Editorial Martyn Woodward
Researcher, Transtechnology Research, Plymouth University

An Electrical Deep Time of the Modern Imagination

Giovanna Costantini's article in this issue of LIRIQ reveals an holistic voice for contemporary Art-science, through that of the Japanese artist Hiroshi Sugimoto, who traces the emergence of human thought over hundreds and thousands of years, to an indistinct 'origin' which merges with time and the universe. With this in mind, Costantini suggests that over time, human thought has become increasingly more detached from these indistinct origins, informed by a positivistic-materialistic world-view, and instead points to a more holistic account of human thought, free of positivism, in which matter and mind are inclusive, co-dependent, interconnected and reciprocal.

Knowledge, within this phenomenal and vitalist view, is manifest within a world in which subject and object are not separated, knowledge is emergent from, what Costantini terms a "primordial sea of being". Costantini points to an account of human history that is both "deep and dynamic", a process of continuous engagement in which thought itself is consistently reworked. Within Costantini's vitalist account of Sugimoto's work, such dualisms as nature and culture, earth and sky, past and present dissolve. The 'origins' that Sugimoto seeks are, for Costantini, revealed as the very essence of the creative process itself, a "vital energy born of the relationship within and over time." A force that Costantini maintains is a sustenance that inspires the very fusion of contemporary art and science, a "deeper" vitalist energy within which both art and science have emerged, from a shared primordial sea of being.

The Scientia 2013 call offers a further charter to these deeper waters, recognising that "knowledge during the period of the Scientific Revolution was inherently interdisciplinary, involving complex mixtures of fields and objects that had not yet been separated into their modern 'scientific' hierarchies." According to Michael Punt this is an indication of how the seventeenth and eighteenth century became a key moment within which the practices of scientific investigation, and that of the arts and crafts, were intimately linked through a complex and reciprocal entanglement involving a co-constructed knowledge. These entanglements are seen by Punt as "performative", in which knowledge does not 'control' and frame an external world, but is directly engaged with, and performed by the actors, along with its ontology.

This moment during the modern period is suggested to provide a form of "theatrical engagement" which is being re-visited by contemporary scientists and philosophers of science with a perceived need to engage more with the wider spectrum of the arts and popular culture. This theatrical engagement offered, however, has a much deeper resonance than may be accounted for through attempts to fuse art and science currently realised. Costantini's "deeper" vitalism finds further recognition through the importance of the often neglected notion of *Deep Time,* formulated during the eighteenth century, as a fundamental aspect of modern thinking, (re)discovering the depths of human thinking that lie within the very deep structures of the earth.

Media Archeologist Siegfried Zielinski reminds us that during the turn of the eighteenth and nineteenth century, the notion that the earth was older than previously believed (as maintained through divine accounts) became a core topic within the academies (2002, pp. 3-6). For Zielinski, James Hutton's *Theory of the Earth* (1778), explained a history of the earth that was free of a theological dogma, and was conceived not in terms of a linear progression but as a *dynamic cycle* of erosion, deposition, consolidation and uplifting. As Zielinski describes, for Hutton, the earth had a *deep time*, that ran much deeper than the upper crust of the earth, that of granite, and extended into the sub-strata below which was now seen to co-constitute the upper layer. For Zielinski, Hutton's concept of the earth was as a cyclic self-renewing machine, without beginning or end, constituted by matter and energy flows.

The construction of a deep time to the earth brought a further implication for the very role and notion of the human itself. Shryock and Smail (2009) suggest in their re-thinking of modern historiography, the subsequent emergence of Charles Darwin's *On the Origin of Species by Means of Natural Selection* (1859) brought about a drastic change in the sense of the role of the human within the universe (pp. 26-27). The evolutionary approach of Darwin, they suggest, resulted in a new sense of human history, in which the human's role was no longer seen as essential and permanent, the human itself had a *deep time*: a deeper relation to the very environment in which they are situated. The human was now implicated within, and impacted upon, by distributed (and non-human) determinants.

For this deep time to figure more fully within an account of human history, Smail suggests that

methods and narratives were needed that could triangulate between agents and materials, methods that could not be fully supported within the models of human cognition, which stressed the rational rather than relational, held at the time (pp. 30-31). The maintenance of a *materialist* account of history during the eighteenth and nineteenth century could not fully support the emergence of *deep time*—the immaterial, energetic and relational aspects—as such, Shryock and Smail offer a re-assessment of deep time's implications for both the human and human history by utilising a more contemporary distributed account of cognition and the human drawn from anthropology. What Shryock and Smail alert us to is an under-realised aspect of eighteenth and nineteenth century (modern) thought, that of deep time itself, that runs a lot deeper within human cognition, imagination and creativity than has been accounted for within conventional materialist accounts of history. A deep time that alludes to a model of mind, and of the human, which is itself distributed amongst much wider determinants than may have been accounted for.

This anthropological re-imagining of the modern period offers a re-assessment of the activities of artists and scientists, which begins to recognise the wider distributed aspects of their collaborations, themselves within the energies and flows of Hutton's account of the earth, that have determining roles to play upon the human. Whereas Costantini and Punt recognise the wider, distributed aspects of Artscience across many brains, imaginations and experiences, the suggested recovery of Aby Warburg's pathosformula (Punt) brings a pathosformula which is in part co-constituted within the wider *deep time* relations of the earth itself. Situating Warburg's thinking back within the emergence of *Deep Time* during the modern period, as Smail and Zielinski suggest within the work of Charles Darwin and James Hutton, points not just to the nuances of the collaboration between discrete practices such as craft and science; the engineering precision required for scientific repeatability, but to the 'deeper', distributed elements of the wider pathosformula of the time that both craft and science fundamentally share, to the wider dimensions of reality not entirely that of the human.

Such 'deep time' aspects of the modern era are becoming more increasingly acknowledged, such as the emergence of electricity; Morus' *Currents From the Underworld, Electricity and the Technology of Display in Early Victorian England*, and Benz's *The Theology of Electricity: On the Encounter and Explanation of Theology and Science in the Seventeenth and Eighteenth Centuries*. These accounts provide access to the deeper determining aspects of electricity upon the distributed pathosformula that the arts, crafts and sciences can be said to share and emerge from within, as Paolo Bertucci uncovers (2006), the emergence of electricity brought with it a different order of the natural world, which includes the human. Costantini's own reference of Faraday's Cage as a guide for Artscience, points not only to the conductivity of the entwined metal bars that share the electrical current but also to the conditions of the behaviour of electricity upon the very construction of the cage itself. To understand the deeply entangled and intimate relations between art and science more fully for a contemporary re-evaluation, is then not to begin from the material (and co-operative) engagements between diverse peoples as a site of origin, but to begin by situating both scientific and artistic practice themselves within the distributed, and deeper, pathosformula of the period—a pathosformula that is in part constituted by the emergence of electricity. The re-instating of the pathosformula within the deep time relations of the earth provide a meshwork to further develop the more holistic accounts of human thought, free of positivistic and materialistic world-views, a further voice for contemporary Artscience.

References

Bertucci, P. (2006) 'Promethean Sparks: Electricity and the Order of Nature in the 18th Century', in Zielinski, S. (ed.) *Variantology 1: On Deep Time Relations of Arts, Sciences and Technologies*, Cologne: Walther Konig, pp. 41–59.

Michaud, P. (2004) *Aby Warburg and the Images in Motion*. New York: Zone Books.

Papapetros, S. (2012) *On the Animation of the Inorganic: Art, Architecture, and the Extension of Life*. Chicago: Chicago University Press.

Shryock, A. and Smail, D. (2011) *Deep History: The Architecture of the Past and Present*. Berkeley: University of California Press.

Smail, D. (2008) *On Deep History and the Brain*. Berkeley: University of California Press.

Zielinski, S. (2006) *Deep Time of the Media: Toward an Archaeology of Hearing and*

Seeing by Technical Means. London: The MIT Press.