyed cloth pieces were fit in a frame positioned on a south-facing window at 45° from the horizontal to ensure a zero-degree angle of

incidence and were exposed to sunlight in 0 day and for up to 35 and 70 days with gradual covering. The spectral reflectance and xy chromaticity coordinates were measured using a two-dimensional spectral radiometer. The spectral reflectance curves for most of the dyed cloth pieces came closed to plateau in the broad-range wavelength with light degradation, confirming findings that the xy chromaticity coordinate values shift toward the white point on the chromaticity diagram. Reflectance ratios showed an increase or a minimal change due to sunlight degradation. These findings on spectral reflectance will be instrumental for understanding colour reproduction of deteriorated cloths under illumination independence.

**Contemporary audio-visual art and mechanism of global and local information analysis**

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- Nikolai Matveev (ITMO University, Russia)
- Daniel Fridman (Lux Aeterna theatre, Hungary)
- Evgenia Sitkina (Pavlov First Saint Petersburg State Medical University, Russia)
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In this paper, the possibility of using the methods of creating original artistic dynamic light and sound content by the Lux Aeterna Theatre for psychoemotional correction of patients with professional burnout is explored. The general theoretical artistic experience of Lux Aeterna Theatre originates from the ideas cultivated in the first decades of the XX century to synthesize the artistic abstract visible and audible. Theater's visual images are created due to the transformation of laser radiation when interacting with optically inhomogeneous media. The resulting images are the compositional basis of a number of optical effects. In this paper, we analyze the complexity of these images through the fractal dimension and the pyramid histogram of oriented gradient. The evaluation of the psycho-emotional response of the viewer was made while viewing the fragment of the light-sound session. The measurement of anxiety level by the Lucher test and stress on the Zung self-assessment scale on a group of 31 showed decrease on 10% in these indicators after viewing. The positive impact of such can be explained by the features of the mechanisms of global and local analysis of visual information, the substrate of which are, first of all, the magno- and parvocellural neural systems.

**The emotional sides of Portraits and Self-Portraits**

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Before the advent of photography, artists relied on mirrors to paint their self-portraits. As a result, the left side of the artist's face was painted on the left side of the canvas, contrary to portraits, in which the left side of the face was painted on the right side of the canvas. Several studies have shown that the left side of the face is more expressive than the right. In addition, humans generally exhibit a gaze bias for the left visual field, and thus the left-side of faces. In turn, self-portraits before the 19th century present the more expressive part of the artist's face to the biased, left visual field of the observer. In light of this phenomena, this study aims to investigate participants' visual scan-paths of portraits and self-portraits. Twelve portraits, twelve self-portraits and their 180-degree rotations (forty-eight in total) were shown twice to thirty-one participants while their visual scan-patterns were recorded. Participants rated the

emotional intensity of depicted faces. Results demonstrate a higher emotional rating for self-portrait and different eye scan-paths for self-portraits with respect to portraits, which may be due to the participants' ability to implicitly identify the more emotionally expressive (left) side of self-portrait.

## Art as A Reflection of Reality: The Same Intuitive Truths Repeated Across Semiotic Representations

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The disjunction between objectivity and subjectivity has persisted since the acceptance of the mechanical paradigm in the 17th century, and with it, the disjunction between the sciences (the embodiment of objectivity) and the arts (the embodiment of subjectivity). Both fields were to remain isolated in their respective spheres of intellectual thought so as to not contaminate the truth preserved in the sciences. Throughout this talk I argue that, although this disjunction has historically been accepted, the current conception of the scientific process is nearly identical to that of the artistic process. What separates these two is that the way the artist orients themselves towards their object of study is allocentric ¬– thus generating an understanding to scientific questions that is more relatable and accessible to the public -- while the scientist's orientation is autocentric. My argument draws support from Kant and Plato's treatment of beauty in Critique of Pure Judgment and Republic, respectively. I ultimately conclude that the semiotic representations found within art allow for the audience to gain a more wholistic understanding of the subject matter found in science by generating a plethora of connections between opposing ideas leading to a collectivist understanding of knowledge that unifies differing perspectives.

## Translucency in sea paintings

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- Huib de Ridder (Delft University of Technology, The Netherlands)
- Maarten Wijntjes (Delft University of Technology, The Netherlands)

To paint the sea is no easy feat. The forever moving waves, changes in weather and time-of-day affect how the sea appears. All aforementioned are factors that hamper artists' ability to capture the essence of the sea. Besides the challenge of freezing the sea's geometry in a painterly form, an additional challenge is depicting the material properties of sea water. In this study, we investigated the depiction and perception of translucency; i.e. how do painters convey that we can look through the waters' surface. With a series of 344 paintings – as painted between 1450-1900 from the open-source collections of the Metropolitan, Getty and Rijksmuseum galleries – participants (n=90) rated how translucent each sea was on a 4-point scale. We found that seas are perceived as translucent regardless of the year they were painted in. Further, we found indications that observers' translucency criterions altered with changing seascapes: rough waves were at times perceived equally translucent as flat seas, although the image cues driving these estimates are likely very different. Overall, studying the perception of painted sea water appears to be a promising window to understanding material depiction.

## Individual differences in aesthetic preferences for Interactive Objects: a Q-methodology study

- Alessandro Soranzo a.soranzo@shu.ac.uk (Sheffield Hallam University, United Kingdom)
- Jie Gao (Sheffield Hallam University, United Kingdom)

Beauty plays an important role in everyday life. When we shop, for example, our preferences often rely on aesthetic evaluations. This decision-making process is rooted in our brain and is often based on the stimulation of multiple senses at once. To investigate how each of our senses contributes to the overall aesthetic experience Soranzo et al. (2018) studied the aesthetics of the Interactive Objects (IOs); which are objects supplied with electronics that react when handled; e.g. by vibrating, sounding

or lightning-up. It emerged that people prefer objects exhibiting a "behaviour" over quiescent objects. Furthermore, interesting different aesthetics "mindsets" emerged: Some people based their aesthetic judgments on the IOs' behaviour only and other also considered a combination of IOs' texture and shape. These individual differences are important as the aesthetic response is a subjective and a whimsical experience. To further explore the individual differences in multiple stimulations, in this project we used the Q-methodology (Stephenson, 1953) together with behavioural methods. The results suggest that people can be clustered into different groups based on their aesthetic mindset. These clustered preference groups have shed more light on individual differences in aesthetics, which paves the foundation for future research.

**The Mona Lisa effect? It works with distance**

- Camilla Martina Succi c.succi@campus.unimib.it (Università di Milano-Bicocca, Italy)
- Olga Daneyko (Department of Psychology, Sociology and Politics, Sheffield Hallam University, United Kingdom)
- Daniele Zavagno (Università di Milano-Bicocca, Italy)

The charm of Da Vinci's "Mona Lisa" (ML) is in part due to two visual experiences. The first relates to distance, concerning ML's smile becoming more prominent as the observer moves away. The second experience is often referred to as the "Mona Lisa effect", and consists in the impression of her gaze following the observer as s/he moves about. In an experiment employing a high quality, actual size print of the painting, we asked 30 observers to determine whether ML was looking at them or not from six different distances (55, 110, 220, 420, 520, 755 cm). 15 observers conducted the experiment from near-to-far, the other from far-to-near. While all observers saw ML looking at them from the furthest distance, 2/3 of the far-near observers saw ML looking at them from the nearest positions (55-220 cm), while only 1/2 of the near-far observers saw ML looking at them from 55 cm. Results show that: 1) the Mona Lisa effect in La Gioconda is stronger with distance; 2) the direction of ML's gaze is rather ambiguous, a feature this that fits well with Leonardo's intent to depict "motti mentali" in his works.

**Predicting Instagram Likes with image features concerning content and composition**

- Katja Thömmes katja.thoemmes@uni-konstanz.de (Universität Konstanz, Germany)

In the digital century, people commonly indicate preferences by clicking a Like button on platforms such as Instagram. The aim of this paper is to investigate whether Likes – resulting from a huge community of over 800 million active users on Instagram – can be used as a proxy for aesthetic appeal of photographs. In a psychophysical sense, aesthetic responses are tied to objective features of the aesthetic stimulus. In this paper, we investigate Likes on Instagram as aesthetic responses. For professional photographs on Instagram the question arises, whether it is possible to predict the number of Likes with image features related to content and composition. Liking data for 3600 Instagram portrait photographs of dancers are analyzed. The focus lies on low-level features related to the concept of visual balance (center of mass, mass distribution) and effects of content-related aspects, such as gender, clothing, and colors. Differences between high-key and low-key photographs* are of special importance for computing appropriate low-level balance measures. Multiple linear regression reveals considerable potential of objective features to explain Likes. For future research, this project provides a methodological basis and guidelines to make use of online liking data in the field of empirical aesthetics. *Examples: https://tinyurl.com/yc3u4kbj

**Are angels spherical? Aesthetic experience in a field of perceptual forces**

- Oliver Toskovic otoskovi@gmail.com (Laboratory for Experimental Psychology, Faculty of Philosophy, University of Belgrade, Serbia)

Arnheim claimed that aesthetic preference depends on perceptual forces configuration, which is affected by the shape of reference frame. So, if one changes the shape of

reference frame it could further lead to change of aesthetic experience. This was tested in 2 experiments in which we used 5 rectangular and 5 elliptic artistic paintings, whose shapes were changed (rectangular to elliptic and elliptic to rectangular). In first experiment 30 participants had a task to estimate paintings on 20 adjectives, which constitute 5 factors: regularity, arousal, attractiveness, calmness and aesthetic experience. Results show significant difference between rectangular and elliptic paintings, on attractiveness factor, regardless of its originality. Elliptic paintings were experienced as more attractive. In second experiment 46 participants had a task to evaluate aesthetic preference of each painting and reaction time was measured. These results did not show any significant effect on reaction times, but there was a significant effect of originality on preference score. Surprisingly, inverted paintings showed higher preference scores. Both experiments show that changing the shape of reference frame does not affect aesthetic experience in expected direction. On the other hand, results indicate importance of novelty for aesthetic experience, as one of Berlyne's collative properties.

**Did Leonardo da Vinci have Strabismus?**

- Christopher Tyler cwt@ski.org (City University of London, United Kingdom)

Leonardo da Vinci was renowned for his expansive view of the scope of the natural and humanistic universe, but few portraits of him are generally recognized. One case that was identified by the Renaissance historian, Vasari, as having been modeled the young Leonardo is the sculpture of 'David' by his master, Verrocchio, in which the eyes appear divergent. The question to be assessed is whether this divergence is an artistic trope or a veridical depiction of Leonardo's ocular physiology. Method. A set of age-appropriate likely portraits or self-portraits of Leonardo with clear depictions of both eyes in the face were identified for analysis. To meet this identification, a depiction had to a) have a date matching Leonardo's age at the time, b) be by Leonardo or his master, Verrocchio, c) have a physiognomy consistent with the 'David' sculpture. The ocular vergence angle was assessed by fitting circles and ellipses to the pupils, irises and eyelid apertures, and by measuring the Hirschberg angle of the irises to the optical glint of the light source. Results. The average divergence angle in the identified portraits was about 10 deg, suggesting that Leonardo had a habitual exotropia of the ocular alignment. Conclusion. Other famous artists, such as Rembrandt, have been found to show an exotropic eye configuration in self-portraits. In the case of Leonardo da Vinci, a consequent stereodeficiency could explain his well-known focus on monocular cues to depth such as linear and aerial perspective, and his failure to identify binocular disparity as a depth cue despite a careful analysis in his notebooks of the geometric difference between the views of the two eyes.

**Evaluation of dynamic preferences using the Repeated Evaluation Technique (RET) - The impact of innovation, complexity, attractiveness, and personality on the perception of fashion**

- Sandra Utz sandra.utz@uni-bamberg.de (University of Bamberg, Germany)
- Amelie Reichenbecker (University of Bamberg, Germany)
- Claus-Christian Carbon (University of Bamberg, Germany)

The Repeated Evaluation Technique (RET) aims at capturing dynamical effects of aesthetic preferences in a valid way (Carbon & Leder, 2005). The present study uses RET to investigate effects of innovativeness, complexity, and personality on the attractiveness perception of fashion. In two test phases (T1 & T2), a treatment group and a control group evaluated 10 dresses (5 low, 5 high innovative) regarding attractiveness, innovativeness and complexity. Between test phases, the treatment group elaborated all dresses intensively, while the control group did an irrelevant task. All participants completed a short version of the Big Five Inventory (Rammstedt & John, 2005). The treatment group showed a general increase of attractiveness ratings from T1 to T2 and rated low innovative dresses as significantly more innovative as the control group at T2. The rated innovativeness correlated positively with the rated complexity of dresses. The expected increase in attractiveness for highly innovative and

simultaneous decrease for low innovative stimuli could not be replicated. Perhaps the recommended equal level of complexity (Carbon & Leder, 2007) could not be achieved due to the varying complexity of the presented stimuli. Furthermore, the personality traits openness for new experiences and conscientiousness seem to influence aesthetic preferences as well.

## Ownership of Expressive Properties

- Benjamin Van Buren benjamin.vanburen@yale.edu (Yale University, United States)

A rich tradition in psychology holds that we experience the world not only in terms of lower-level features, such as color and orientation, but also in terms of seemingly higher-level properties, such as weight, tension, intentionality, and emotionality. Although it is often said that artists harness these so-called 'expressive' properties in order to elicit visual and affective impressions in viewers, their role in the visual arts has yet to be explored systematically.  Such properties may be usefully distinguished based on how they are owned.  Just as color is experienced not as free-floating, but rather as belonging to particular objects, so too are expressive properties owned.  For example, a property such as tension may belong to a depicted object (e.g. tension in a boat's sails), to the composition (e.g. tension in the arrangement of shapes in the picture plane), or to the 'causal history' of the piece (e.g. tension in the artist's hand). In addition to being owned, such properties may be lent; agitated brushstrokes may lend a quality of agitation to a depicted face.  This framework helps to explain the phenomenal impact of individual artworks, and it also provides a foundation for more general hypotheses about how art 'works'.

## Lost edges

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- Jan Koenderink (Katholieke Universiteit Leuven, Belgium)
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To prevent a "colouring book" effect pictorial objects should not have fully outlined silhouettes. That would kill pictorial depth and relief, thus is only preferable in intentionally flat design, as posters. One needs to "lose" edges. There are various methods in common use. "Lost and found edges" are created by countershading the background of a shaded object, "passages" are created by such devices as merging the body and cast shadows of pictorial objects, or merging pictorial object regions with background values especially designed for the purpose, such as "gripping darks", "mysterious darks" or "luminous backdrop". Blurring edge ("edge quality") is another technique. Artists typically carefully plan their edge schemes. Observers tend to tolerate huge stretches of "lost edge", what do they see? We present an operational method to quantify and present results.

## Amodal presence and absence in visual art: Magritte, Baldessari, Catalano, Picasso

- Rob van Lier r.vanlier@donders.ru.nl (Radboud University; Donders Institute for Brain, Cognition and Behaviour, The Netherlands)
- Vebjørn Ekroll (University of Bergen; Department of Psychosocial Science, Norway)

In visual art, occlusion is often applied to suggest depth, with various visual cues that trigger extensions of a background surface behind an occluder (known as amodal completion). Here, we focus on how artists may deliberately occlude parts in visual sceneries to induce ambiguity or to appeal to the viewers' imagination. For example, René Magritte's "son of man" serves exactly that purpose; an apple levitating in front of a face leaves the face absent in the image, but what the observer perceives seems to be an intriguing mixture of perceptually driven and knowledge-driven expectations. Similarly, the typically occluding disks in John Baldessari's conceptual art leaves the scenery largely intact, due to amodal presence of the occluded parts, yet triggers a different way of experiencing the photographs. Although occlusion is an effective way

to induce amodal presence, it can be triggered by other means as well; in Bruno Catelano's statues brute gaps in human bodies seem to act as a trigger for completion, and a few simple lines drawn by Picasso elicits the presence of an imaginary shape, much richer than the actual image. In this presentation, we relate research on amodal completion to absence and presence in visual art.

### Aesthetics and good Gestalt: a close but complex relationship?

- Eline Van Geert eline.vangeert@kuleuven.be (Katholieke Universiteit Leuven, Belgium)
- Johan Wagemans (Katholieke Universiteit Leuven, Belgium)

The relation between good Gestalt and aesthetic appreciation is a long-lived one. Koffka (1935), for example, already noted that "violations of the Law of the good Gestalt hurt our sense of beauty" (p. 153). Although several important authors, besides Koffka also including Eysenck and Arnheim, mentioned and emphasized the importance and prominence of the relation between good Gestalt and aesthetic appreciation, empirical work on this relationship and which factors influence it lags behind. In this poster, we will discuss historical, mostly theoretical links between good Gestalt and aesthetic appreciation as well as planned empirical studies concerning this relationship. The planned studies aim to investigate individual and contextual differences in what makes a good Gestalt and in how good Gestalt relates to aesthetic appreciation

### Human skin depiction over the ages

- Mitchell van Zuijlen m.j.p.vanzuijlen@tudelft.nl (Delft University of Technology, The Netherlands)
- Paul Upchurch (Cornell University, United States)
- Hubert Lin (Cornell University, United States)
- Kavita Bala (Cornell University, United States)
- Sylvia Pont (Delft University of Technology, The Netherlands)
- Maarten Wijntjes (Delft University of Technology, The Netherlands)

Human skin has been a ubiquitous motif throughout painting history. This allows for comparisons to be made over different periods in time. Human skin displays great variability due to health, age, gender and geography. Combined with its translucency and optical complexity, it is an interesting material for vision sciences. In this exploratory study we looked at painted human skin and changes over time. We used facial recognition software to extract human faces from 7 digitalized art collections, and we removed pixels corresponding to the eyes and the mouth. This resulted in 14,872 depictions of human facial skin. We calculated the Michelson contrast for each image using the 5th and 95th quantile as minimum and maximum, respectively. We found that the Michelson contrast for the luminance of the skin depictions increases steadily from the late 15th century and peaks in the golden age, after which it slowly decreases again. This shows that temporal differences can be found in the depiction of facial skin. Besides this large-scale temporal analysis performed in the current study, this interdisciplinary method can be applied to the examination of geographical or even cultural difference in digitalized art.

### Pictorial Continuous Narratives: Perceptual-Representational Strategies

- Ian Verstegen verstege@sas.upenn.edu (University of Pennsylvania, United States)
- Tamara Prest (formerly University of Padua)
- Laura Messina Argenton (University of Padua, Italy)
- Alberto Argenton (†) (University of Padua, Italy)

Although continuous narrative has been extensively discussed in art history, only a handful of psychologists have turned their attention to it (c.f. Actis-Grosso & Zavagno, 2008; Kalkofen & Strack, 2012; McNamara et al, 2012). Among his unfinished projects, Alberto Argenton left a corpus of 900 images with continuous narratives represented within a single work he had compiled with Tamara Prest. Argenton's goal was to study the perceptual-representational strategies used by artists to visually tell a story in the

continuous narrative mode. The present project narrowed the study to a single iconography, the story of Adam and Eve, found in 90 of the repertoire images. Following the classic Gestalt laws of grouping, two different types of strategies were studied: the segmentation of the pictorial field into scenes (perceptual separation of episodes and time-separating devices), and the linking of protagonists together (vectors of direction and perceptual identification of repeated protagonists). Although art history traditionally has focused on conventional features connecting figures well-known from biblical stories, our results show strong utilization of reinforcement of perceptual separation between scenes and perceptual identity preserved among protagonists.

**Fractal-scaling properties predict individual preferences across synthetic images and art**

- Catherine Viengkham thursday@live.com.au (The University of New South Wales, Australia)
- Branka Spehar (The University of New South Wales, Australia)

While the relationship between fractal-scaling properties and visual preference in synthetic, abstract images has been demonstrated and supported in a large number of studies; much less is known about the role fractal-scaling properties play in the appreciation of actual artworks. In this study, we make a direct comparison of within-individual preferences for certain fractal-scaling characteristics across both synthetic images and artworks. Over two online studies, participants were presented with two types of stimuli (synthetic images and art) that varied across three levels of fractal dimension (low, intermediate, high). We measured preference, as well as ratings of perceived pleasantness, complexity and interestingness across all stimulus combinations. We found average preference peaked for intermediate D values for both image types, but clear patterns of individual differences also emerged. These preference patterns were largely consistent within-individuals and, while slightly fluid, were resistant to extreme changes across image types. Overall, our findings further substantiate the role of fractal-scaling properties as a key proponent of aesthetic value and a predictor of individual aesthetic preferences.

**Home sweet home: Is kitsch more popular with people who value security over arousal?**

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- Uwe C Fischer (University of Bamberg, Germany)
- Claus-Christian Carbon (University of Bamberg, Germany)
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According to Schmidt (1994) "something in kitsch refers to homeland and familiarity" (p. 143). If this is the case we expect people with a pronounced security motif to rate potential kitsch objects as more likable and less kitschy than people with a low need for security. Regarding a complementary need for arousal this response pattern should be reversed (Ortlieb & Carbon, 2014). A rating study was conducted to test these hypotheses: Inter-individual differences in basic needs for security and arousal were assessed using two standardized scales from the MPZM-questionnaire by Schönbrodt et al. (2009). Subsequently, participants rated 208 images of decorative everyday objects from the Bamberg Repository of Contemporary Kitsch (BaRoCK) in terms of liking and kitschiness. For data analysis the sample (N=56) was split into three homogenous groups based on the MPZM-scores for security/arousal. A group-wise comparison of individuals with high (n=19/n=20), moderately high (n=20/n=21), and low scores (n=17/n=15) confirmed our initial hypotheses: On average, participants with a high need for security rated the BaRoCK-images more likable and less kitschy than participants with low security-scores, while participants with a distinct appetence for arousal rated the BaRoCK-stimuli less likable and more kitschy than individuals with a low need for arousal.

**A museum study with some imagination too, perhaps**

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- Vincent Janssens (Katholieke Universiteit Leuven, Belgium)
- Nelke Jorissen (Katholieke Universiteit Leuven, Belgium)
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Building further on a 10-year long relationship, going back to Parallellepipeda (Wagemans, 2011) and the artist's PhD, we have now conducted an extensive study of the visitors' experiences and appreciations of "This, of course, is a work of the imagination" by Wendy Morris. 135 visitors with a range of backgrounds (art, historians, general audience) participated in three conditions with or without additional information provided by the artist or the researchers. Before entering the exhibition, participants filled out a questionnaire asking about their personal background, interest and familiarity with art and history and some specific aspects related to the exhibition. Upon leaving the exhibition, participants filled out a questionnaire tapping into their experiences and appreciations, using semantic differential scales and items from AESTHEMOS (Schindler et al., 2017), as well as items related to the VIMAP model (Pelowski et al., 2017). We are still in the process of analyzing this rich data set but we can already conclude that the range of outcomes is huge and clearly relates to participant characteristics and the additional information they received. It seems that no single size fits all when it comes to understanding and appreciating complex art works.

**What are "complementary colours"?**

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- Alexander Nowak (Justus-Liebig-Universität Gießen, Germany)
- Andrea van Doorn (Katholieke Universiteit Leuven, Belgium)
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In the arts, complementary colours are considered to be colours that have opposite hue in a "color wheel" and have maximal contrast. From the perspective of colour research, such colours are opponent colours and should correspond to the colours seen in colour aftereffects and simultaneous contrast. We carefully measured the hue of colours induced through aftereffects and simultaneous contrast with 30 observers in two experiments. We found that the colours induced by afterimages and simultaneous contrast can be coarsely predicted by perceptual colour models (DKL, CIELUV, CIELAB, Munsell). However, none of those models consistently predicted the precise hue observers see in afterimages and simultaneous contrast and there was a considerable difference between colours induced by aftereffects and simultaneous contrast. These results raise the question of what visual phenomena and what "colour wheel" should be used to define "complementary colours".

**Thresholds: The Artist as the Medium**

- Silvio Wolf info@silviowolf.com (Studio Silvio Wolf, Italy)
- Inna Rozentsvit (United States)

Images are formed in our minds and result from the connection of two worlds: the manifold external world and our lightless inner one. Each of us sees, thinks and understands the same object differently, so, does the truth of the image reside in the eye and mind of the beholder? The focus of my artistic practice is on the threshold of our mental and perceptual interaction with the Real and the role that the viewer plays in the relationship between what the photographer saw and what the viewer is seeing. During this workshop, participants will explore their unique beholder's experience, working with my photo-based works printed onto mirrors. Where a photograph would traditionally be white, the mirror surface is imageless, embracing the phenomenological the inner world of the image. Reducing the referent to a background noise of retinal vision, they embody the hic et nunc of the beholder, his sight, experience and time, expanding the idea of the exposure from where it was

taken to the place where it's seen. It is the Subject who questions the actuality of the image, activating it at every new glance.

## Picture perception reveals mental geometry of 3D scene inferences

- Qasim Zaidi qz@sunyopt.edu (Graduate Center for Vision Research, SUNY College of Optometry, United States)
- Erin Koch (Graduate Center for Vision Research, State University of New York, United States)
- Famya Baig (Graduate Center for Vision Research, SUNY College of Optometry, United States)

Pose estimation of objects in real scenes, is critically important for biological and machine visual systems. We show that there is unexpectedly remarkable agreement across observers in estimating object poses from pictures, and that all observers apply the same inferential rule in all views. We used photographs from different camera angles of single sticks or pairs of joined sticks. Observers viewed these from 5 directions, and matched the perceived 3D pose of each stick by rotating an arrow on a horizontal touchscreen. When the trigonometric expression for the projection of each 3D stick to the 2D picture, and then onto the retina, is inverted, the expression yields the back-projection for each object pose, camera elevation, and observer viewpoint. We built a model where observers use the back-projection, modulated by one parameter for front-parallel bias, and one for perceived tilt of the ground plane. The two-parameter model explains 560 pose-estimates per observer for the sticks, and also explains perceived limb poses of two bodies lying on the ground. Since using back-projections explains both perceptual invariance and dramatic distortions of poses in real and pictured scenes, we conclude that projective geometry of light is incorporated into mental inferences about 3D scenes.

## A direct and fast comparison method to measure perceived complexity

- Johannes M Zanker j.zanker@rhul.ac.uk (Royal Holloway University of London, United Kingdom)
- Jasmina Stevanov (Royal Holloway University of London, United Kingdom)

Challenges in studying attributes of 'beauty' such as 'complexity' arise from the subjective nature of judgements, broad definitions, and vastly different domains of measurements. Our goal is to link mathematical and perceptual complexity in an attempt to understand the meaning of 'complexity' in visual arts. To unify the domain of measurements and dimensions of complexity, in previous work we devised a method to compare how synthetic patterns with varying degree of mathematical complexity, symmetry, and regularity relate to perceptual aesthetic attributes (ECVP 2015), using rating and ranking experiments. Here we show how comparison with a 7-step scale 'moss'-like synthetic fractals can be used to assess perceived complexity in wide stimulus sets, including artificial images, paintings, and natural images. Comparing the scale with other synthetic patterns cross-validates the new method against previous experiments, in which the perceived strength of stimulus property was rated on a numerical scale. We show with larger stimulus set that robust data can be collected from naive participants with this new method fast and effortlessly. Although some test images appear difficult to match, our results indicate general consistency between participants and good alignment between mathematical and perceptual complexity. Support by ESRC grant (ES/K000187/1).

## Visual Tension and the Expressiveness of Art

- Ling Zhu ling.zhu@lyonandturnbull.com (Lyon & Turnbull, United Kingdom)

"Any artist knows that an artwork is defined by its structure of tension. Yet remarkably, no one has ever given a theory of tension in artworks." - complains Michael Leyton in his book The Structure of Paintings. Indeed, very few researchers have addressed the question of visual tension, a key concept to understanding how static works of visual art can provoke a sense of dynamics, which in turn is intimately related to their expressiveness. This paper proposes that visual tension, in a way entirely analogous to

elastic tension, emerges as the result of the distortion of basic shapes underlying visual perception. The key idea of the paper was first put forward in "An Outline of a Theory of Visual Tension," published in the journal Art & Visual Perception in 2015. In the current paper, I wish to explore the idea further by discussing the gradient character of visual tension. It is by modulating visual tensions to generate a gradient of intensity that works of visual art gain their unique sense of expressiveness.

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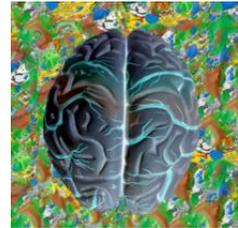**Università degli Studi Milano Bicocca Dipartimento di Psicologia**

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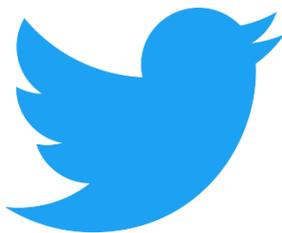
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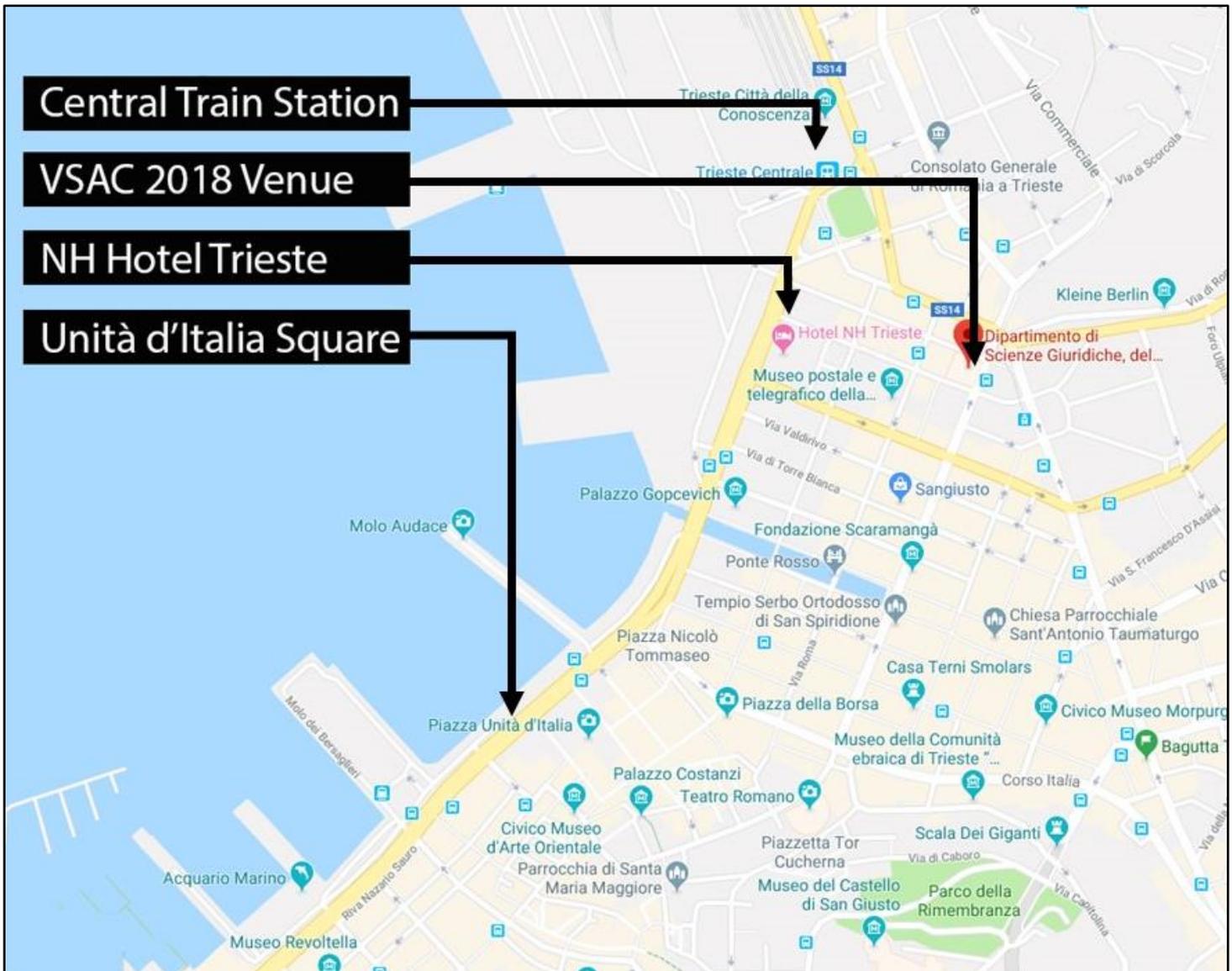**@vsac2018**

# VSAC 2018 Map

The venue for our VSAC 2018 conference is the **Narodni Dom building**, located in the centre of Trieste at **14 via Fabio Filzi**. It hosts the "Section of Studies in Modern Languages for Interpreting and Translation" of the University of Trieste.



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