ABSTRACTS

SOFIA BELARDINELLI, THE HUMAN-NATURE RELATIONSHIP IN THE ANTHROPOCENE: A SCIENCE-BASED PHILOSOPHICAL APPROACH

In the face of the current environmental crisis, philosophy is most necessary to promote a renewed relationship between the human and non-human world, providing the theoretical and ethical basis to begin a new path of coexistence on this Planet. In this paper, I argue for the relevance of evolutionary knowledge to current challenges in environmental ethics. I suggest that by incorporating biological evidence, philosophy can fruitfully revise the human-nature relationship from a non-anthropocentric perspective. Contra anthropocentric theories, scientific evidence shows (i) that there has never been any ontological division between humans and the rest of the natural world; (ii) that considering the profound evolutionary link among these spheres is essential to understand the ongoing crises. In examining some specific cases – namely, the relational approach to ecosystems, the holobiont theory, the niche construction theory –, I emphasise the fallacy of anthropocentrism, that marks the current socioeconomic development model, and contrast this with a 'humanistic ecocentric' approach. I argue that this is consistent with scientific evidence, and that overcoming the present crisis will require a shift in societal and individual values, which can only be achieved through a scientifically and ethically based 'ecological education'.

ALEJANDRO FÁBREGAS TEJEDA – FRANCISCO VERGARA SILVA, 'MAN-MADE FUTURES': CONRAD HAL WADDINGTON, BIOLOGICAL THEORY, AND THE ANTHROPOCENE

How biology should figure in Anthropocene studies, hitherto stemming from Earth sciences and a broad constellation of human and social sciences, is still an unsettled issue among scholars. Here, we contribute with a historiographically-informed perspective on the specific role that 'biological theory' has played in past rounds of reflection on the main issues that are covered by current Anthropocene-related research. We focus on the British biologist Conrad Hal Waddington and his contributions from the late 1950s onwards to evolutionary theory and so-called 'Man-made future' studies. We uncover the organicist roots of Waddington's ecological thinking and highlight his conception of the 'exploitative system', a key element in the formulation of niche construction theory some decades later. Focusing on Waddington's enriched notion of what 'biology' encompasses and the interdisciplinary dialogues he engaged in during the 1970s, we further identify a suite of his concepts (e.g., the World's *Problématique*, and humanised ecosystems) which arguably constitute an original articulation of the 'Anthropocene' under a different name.

STEFAN LINQUIST, BREAKING NEWS FROM GENOME-LEVEL ECOLOGY: NOT EVERYTHING THAT IS A DARWINIAN INDIVIDUAL SHOULD BE SCIENTIFICALLY REGARDED AS SUCH

When evolutionary thinking is extended to some novel domain – be it cancer cells, human culture, or ecological communities – a popular opening question is whether the focal entities qualify as Darwinian individuals. This term originally applied to entities that form interacting populations that exhibit heritable variation in traits that differentially impact reproduction (Godfrey-Smith 2009). However, in recent years, the conditions for Darwinian individuality have been expanded to include ecological communities or even entire ecosystems (Bouchard 2011, Doolittle 2013, Doolittle and Inkpen 2018). A central worry with this strategy is that it encourages researchers to posit adaptations where none in fact exist. As an alternative to Darwinian individualism, I outline an eco-evo

partitioning framework that distinguishes purely ecological from purely historical influences on populations of ecological communities. On this view, a Darwinian explanation is warranted only in cases where there is empirical evidence for an interaction between both factors. Otherwise, a more idealized mode of explanation – either in terms of pure ecology or pure evolution – is more suitable.

ANTONELLA TRAMACERE, EVOLUTIONARY PSYCHOLOGY. DEATH OR TRANSFORMATIVE CRISIS?

The concept of domain-specific information processing is central to early evolutionary psychology. On a classical view, mindreading, imitation and language are domain-specific mental adaptations, favoured by natural selection for the survival advantage brought to hominins during their evolutionary history. In contrast, contemporary evolutionary accounts of the human mind use the concept of domain-specificity in a more liberal way. Domain-specific mental mechanisms are not necessarily evolved by natural selection, but result from combinations of domain-general learning, culture, and hardwired processes. Consequently, the attribution of domain-specificity has lost predictive power because it cannot be used to make predictions on the evolutionary origin of mental traits. A series of considerations are made on the future of evolutionary psychology, and on what we can really obtain through an evolutionary study of the human mind.

CARLO PACE, THE METAPHYSICAL FEATURES OF A PROXY. AN EVOLUTIONARY ENTANGLEMENT BETWEEN MIND AND MATERIALITY

In questioning the emergence of human mind across hominin phylogeny, this paper focuses on the nature and metaphysical features of proxy systems. In archaeology, a proxy is a material evidence through which is possible to study non-material things, such as human intelligence and cognition. The first part of the article aims to understand which relations stand between the growth of brains' size – through the study of cranial endocasts – and advanced lithic industries, with cognitive enhancement. Secondly, the paper takes into account the enactive engagement between mind and material culture, highlighting the importance to consider the very engagement a proxy itself.

AGOSTINO MARCONI, NEW USES OF OLD FUNCTIONS. FORMS OF EXAPTATION IN THE EVOLUTION OF NERVOUS SYSTEMS

The concept of exaptation was first introduced by paleontologists Stephen J. Gould and Elisabeth Vrba in 1982, and since then has had a great impact as an enriching tool to understand evolutionary processes beyond and together with standard adaptation. In the present article, I aim to define the history of his origin from Darwin's works and show how this idea has been applied and could be furtherly coopted outside the boundaries of evolutionary biology, specifically in cognitive sciences. Thus, I argue that the concept of exaptation constitutes a precious (and often tacit) legacy not only for our reflections on nature and evolution, but for understanding the genealogy and functioning of nervous systems and human cognition.

MARIAGRAZIA PORTERA – ELLEN DISSANAYAKE, AESTHETICS AFTER DARWIN, DEWEY, AND DISSANAYAKE: A REASSESSMENT

Where did art originate (evolutionarily) and why? Can we even define art? Is there a common denominator that characterizes all the arts? What is "aesthetic experience"? The present paper sets

out to relaunch these and similar questions by integrating original perspectives and hypotheses from disciplines as different as philosophical aesthetics, evolutionary biology, human ethology, anthropology, cognitive science and developmental psychology. In particular, the paper examines the interdisciplinary ideas and hypotheses of the evolution of the arts developed by American evolutionary scholar Ellen Dissanayake over more than forty years of her intellectual career. Dissanayake's hypotheses, along with her self-education as an interdisciplinary scholar and her unconventional academic career, are described in the paper and her ideas are reassessed in light of some recent research developments in evolutionary biology and cognitive sciences, with special attention to the ecological (and therefore habitual) nature of the human aesthetic attitude.

ANDREA OLMO VIOLA, WHY DARWIN'S PREDICTION MATTERS

Darwin's prediction of a moth pollinating the orchid *Angraecum sesquipedale* has become exemplary of the predictive potential of the theory of evolution. However, both the predominant historical account and the epistemological analysis are vitiated by a falsificationist perspective, which over-emphasizes the role of risky predictions. The problems of this interpretation are accompanied by other historical and theoretical anomalies. In this paper, I will argue that different interpretative tools are necessary to rationalize the dynamics of the growth of knowledge produced by Darwin's prediction. In particular, I will make a case for the recourse to pluralistic instrumental predictivism, as its application allows to reinterpret the epistemological profile of the case and to reconstruct a more pertinent history to the practical dynamics of scientific research.

ANDRA MENEGANZIN – FRANCESCO SUMAN, THE ANTI-EVOLUTIONISM BEHIND SARS-CoV-2 ARTIFICIAL ORIGINS THESES

Although the overwhelming majority of scientific evidence points towards a zoonotic origin of SARS-CoV-2, a lab leak scenario has gained momentum across the mediatic landscape. In this paper, we review the sources behind the SARS-CoV-2 origins debate, drawing both from scientific literature and media coverage. We then recall classic design arguments and argue that artificial origin hypotheses re-propose some of the distinctive traits and typical logical flaws of anti-evolutionist theories. We conclude by putting the Covid-19 pandemic in the context of global environmental and climatic crises.

OZAN ALTAN ALTINOK, DARWINIZE IT TWO TIMES: ON THE POSSIBILITIES OF EXTENDING EVOLUTIONARY MEDICINE THROUGH NEW DEVELOPMENTS IN EVOLUTIONARY THEORY

In this paper, I will briefly summarize the history and current accounts of Evolutionary Medicine (EM). I will show that EM, in its current forms, is using an evolutionary understanding that carries the explanatory framework, as well as explanatory limits, of the Modern Synthesis (MS). I will then point out some essential elements that need to be seen as limiting factors within EM and analyze the limitations that are brought about by the MS understanding of it. On this basis, I will argue that if the latest developments in evolutionary theory are considered – in particular, those pertaining to the inheritance mechanisms highlighted by the Extended Evolutionary Synthesis (EES), and the newly introduced evolutionary entities – EM will have a much broader explanatory scope and increased explanatory power in addition to greater relevance, which will enable its application in medical explanations.

LUCA FABBRIS, MACCHINE DARWINIANE. WILLIAM ROSS ASHBY E L'ORIGINE DELLA VITA ARTIFICIALE

William Ross Ashby was a cybernetician who in the second half of the '40s started to design bio-inspired machines (or 'Darwinian Machines', as Norbert Wiener named them). This article reconstructs three salient steps toward the emergence of 'artificial life' in Ashby's work: 1) the formulation of a 'general theory of machines', intended as a methodological frame; 2) the simulation of adaptive and self-organizing processes; 3) the elaboration of stochastic and dynamic processes underpinning self-organizing and self-assembling properties in complex systems. Instead of using an instructionist and top-down approach to design machines capable of performing determinate behaviors, Ashby conceived a selectionist – Darwinian, bottom-up – approach, anticipating a large number of contemporary research programs such as ALife, Evolutionary Robotics, Neural Darwinism, Distributed Cognition, etc. The article shows the theoretical implications underlying the design of and the relation with Darwinian machines, suggesting effective control modalities to deal with them.