Philosophy 870: Topics in Metaphysics: Emergence
Professor John Symons
Thursday 2.30-4.20
The University of Kansas
Office Hours: Friday 2-3.30

This seminar explores the concept of emergence as it figures in recent philosophy of science, philosophy of mind, and metaphysics. We begin with a study of the origin of the concept in the work Mill and Lewes, before turning to the work of Broad, Morgan, and Alexander. From there, we will read contemporary arguments concerning emergence from philosophers of mind and philosophers of science. Emergence is a central concept in modern science and we will critically examine some of the ways that scientists have used the concept. We will read Simon, Crutchfield, Anderson, Wolfram, Schelling and others with an eye to unpacking the ontological commitments of these leading figures in the science of complexity. We will examine the role of the concept of emergence in a variety of scientific disciplines, including physics, chemistry, economics, and biology. Our final topic in this course will be a careful consideration of the concept of fundamentality as it has figured in recent metaphysics and philosophy of physics.

Our goal is to understand a basic concept in science and metaphysics from a variety of perspectives and to develop an informed position of our own on emergence.

Requirements: Attendance and active participation in weekly meetings are required. Class time will be spent on lecture and discussion. Each student will give three presentations. Presentations will involve presenting critical evaluations of specific sets of texts. Summaries of the reading should be made available to all members of the seminar two days prior to the class meeting.   There will be a final 20 page term paper due at the end of exam week.

Please alert me if you have a disability that requires that the course be modified in order to ensure accessibility. Please do not use audio or video recording equipment in this class without my permission.

Grading: Participation   17%
                  Presentations   33%
                  Term Paper   50%

Texts: Texts will be available electronically via KU library holdings.

                            Provisional Schedule

Some Background:

        McLaughlin, Brian: 'Emergence and Supervenience' *Intellectica*, 1997/2, 25, pp. 25-43
        O'Connor, Timothy and Wong, Hong Yu, "Emergent Properties", *The Stanford Encyclopedia of Philosophy*

Jan 23:
        Introductory Lecture: Mill, Whewell, and the origins of Philosophy of Science

Jan 30
        Mill: Of the Composition of Causes. Book 3, Ch. 6
        Selections from Lewes: Problems of Life and Mind (available online via KU library login)

Feb 6:
        Alexander, Broad, Morgan, and Whitehead
        Lecture. (no reading)

Feb 13:
        Hempel and Oppenheim, Studies in the Logic of Explanation *Philosophy of Science*, Vol. 15, No. 2. (Apr., 1948), pp. 135-175.
        Jaegwon Kim (1999). Making sense of emergence. *Philosophical Studies* 95 (1-2):3-36.
        Jaegwon Kim (2006). Emergence: Core ideas and issues. *Synthese* 151 (3):547-559.

Feb 20:

      Richard Corry (2013). Emerging from the causal drain. *Philosophical Studies* 165 (1):29-47.
      Louise M. Antony (1999). Making room for the mental. *Philosophical Studies* 95 (1-2):37-44.
      Jessica M. Wilson, Metaphysical Emergence: Weak and Strong.
      Sydney Shoemaker (2002). Kim on emergence. Philosophical Studies 58 (1-2):53-63.

Feb 27:

      Herb Simon, Selections from The Sciences of the Artificial (to be distributed)
      Thomas Schelling, Selections from Micromotives and Macrobehaviors (to be distributed)
      Wimsatt, William C. "Aggregativity: reductive heuristics for finding emergence." Philosophy of
      Science (1997): S372-S384.
      Philip Anderson "More is different." Science 177.4047 (1972): 393-396.

 Mar 6:

      John Holland, Selections from *Emergence: From Chaos to Order.*
      James Crutchfield (1994) Is anything ever new? considering emergence. Working Paper 94-03-011, Santa
      Fe Institute
      Ryan, Alex J. (2007). `Emergence is coupled to scope, not level', *Complexity* 13, 67-77

Mar 13:

      Hendry, Robin (2006): `Is there downward causation in chemistry?', pp. 173-189 in *Philosophy of Chemistry:*
      Synthesis of a New Discipline. Dordrecht: Springer. (available electronically via KU library)
      McIntyre, L. (2007): `Emergence and Reduction in Chemistry: Ontological or Epistemological Concepts?',
      Synthese 155, 337-343.
      Bishop, Robert C. (2008): `Downward Causation in Fluid Convection', *Synthese* 160 229-248

Mar 27:

      Bedau, Mark A. (2008): Is weak emergence just in the mind? *Minds and Machines*, 18, pp. 443-459.
      Symons, John. (2008) Computational models of emergent properties. *Minds and Machines* 18.4 (2008):
      475-49
      Humphreys, Paul (2008): `Synchronic and Diachronic Emergence', *Minds and Machines*, 18, pp. 431-442
      Abbott, Russ (2006). `Emergence explained: Abstractions: Getting epiphenomena to do real work.'
      Complexity 12, 13-26

Apr 3
      Humphreys, Paul (1997) Emergence, not supervenience." *Philosophy of science* S337-S345
      Humphreys, Paul (1997) How properties emerge. *Philosophy of Science* 1-17

Apr 10

      Hütteman, A. (2005): `Explanation, emergence, and quantum entanglement', *Philosophy of Science* 72, 114-
      127.
      Wong, Hong Yu (2006): `Emergents from Fusion', *Philosophy of Science* 73

Apr 17

      Kronz, F. and J. Tiehen (2002): `Emergence and Quantum Mechanics', *Philosophy of Science* **69**, 324-347.
      Butterfield, Jeremy [2010a]:`Emergence, Reduction, and Supervenience: A Varied Landscape', *Foundations*
      of Physics
      Butterfield, Jeremy [2010b]:`Less is Different: Emergence and Reduction Reconsidered' *Foundations of*
      Physics

Apr 24

Sandra Mitchell, (2012) Emergence: Logical, functional and dynamical *Synthese* March,185,2 pp 171-186
Jessica M. Wilson (2013). Nonlinearity and Metaphysical Emergence. In Stephen Mumford & Matthew Tugby (eds.), Metaphysics and Science.

May 1

Brown, Robin and James Ladyman (2009). `Physicalism, Supervenience, and the Fundamental Level', *The Philosophical Quarterly* 59, pp. 20-38
Yates, David (2009). `Emergence, Downwards Causation, and the Completeness of Physics' *The Philosophical Quarterly* 59, pp. 110-131

May 8   Slack in the schedule
May 15   Slack in the schedule