HPSC3034 Science, Art & Philosophy

Course Syllabus

2012-13 session | Dr Chiara Ambrosio|c.ambrosio@ucl.ac.uk

Course Information

This module explores the interactions between science and art from the mid-nineteenth century to the present. Its philosophical focus is the notion of "representation", conceived as a crucial common link between scientific and artistic visual practices. Integrating the history and philosophy of scientific and artistic representations, the course will address a broad range of issues. These will include questions on the nature and role of visual representations in scientific and artistic practice, what counts as "objective" and "accurate" representation, when and how images count as "evidence", and whether the relations between science and modernism contribute to overturn the common sense view that "art invents, science discovers".

Course Summary at a Glance

Moodle Web site:	Search 'HPSC3034 – Science, Art and Philosophy' (enrolment key: darwin)
Assessment:	Coursework 1: Poster (40%), Coursework 2: (60%) A short review article (2500 words) (40%) Oral presentation of the article+ poster (10 mins) (20%)
Timetable:	Please refer to this link for the course timetable: www.ucl.ac.uk/sts/hpsc . Remember to check your personal timetable regularly for the venue of lectures and tutorials. **Note: some of the lectures will be based in museums and galleries. Please refer to the weekly schedule below for further details.**
Prerequisites:	no pre-requisites
Required texts:	no required texts
Course tutor(s):	Chiara Ambrosio
Contact:	c.ambrosio@ucl.ac.uk | t: 020 7679 0166
Web:	www.ucl.ac.uk/sts/tutor
Office location:	22 Gordon Square, Room 1.2
Office hours:	Tuesday 4-5 Wednesday 10-11

Teaching format:

This course comprises a two-hour lecture (Wednesdays) and a one-hour seminar (Fridays). In each lecture, I will explain the readings assigned for the current week. In some cases, I might give you a choice between two or three optional readings, and you will be expected to read them in preparation for the seminars on Fridays.

For each seminar, I will ask you to find a representation that will stimulate further thoughts and discussion on the readings. By "representation" I mean an object, image, video, piece of music or anything else of your choice that might be relevant to the readings assigned each week. **It is essential that you bring this material to the seminars, as the sessions will focus on the representations you will choose each week.** It is also very important that you show a coherent line of argumentation to explain why we should pay attention to the representations you have chosen for the session.

After reading week I will run two tutorial sessions on poster design and assessment in general. As in professional academic practice, the poster, short article and presentation which form your assignment are complementary to each other and should be approached as a coherent and unified research project. More details on this will be given in the lectures and seminars.

Schedule

Week 20 – Wednesday 9 January
Introduction: Why Representations?

Required readings:

- Stephen Kern, *The Culture of Time and Space 1880-1914,* Cambridge, Mass.: Harvard University Press.

(Introduction; Chapter 1 "The Nature of Time" and Chapter 6 "The Nature of Space").

Part 1. How do representations "represent"?

Week 21 – Wednesday 16 January
Denotation, Convention and the Riddle of Style

[Note: This lecture will take place at the UCL Art Museum]

Required Readings:
Choose one of the following

- Nelson Goodman, *Languages of Art*. (Indianapolis: Hackett, 1976).

(Introduction; Chapter 1 "Reality Remade". You might want to consider also the following extracts from chapter 2: "Exemplification" (pp. 52-57) and "Samples and Labels" (pp. 57-68).

- Ernst Gombrich, *Art and Illusion* (London: Phaidon, 1960)

("Psychology and the Riddle of Style" (introduction); Chapter 2 "Truth and the Stereotype")

Further Readings:

On Nelson Goodman

- Douglas Arrell, "What Goodman Should Have Said about Representation", in *the Journal of Aesthetic and Art Criticism*, vol. 4, no. 1 (1987), pp. 41-49. (also reprinted in Elgin 1997, below).
- Catherine Z. Elgin, *Nelson Goodman's Philosophy of Art*. (New York: Garland Publishing, 1997).
- Alessandro Giovannelli, "Goodman's Aesthetics", *The Stanford Encyclopedia of Philosophy (Summer 2010 Edition)*, Edward N. Zalta (ed.), URL= http://plato.stanford.edu/archives/sum2010/entries/goodman-aesthetics/
- Richard Rudner (ed.). *Logic and Art: Essays in Honor of Nelson Goodman*. (Indianapolis: Bobbs Merrill, 1972)

On/by Ernst Gombrich

- Ernst Gombrich *Meditations on a Hobby Horse* (London: Phaidon, 1963).
- Ernst Gombrich, Julian Hochberg and Max Black, *Art Perception and Reality* (Baltimore: The John Hopkins University Press, 1972).
- Ernst Gombrich and Didier Eribon, *Conversations on Art and Science.* (New York: Abrams 1993)
- Onions J. (ed.). *Sight & Insight. Essays in honour of E.H. Gombrich.* (London: Phaidon 1994)
- Sheldon Richmond, *Aesthetic Criteria: Gombrich and the Philosophies of Science of Popper and Polanyi*. Amsterdam and Atlanta, GA: Rodopi, 1994

Week 22 – Wednesday 23 January
Representation, Classification and the Order of Things

Required Readings:

- Michel Foucault, *The Order of Things* (London: Routledge, 2002).

(Preface and extracts from part 1: 1. Las Meniñas; 2.1 "The Four Similitudes"; 3. Representing)

- Svetlana Alpers, Interpretation without Representation, or the Viewing of Las Meniñas", in *Representations*, vol. 1 (1983), pp. 30-42.

Further readings:

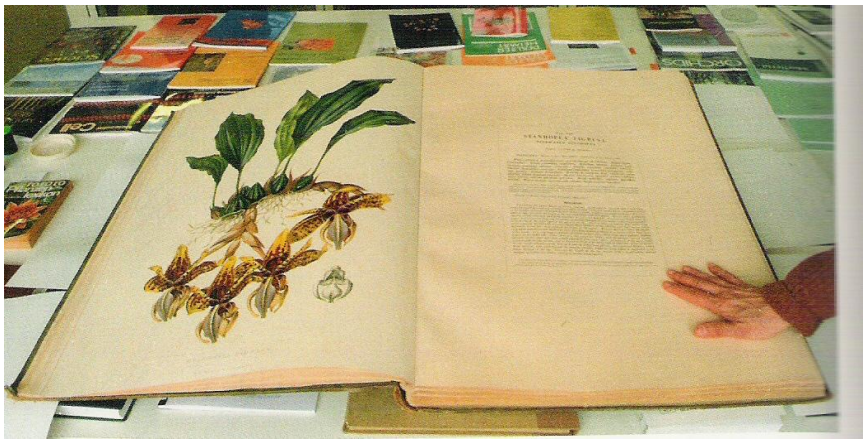
- Svetlana Alpers, *The Art of Describing. Dutch art in the seventeenth century*. (Chicago: University of Chicago Press, 1983).
- Svetlana Alpers, "The Studio, the Laboratory and the Vexations of Art", in Jones, C. and Galison. P. (eds.), *Picturing Science and Producing Art*. (London: Routledge University Press 1998), 401-417.
- John Searle, "Las Meniñas and the Paradoxes of Pictorial Representation" in Critical Inquiry vol. 6 no. 3 (1980), pp. 477-488.

Companions and secondary sources on Foucault:

- Gary Gutting, *Michel Foucault's Archaeology of Scientific Reason* (Cambridge: Cambridge University Press, 1989)
- Gary Gutting (ed.), *The Cambridge Companion to Foucault* (Cambridge: Cambridge University Press, 2009, 2nd edition.
- Gay Gutting, "Michel Foucault", *The Stanford Encyclopedia of Philosophy (Fall 2011 Edition)*, Edward N. Zalta (ed.), URL= < http://plato.stanford.edu/archives/fall2011/entries/foucault/>

Week 23 – Wednesday 30 January
Truth-to-Nature

[Note: This lecture will take place at the UCL Art Museum]



Required Readings:

- Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books 2007)

(Chapter 2, Truth-to-Nature)

Further Readings:

- Lorraine Daston, "Objectivity and the Escape from Perspective", in *Social Studies of Science*, vol. 22, no. 4 (1992), pp. 597-618.
- Lorraine Daston and Peter Galison, "The Image of Objectivity", in *Representations*, no. 40 (1992), pp. 81-128.
- Lorraine Daston "On Scientific Observation", in *ISIS*, vol. 99, no. 1 (2008), pp. 97-110.
- Lorraine Daston and Peter Galison, "Epistemologies of the Eye", in: *Objectivity* (New York: Zone Books 2007), pp. 17-51.

Historical Case-Studies

- Lorraine Daston and Elizabeth Lunbeck (eds.), *Histories of Scientific Observation* (Chicago and London: University of Chicago Press, 2011)

(see especially Part 1: "Framing the History of Scientific Observation, 500-1800)

- Peter Galison and Caroline Jones, *Picturing Science, Producing Art* (New York and London: Routledge, 1998)

(see especially section 3, "Seeing Wonders").

- Reinhard Hildebrand, "Attic Perfection in Anatomy: Bernhard Siegfried Albinus (1697–1770) and Samuel Thomas Soemmerring (1755–1830), in: *Annals of Anatomy,* 187, vols 5-6 (2005), pp. 555-573.
- Ann B. Shteir and Bernard Lightman (ed.) *Figuring it out: Science, Gender and Visual Culture* (Dartmouth College Press, 2006).

(see especially part 1, chapters 1-3).

- Patrick Singy "Huber's Eyes: The Art of Scientific Observation before the Emergence of Positivism", in *Representations,* vol. 95, no. 1, pp. 54-75.

Week 24 – Wednesday 6 February
The Conundrum of Representation in Philosophy of Science

Required readings:

- Roman Frigg and Matthew Hunter (eds.) *Beyond Mimesis and Convention: Representation in Art and Science* (Dordrecht: Springer, 2010)

(Introduction)

- Mauricio Suárez, "Scientific Representation", *Philosophy Compass* (2010) vol. 5, no. 1, pp. 91-101.

Further readings:

- Black, M. *Models and Metaphors*. Ithaca and New York: Cornell University Press, 1966.
- Roman Frigg and Stephan Hartmann, S. 2006. *Models in Science. The Stanford Encyclopedia of Philosophy (Summer 2009 Edition)*, Edward N. Zalta (ed.), URL = http://plato.stanford.edu/archives/sum2009/entries/models-science/ .
- Ian Hacking, *Representing and Intervening*. Cambridge: Cambridge University Press, 1983.
- David Kaiser, "Stick-Figure Realism: Conventions, Reification and the Persistence of Feynman Diagrams", in *Representations*, no. 70 (2000), pp. 49-86.
- Morgan, M. and Morrison, M. (eds.). *Models as Mediators. Perspectives on Natural and Social Science*. Cambridge: Cambridge University Press, 1999.
- Demetris Portides, "Scientific Representation, Denotation and Explanatory Power", in: Raftopoulos, A. and Machamer, P. (eds), *Perception, Realism and the Problem of Reference*. Cambridge: Cambridge University Press, 2012.
- Mauricio Suárez, "Scientific Representation: Against Similarity and Isomorphism" in: *International Studies in the Philosophy of Science* (2003), vol. 17 no. 3:225-244.
- Bas van Fraassen, *Scientific Representation: Paradoxes of Perspective* (Oxford: Oxford University Press, 2008.

Week 25 – READING WEEK

Part 2 – Representations "in action"

Week 26 – Wednesday 20 February
Representation in the Age of Mechanical Reproduction
[Note: This week's tutorial will take place at the UCL Art Museum]

Required readings:

- Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2007)

(Chapter 3, Mechanical Objectivity)

Further Readings:

- Walter Benjamin, *Illuminations*. (London: Pimlico, 1999)

(this collection of essays contains *The Work of Art in the Age of Mechanical Reproduction*).

- Walter Benjamin, *The Work of Art in the Age of Mechanical Reproduction*. (London: Penguin Books, 2008).
- Peter Geimer, "Image as Trace: Speculation about an Undead Paradigm", in *differences*, vol. 18, no. 1, pp. 7-28.
- Andreas Mayer, "The Physiological Circus: Knowing, Representing and Training Horses in Motion in Nineteenth Century France", in *Representations,* vol. 111, no. 1 (2010), pp 88-120.
- Francis Ribemont, Patrick Daum and Philip Prodger (eds.), *Impressionist Camera: Pictorialist Photography in Europe, 1888-1918* (London: Merrell, 2006)
- Susan Sontag, *On Photography* (London: Penguin Classics 2008)
- Joel Snyder, "Visualisation and Visualizability", in Peter Galison and Caroline Jones (eds.), *Picturing Science, Producing Art* (New York and London: Routledge, 1998)

Week 27 – Wednesday 27 February
Modernist Visions

Required readings:

Choose one of the following (you can use the remaining articles as optional readings):

- Willard Bohn "In Pursuit of the Fourth Dimension: Guillaume Apollinaire and Max Weber" in: *Arts* vol. 54 (1980), pp. 166-169.
- Peter Galison, "Aufbau/Bauhaus: Logical Positivism and Architectural Modernism" in *Critical Inquiry*, Vol. 16, no. 4 (1990), pp. 709-752.
- Linda Dalrymple Henderson, "X-Rays and the Quest for Invisible Reality in the Art of Kupka,

Duchamp and the Cubists", in: *Art Journal* vol. 47 (1988) pp. 323-340.

Further readings:

- Linda Dalrymple Henderson, *The Fourth Dimension and Non-Euclidean Geometry in Modern Art*, (Princeton: Princeton University Press, 1983).
- Linda Dalrymple Henderson, "Editor's Introduction – Writing Modern Art and Science", in *Science in Context*, vol. 17 no. 4 (2004), pp. 423-466.

(you can use this issue of *Science in Context* as a source of further material on Modernism and Science)

- Linda Dalrymple Henderson, *From Energy to Information: Representation in Science and Technology, Art, and Literature* (Stanford: Stanford University Press, 2002)
- William R. Everdell, *The First Moderns: Profiles and Origins of Twentieth Century Thought*. (Chicago: University of Chicago Press, 1999).
- Gerald Holton, "Henri Poincaré, Marcel Duchamp and Innovation in Science and Art", in *Leonardo,* vol 34 no. 2 (2001), pp. 127-134.
- Stephen Kern, *The Culture of Time and Space 1880-1914,* Cambridge, Mass.: Harvard University Press.
- Arthur I. Miller, *Insights of Genius* (Cambridge, Mass.: The MIT Press, 2000).
- Arthur I. Miller, *Einstein, Picasso. Space, Time and the Beauty that Causes Havoc*. (New York: Basic Books, 2001).
- Gavin Parkinson *Surrealism, Art and Modern Science*. *Relativity, Quantum Mechanics, Epistemology.* (New Haven and London: Yale University Press, 2008).

Week 28 – Wednesday 6 March
Representing Time: Seriality and Duration

[Note: This week's tutorial will take place at the UCL Art Museum]

Required Readings:

Choose one of the following:

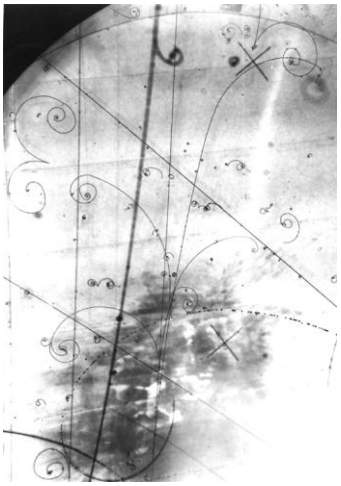
- Mark Antliff "The Fourth Dimension and Futurism: A Politicised Space", in *Art Bulletin*, vol 82 no. 4 (2000), pp. 720-733.
- Jimena Canales "Desired Machines: Cinema and the World in Its Own Image", in *Science in Context,* no. 24 vol. 3 (2011), pp. 329-359.

Further readings:

- Keith Ansell Pearson and John Mullarkey (eds.) *Bergson: Key Writings* (London: Continuum, 2002)
- Henri Bergson, *Duration and Simultaneity,* edited by Robin Durie (Manchester: Clinamen Press, 1999)

- Suzanne Guerlac, *Thinking in Time; An Introduction to Henri Bergson* (Ithaca: Cornell University Press, 2006).
- Jimena Canales *A Tenth of a Second: A History* (Chicago and London: The University of Chicago Press, 2009)
- Stephen Kern, *The Culture of Time and Space 1880-1914,* Cambridge, Mass.: Harvard University Press. (See especially chapters 1- 4 and chapter 11)

Week 29 – Wednesday 13 March
Visualization Lost and Regained



Required Readings:
Peter Galison, "The Suppressed Drawing: Paul Dirac's Hidden Geometry", in *Representations*, no. 72 (2000), pp. 145-166.

Further Readings:
- Lorraine Daston and Peter Galison, "Trained Judgment", in *Objectivity* (New York: Zone Books 2007), pp.309-357.
- Peter Galison, *Image and Logic*. (Chicago: University of Chicago Press, 1997)
- Charles Harrison, Francis Frascina, and Gill Perry *Primitivism, Cubism, Abstraction* (New Haven and London: Yale University Press 1993).
- Arthur I. Miller, *Insights of Genius* Cambridge, Mass.: The MIT Press (2nd ed.).
- Arthur I. Miller "Aesthetics, Representation and Creativity in Art and Science" in *Leonardo*, vol. 28 no. 3 (1995), pp. 185-192.

Week 30 – Wednesday 20 March
The Future of Representations
[Note: This lecture will take place at the UCL Art Museum]

Required Readings:
Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books 2007)
Chapter 7 (Representation to Presentation)

Further Readings:
- -- *Tradition Aside. Slade Printmakers of the 1960s*, (London: UCL Art Collections, 2007)
- Harold Cohen, "A Self-Defining Game for One Player: On the Nature of Creativity and the Possibility of Creative Computer Programs", in *Leonardo*, vol. 35 no. 1 (2002), pp. 59-64.
- Richard Hamblyn and Martin John Callanan, *The Data Soliloquies*. (London: UCL Environment Institute, 2009)

Assessments

Summary

	Description	Deadline	Word limit
Coursework 1	Poster	Pdf submitted by Thurs 14 March, 11.59pm	n/a
Coursework 2	Review article + Oral presentation (date TBC)	Sun 17 March 11.59pm	Equivalent of 3600

Assignments

Assignments for this course consist in a research poster of academic quality (40%), a 2500 words review article (40%) and an oral presentation (20%). The three assignments are complementary, in that they constitute three parts of a single research project. Hence, in order to be deemed 'complete' on this module, students must submit all three pieces of coursework.

All students must submit the written coursework via Moodle. Posters will be submitted separately and prepared for printing. I will give further details on the course assessments in the tutorials, along with more precise instructions on the format and submission of posters.

Criteria for assessment

The departmental marking guidelines for individual items of assessment can be found in the STS Student Handbook.

Aims & objectives

The aim of this course is to explore the notion of "representation" as a crucial link between scientific and artistic visual practices. Drawing on a variety of interpretative tools from analytical and continental philosophical traditions, the course will address a range of philosophical questions arising from the parallel histories of representations in science and art. These will include issues concerning the nature and role of visual representations in scientific and artistic practice, what counts as "objective" and "accurate" representation, when and how images count as "evidence", and whether the relations between science and modernism contribute to overturn the common sense view that "art invents, science discovers".

By the end of the course, students will have acquired the necessary analytical and interpretative tools to engage critically with a broad range of visual materials and to establish interdisciplinary parallels between visual representations in science and in the visual arts.

Course expectations
Students are expected to attend the lectures and seminars, complete the assignments by the due dates and do the assigned readings in preparation for the seminars on Friday.

Important policy information

Please refer to the HPSC Syllabus Supplement available in Moodle.