

THE PHILOSOPHY OF BIOLOGY  
New York University  
Spring 2011

Instructor: Laura Franklin-Hall, lrf217@nyu.edu  
Meeting Time: Monday 6:30 – 8:30 pm, 3<sup>rd</sup> Floor Seminar Room  
Office Hours: Tuesday 4:00 – 6:00 pm, room 407

Course Sketch

It is customary to conceive of the natural world as 'leveled' or 'layered'; there are multiple 'levels' at which natural selection is said to act (the genic, the individual, the group); there are many 'levels of organization' which determine the physiological functioning of the organism (the molecular, the cellular, the organismal). Yet this talk of levels can be as obscure as it is ubiquitous. In this course we will explore the various respects in which the natural world might be understood as 'leveled'. Questions to be addressed: What would it take for 'levels' to be metaphysically real? Is there any objective respect in which the natural world is leveled, or do all claims about levels depend on perspective? If the latter is the case, is there a large range of perspectives that would lead us to the *same* levels? Are claims about levels dependent on particular theories of scientific explanation? How are debates about 'real' levels related to the structurally similar debate about the existence of 'natural kinds' or 'natural joints'?

Requirements

Two papers: one (~10 pages) due at mid-semester (3/25), and one (~15 pages) due at the end of the semester (5/11). The final paper can be a revision and expansion of the first paper.

There are no required books. All readings will be posted in PDF form on the course page, linked from my website. <[www.laurafranklin-hall.com](http://www.laurafranklin-hall.com)> The reading list below is very tentative. Always use the course website as your definitive reading schedule. It will be accurate as of two weeks in advance of each class.

Topics and Readings

January 24 -- Introduction: The Extremes

\*Oppenheim and Putnam (1958) "Unity of Science as a Working Hypothesis" (§ 1 - 4 and 7)  
Cartwright (1999) *The Dappled World* (introduction: p. 1 - 19)

January 31 -- Levels and Multiple Realizability: Genetics

\*Fodor (1974) "Special Sciences (Or: The Disunity of Science as Working Hypothesis)"  
\*Kitcher (1984) "1953 and All That: A Tale of Two Sciences"  
Waters (1994) "Genes Made Molecular"

February 7 -- Levels and Multiple Realizability: Dilemmas

\*Shapiro (2000) "Multiple Realizations"  
Kim (1992) "Multiple-Realizability and the Metaphysics of Reduction"  
Fodor (1997) "Special Sciences: Still Autonomous After All These Years"

February 14 -- Natural Kinds/Species in Biology

Hull (1978) "A Matter of Individuality"  
\*Kitcher (1984) "Species"

Wilson et al. (2007) "When Traditional Essentialism Fails: Biological Natural Kinds"

February 21 -- NO CLASS: PRESIDENTS' DAY

March 7 -- Levels and Degrees of Freedom

\*Wilson (2009) "Non-reductive physicalism and degrees of freedom"

Wimsatt (1994) "The Ontology of Complex Systems: Levels of Organization, Perspectives, and Causal Thickets"

March 14 -- NO CLASS: SPRING BREAK

March 21 -- More on the High-Level Sciences

\*Strevens (2005) "How are the sciences of complex systems possible?"

Levins (1966) "The Strategy of Model Building in Population Biology"

March 28 -- Levels of Selection

\*Okasha (2008) "The Units and Levels of Selection"

\*Sterelny and Kitcher (1988) "The Return of the Gene"

April 4 -- Explaining the Origination of Levels

\*Okasha (2005) "Multi-Level of Selection and the Major Transitions in Evolution"

\*Millstein (2006) "Natural Selection as a Population-Level Causal Process"

Michod (2007) "Evolution of individuality during the transition from unicellular to multicellular life"

April 11 -- Natural Selection and Causal Exclusion

\*Haug (2007) "Of Mice and Metaphysics: Natural Selection and Realized Population-Level Properties"

Matthen and Ariew (2002) "Two Ways of Thinking about Fitness and Natural

April 18 -- The Causal Adequacy of Models at Different Levels

\*Godfrey-Smith and Kerr (forthcoming) "Gestalt-Switching and the Evolutionary Transitions"

\*Campbell (2010) "Control Variables and Mental Causation"

April 25: Levels from Explanatory Abstraction: Objective and Contextual

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\*Strevens (ms.) "Explanatory Autonomy and Explanatory Irreducibility"

Kitcher (1999) "The Hegemony of Molecular Biology"

May 2 -- Levels from Counterfactually Stable Sets of Laws

\*Lange (2005) "Laws and their Stability"

\*Lange (2004) "The Autonomy of Functional Biology: A Reply to Rosenberg"

Rosenberg (2001) "How Is Biological Explanation Possible?"

May 9 -- Historical Contingency and Biology

\*Powell (2007) "Is convergence more than an analogy?"

\*Desjardins (2011) "Historicity and Experimental Evolution"

(\* = most important reading(s) for each session)