# Conference "Biological Identity"

Organised by Anne Sophie Meincke (Exeter) & John Dupré (Exeter)

**Institute of Philosophy, University of London, 2-3 June 2016**

Senate House, Malet Street, London WC1E 7HU, Bloomsbury Room, G35, Ground Floor

***Programme***

## 2nd June 2016

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|---|---|
| 9:00 – 9:15 | Registration |
| 9:15 – 9:30 | **John Dupré & Anne Sophie Meincke**: Welcome addresses |
| 9:30 – 10:30 | **Alvaro Moreno**: What makes a collection of cells an integrated individuality? |
| *Coffee Break* | |
| 11:00 – 12:00 | **David S. Oderberg**: The Great Unifier |
| 12:00 – 13:00 | **Philippe Huneman**: Rethinking biological identity when concepts of organisms and ecosystems are intertwined |
| *Lunch Break* | |
| 14:30 – 15:30 | **Anne Sophie Meincke**: Biological identity and personal identity |
| *Coffee Break* | |
| 16:00 – 17:00 | **Paul F. Snowdon:** The Nature of persons and the nature of animals |
| 17:00 – 18:00 | **Thomas Pradeu (& Adam Ferner)**: Animalism & Identity: Confronting the Biological Approach with Biology |
| *Conference Dinner* | |

## 3rd June 2016

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| 9:30 – 10:30 | **Eric T. Olson**: Metaphysics and the problem of biological individuality |
| *Coffee Break* | |
| 11:00 – 12:00 | **Matteo Mossio:** What does autonomy tell us about biological identity? |
| 12:00 – 13:00 | **Ellen Clarke:** Evolutionary individuals and their offspring |
| *Lunch Break* | |
| 14:30 – 15:30 | **Denis Walsh:** Hylomorphism, foundationalist materialism, and emergence |
| *Coffee Break* | |
| 16:00 – 17:00 | **Arantza Etxeberria:** Biological interidentity: causal and constitutive relations |
| 17:00 – 18:00 | **John Dupré**: Processes within processes: A dynamic account of living beings |

## *Abstracts*

Ellen Clarke (Oxford)

**Evolutionary individuals and their offspring**

I present a concept of the biological individual that is used within evolutionary biology. I explicate the concept through a discussion of the theoretical roles that it is expected to play, and detail the constraints that these roles imply for the concept. The concept emerges from what can be described as a levels-of-selection approach to evolutionary individuality, since the entity is picked out primarily in terms of its capacity to undergo evolution by natural selection *at one level rather than another*.
I'll use two case studies to show the concept at work. First, in the evolution of multicellularity in bacteria, second, in discussions about the role of sex in clonal plants.
Finally, I will discuss the relevance and implications of this evolutionary concept for issues about biological identity. We can categorise three classes of biological identity relation. In the first class, an organism at time t is identical with an organism at time t+1. In another class, an organism at time t is completely different from an organism at time t+1 and counts as a separate individual. In between these cases is a third, in which an organism at time t is similar to, but still different from an organism at time t+2 such that the latter is an offspring of the former. I try to explicate the relevant senses of 'similar' and 'different' for marking these distinctions. But perhaps the most interesting point, in respect of interests about biological identity in general, is the finding that the boundaries between these three cases may not be sharp. The relationship between self and other, at least in the case in which parents are related to their offspring – can be gradient.

John Dupré (Exeter)

**Processes within Processes: A Dynamic Account of Living Beings**

In this talk I shall argue that contrary to a still common view that sees life as composed of a hierarchy of things arranged into increasingly complex structures, we should understand life as a nested hierarchy of processes. The persistence of a biological entity is not, as is naturally supposed on the first view, a default condition, but something achieved by constant work. Hence the familiar observation that life consists of systems far from thermodynamic equilibrium. The apparent thinglikeness of biological entities is, like the eddies in a river, an illusion grounded in the temporarily stable aspects of a process.

This position has a number of important implications. One, already indicated, is that biological explanation is more often concerned with explaining stability than with explaining change. A second is that we should abandon the exclusive emphasis on bottom-up relations. The stability and persistence of, for example, an organism depends not only on metabolic and other processes internal to the individual, but also on its embedding within a larger process, the lineage of which it is part. Following from this second implication is a third, that highly influential accounts of life in terms of mechanism are misguided. Finally, fourth, the traditional project of explaining function in terms of structure can be seen to be limited. It is just as important to explain structure in terms of function. As with much else in biology, the relationship is dialectical.

Arantza Etxeberria (San Sebastián)

**Biological interidentity: causal and constitutive relations**

Two styles of thought on the identity of complex individual organizations prevail in biology: according to the functional one, the parts of an organized entity form a coherent and complex whole individuated from the environment; according to the relational one, living entities are also defined according to their relations with other living beings and the environment in general. Different insights in current biology point to the enhanced significance of relations for biological identity, as entities appear tightly entangled with others causally (as in epigenetics) and constitutively (as in symbiosis). This presentation will be concerned with problems related to how to distinguish the causal and the constitutive aspects of relations for identity.

Philippe Huneman (Paris)

**Rethinking biological identity when concepts of organisms and ecosystems are intertwined**

Individuals have an identity; typically, identity in metaphysical terms means two things, the identity through time, and the distinguishability from other individuals. Various conceptions of biological individuality have been proposed, a very attractive one being the individuality defined through evolutionary theory as a unit of selection (as proposed by Hull initially).

Yet in the last decade several new visions of biological individuality have been proposed. Some of them emphasize the fact that, because of the role of symbiosis in the construction of organisms of many clades, as well as because of the dynamics in which body parts like cells and tissues are involved (which are often ecological dynamics, such as competition or dispersal processes), organisms share metaphysical properties with ecosystems. To this extent, while metazoan organisms used to be the paradigm of biological individuality and ecosystems seem collections of organisms in some abiotic context, our notions of individuality should be revised if organisms are akin to ecosystems.

In turn, what should be the identity of these biological individuals, when ecology is involved in the definition of individuality? An influential thesis about biological individuality (tracing back to Kripke) is “origin essentialism”: the nature of their parent gametes and the timing of their fusion define the transworld identity of individuals (at least for multicellular metazoan organisms). However, such identity is much less easy to be defined if individuals are ecosystems that may sometimes recruit new heterogeneous symbionts (like in the case of many symbioses involving bacteria).

This talk will begin by considering the relation between metaphysical concepts of individuality and identity, emphasizing the two aspects of identity (accounting for the persistence in time as the same; accounting for discriminability). Then it will consider the challenges for several classical views of biological individuality (inspired by Hull’s thesis) raised by an ecological understanding of biological individuality. Finally, it will question the notion of biological identity in this context, by criticizing the view of “origin essentialism” and then introducing a formal account of the two aspects of identity that appears plausible in such a perspective.

Anne Sophie Meincke (Exeter)

**Biological identity and personal identity**

Animalism is no longer a negligible outsider view within the debate on personal identity. Instead, the claim that human persons are biological entities, i.e., organisms, and that therefore their synchronic and diachronic identity conditions have to be spelled out in purely biological terms has become increasingly popular among metaphysicians, about to supersede the hitherto predominant psychological stance on personal identity.
It is time to review the biological approach to personal identity by having a closer look at the concept of biological identity it operates with. What does it mean to say that personal identity is biological identity?
I shall argue that the answer given by animalism actually is either at odds with important empirical facts about organisms as studied in biology and reflected in the philosophy of biology or, else, uninformative in a way that renders animalism dismissible as a mere platitude. All presumably informative accounts of biological identity offered by animalists so far turn out to ultimately rest upon ideas of the organism as a well-individuated substance-like particular whose identity is determined by some intrinsic essential principle; ideas which are seriously challenged by recent studies in symbiosis and the evolution of multi-cellular organisms as well as by insights from systems biology in the dynamical and environment-dependent character of organisms.
If we still, as I think we should, do want to say more than that persons are organisms and therefore have the identity conditions of organisms whatever these might be, we will have to seek for an alternative understanding of biological identity. I shall conclude with briefly outlining such an alternative view which faces the challenges from the latest research in biology and the philosophy of biology head-on by adopting a process ontological framework and which at the same time, by taking seriously the holistic theory of cognition deriving from systems biological models of the organism, overcomes the latent dualist view of human persons manifest in the antagonism between biological and psychological theories of personal identity.

Alvaro Moreno (San Sebastián)

**What makes a collection of cells an integrated individuality?**

I will first analyze the origins of biological individuality, showing that in the prebiotic evolution the emergence of individualized organizations was of fundamental importance because they were both a source and a locus of complexification, and a necessary concept for understanding the origin of organisms. Once a minimal form of individuality appeared, collective synchronic organizations would also appear, and these collective systems would in turn create favorable conditions to their individualized parts. I will also discuss how the embodiment of these early individual systems in collective systems is at the origin of ecological and symbiotic systems. Yet, though these collective organizations could exhibit certain similitudes with the individual systems, they are not full-fledged individuals, and only much later evolution has generated highly integrated multicellular organisms. In the second part, I will analyze how and why collective organizations could constitute multicellular integrated individualities. I will argue that a key concept that helps to understand what

differentiates non-individuated collective systems from individuated ones is that of Functional Integration. By this I mean a process by which a large variety of merely coordinated functions, distributed among different associated agents, become hierarchically organized according to a global *regulatory center, constituting a unique cohesive autonomous system,* whose identity is maintained through its agency. Finally, I will argue why, in a similar way as in the origin of life, the appearance of integrated multicellular individualities is also a key point for understanding the complexification of life.

Matteo Mossio (Paris)

**What does autonomy tell us about biological identity?**

One of the central tenets of the autonomous perspective in biology is the idea that biological organisms are organized systems. Organization refers to a specific kind of regime, in which a set of constituents depend on each other for their own existence and maintenance; as a whole, the system can be said to realise self-determination. It has been recently argued that biological organisation, understood in this way, provides a relevant ground for distinctive biological dimensions as teleology, normativity, functionality and individuation. In this talk, I explore to what extent biological organisation also provides useful criteria to think about biological identity. In particular, I suggest that the continuity of the organisation constitutes a central criterion, which maintains the identity of the organism in spite of various kinds of material, structural and functional changes that it might undergo. So far, however, the very idea of "continuity of the organisation" has not been spelled out in precise terms. I will make a contribution in this direction by examining whether and how this criterion applies to situations in which biological organisms undergo strong discontinuities: in particular, I will focus on examples involving metamorphosis and reproduction.

David S. Oderberg (Reading)

**The Great Unifier**

An organism is a paradigm of an individual substance. As such, it is a unified entity distinguished metaphysically both from parts of organisms and the larger entities to which some organisms belong. Unity, however, cannot be taken for granted. There is a 'unity problem': assuming organisms have essences, what holds together the constituents of those essences? I argue that nothing less than Aristotelian substantial form will do, contrasting the hylemorphic solution with the important approach of Hoffman and Rosenkrantz to biological unity. I then apply hylemorphism to difficult cases that might be thought to challenge the idea that organisms have a special ontological status in virtue of their peculiar unity.

Eric T. Olson (Sheffield)

**Metaphysics and the problem of biological individuality**

Discussions of biological individuality appear to concern the metaphysics of organisms. Yet these discussions typically ignore the substantial literature on the metaphysics of material things (or of any other metaphysical sort that organisms might belong to). This means that philosophers of biology are bound to make assumptions that many metaphysicians think they have strong reasons to reject, without being aware that these assumptions are in any way controversial. (Some philosophers of biology do not even seem to be aware that they are making metaphysical assumptions.) I don't want to argue for or against any particular claim about the metaphysics of material things. I will argue that the way to formulate the problem of biological individuality, and the sort of thing that would count as a solution to it, depend on what metaphysical background claims are assumed. And the usual metaphysical assumptions clash with the most common formulations.

Thomas Pradeu (Bordeaux) & Adam Ferner (Bordeaux)

**Animalism & Identity: Confronting the Biological Approach with Biology**

Animalism (as, e.g., defended by P. van Inwagen, E. Olson, S. Blatti and P. F. Snowdon) is an influential position in metaphysical debates about human identity. According to the animalist, we should understand ourselves to be, fundamentally, human animals rather than, e.g., persons. Consequently, our persistence through time should be understood biologically, as the persistence of the human animal, and not, for example, in terms of psychological continuity.
While there are attractive elements to this view, the aim of this talk is to present some challenges to the so-called "biological approach", grounded in recent discussions in biology and philosophy of biology. We will argue that certain claims made by animalists are at odds with biological observations, and that their picture of the 'human animal' needs to be more clearly defined.

Paul F. Snowdon (London)

**The Nature of Persons and the Nature of Animals**

The paper attempts to explain why, and to what extent, issues about animal identity are important for philosophical discussions about the nature of persons and their identity. It then considers attempts by some philosophers – e.g., Shoemaker, Johnston, and Wiggins – to clarify the nature of animal identity. Finally it will consider some recent ideas about animals and consider what, if anything, they imply about the philosophical debates.

Denis M. Walsh (Toronto)

**Hylomorphism, Foundationalist Materialism, and Emergence**

I contrast two approaches to individuating, and explaining, the properties of primary substances—hylomorphism and foundationalist materialism. The principal difference lies in the relation that each posits between a substance and its material constitution. According to hylomorphism, a primary substance is a complex of matter and form. According to foundationalist materialism a primary substance is constituted exclusively of its matter. The theoretically significant properties of a complex entity are fixed by the intrinsic, context insensitive properties of its matter. Foundationalist materialism has notorious difficulties accommodating the emergent properties of complex dynamic systems. This has become a genuine impediment to the proper understanding of the nature and function of biological systems, in which the function of the system confers certain causal properties upon its parts. I trace the problems back to the putative relation between a substance and its matter. These difficulties do not apply to hylomorphism. I conclude that hylomorphism provides a more appropriate model for the individuation and explanation of biological systems.

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