

## 12. Lives and Lines

### Integrating molecular genetics, the ‘origins of modern humans’ and Indigenous knowledge

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#### Introduction

Within Palaeolithic archaeology and palaeoanthropology a general consensus seems to have formed over the last decades that modern humans – people like us – originated in Africa around 150,000 to 200,000 years ago and subsequently migrated into the remaining parts of the Old and New World to reach Australia by about 50,000 years ago and Patagonia by about 13,000 years ago.<sup>1</sup> This view is encapsulated in describing Africa as ‘the cradle of humankind’. This usually refers to the origins of the genus *Homo* between two and three million years ago, but it is readily extended to the processes leading to the origins of our species *Homo sapiens sapiens*.<sup>2</sup>

A narrative is created that consequently imagines the repeated origins of species of human beings in Sub-Saharan Africa and their subsequent colonisation of different parts of the world. In the course of these conquests other human species are replaced, such as the Neanderthals in western and central Eurasia.<sup>3</sup> These processes are described with the terms ‘Out-of-Africa I’ (connected to *Homo ergaster/erectus* around two million years ago) and ‘Out-of-Africa II’ (connected to *Homo sapiens sapiens* about 100,000 years ago). It is probably fair to say that this description relates to the most widely accepted view of ‘human origins’ both in academia as well as the public sphere.<sup>4</sup>

Analysis of ancient DNA, historical DNA samples and samples from living human populations molecular genetics increasingly contributes to our understanding of the deep past and generally, and seems to support this ‘standard model of human origins’, beginning with the establishment of the mitochondrial ‘Eve’ hypothesis from the 1980s onwards.<sup>5</sup> In 2011 an Australian Indigenous genome was for the first time analysed – a 100-year-old hair sample from the Western Australian

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1 Oppenheimer 2004, 2009.

2 Antón 2003; Mellars and Stringer 1989; Schwartz and Tattersall 2010; Stringer 2011.

3 Stewart and Stringer 2012

4 Klein 2009; Roebroeks et al. 2012; Tattersall and Schwartz 2000.

5 Crawford 2007; O’Rourke 2007.

Goldfields region held in the British Museum – with a range of results and implications, which impact not only on the narrative of the earliest colonisation of what is now Australia, but also the timing and character of successive waves of early modern humans' assumed journeys out of Africa and into Asia and beyond.<sup>6</sup> The analysis also concluded that 'present-day Aboriginal Australians descend from the earliest humans to occupy Australia, likely representing one of the oldest continuous populations outside Africa'.<sup>7</sup>

The understanding of modern human origins in Africa and replacement scenarios elsewhere had to be further revised with genetic evidence for inter-breeding within Africa of supposedly archaic and modern humans, as well as the persistence of archaic populations until a surprisingly recent date.<sup>8</sup> Although one of the researchers involved in these studies claims that latest results signal a 'paradigm shift', this does not go so far as to question the fundamentals of current views.<sup>9</sup> The latter are firmly based on the existence of separate lineages of human beings, such as modern humans, Neanderthals, Denisovans or 'archaic humans', who interacted with each other over time and to a different degree. Despite these latest complications, current views seem not to question the boundaries between species or sub-species within recent human evolution, although this was a major issue of contention in debates during the twentieth century.<sup>10</sup> In this context, the evidence from molecular genetics is mainly regarded as having influenced the debate between the Multiregional and Out of Africa views of recent human evolution in favour of the former.

One thing that all scientific and western narratives about human origins appear to have in common, however, seems to be that they are well removed from traditional Indigenous world-views, concepts of history and the past. These issues are relevant for the relationship between western and traditional knowledge systems in all parts of the globe. However, the particularities of Australia's deep and more recent history and geography make some of these aspects particularly visible. The presence of human beings in Greater Australia (or Sahul, which encompasses present-day Australia and the island of New Guinea) is seen and explained as an episode of the more general narrative of modern human's colonisation of the world. The scientific view reconstructs the first arrival of human beings at a particular point in time or, rather, having occurred during a specific period in the deep past. The initial colonisation is currently estimated to have been between about 45,000 to 60,000 years ago.<sup>11</sup> Before this time Sahul was uninhabited by humans or their ancestors.

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6 Rasmussen et al. 2011.

7 Green et al. 2010.

8 Hammer et al. 2011; Harvati et al. 2011.

9 Michael Hammer quoted in Gibbons 2011: 167.

10 Caspari and Wolpoff 1994; Mayr 1963; Wolpoff and Caspari 1997.

11 Davidson 2013; O'Connell and Allen 2004.

This view stands in contrast to some fundamental features of traditional Australian Indigenous world-views and knowledge systems, which stress a close connection to 'Country', timelessness of identity and an ongoing presence of a mythological past. Famously (but not without its problems), this understanding has been encapsulated in the academic and popular literature in the term 'the Dreaming'.<sup>12</sup> While this term is discussed in more detail in chapters by James, Paton, Hughes and Leane, it generally is taken to imply that people are so intimately connected to Country that they are one and the same, and thus neither 'arrived' nor came from somewhere else.<sup>13</sup> The stories that bind people and Country together are timeless and always present, and the people who know the stories have always been in the Country. The Indigenous notions of Country and Dreaming are of great relevance here for an understanding of a large range of issues. This applies particularly to the ways of perceiving, experiencing and understanding the dialectic, fundamental and inseparable interrelationships between people, their life ways and the land. Millroy and Revell have elaborated that 'the individual is born to Country, not just in Country, but from Country, and his or her identity is inextricably and eternally linked to the Dreaming'.<sup>14</sup> The relationship between persons and Country is dialectic and social:

People talk about Country in the same way that they would talk about a person ... Country is a living entity with a yesterday, a today and tomorrow, with consciousness, action, and a will toward life. Because of this richness of meaning, Country is home and peace: nourishment for body, mind and spirit; and heart's ease.<sup>15</sup>

Personally, I was exposed to these perspectives during my recent fieldwork in the Kimberley region of north-west Australia, and during a workshop meeting 'Gwion Gwion rock art of the Kimberley' that I co-organised in 2010.<sup>16</sup> In the course of this workshop it became increasingly clear to me how different the perception of the rock art between western and Indigenous people is on many levels. Kim Doohan, who has worked as an anthropologist many years in the Kimberley, participated in this workshop together with Donny Woolagoodja and Leah Umbagai from the Dambimangari Aboriginal Corporation, and Valda Blundell. Since the workshop we have had many conversations about Indigenous viewpoints and the implications for research into knowledge systems, heritage management, the interpretation of archaeological evidence and rock art. During a conversation in Kalumburu, Kim mentioned that she recently was asked by young Indigenous men the following: 'The scientists said that Aborigines only

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12 Stanner 1958; Wolfe 1991.

13 Kolig 2000; Porr and Bell 2012; Stanner 1968.

14 Milroy and Revell 2013.

15 Rose 1996: 7.

16 See Porr and Bell 2012; McNiven 2011; Aubert 2012.

arrived in Australia 50,000 years ago, but our Elders have told us that we have always been here. Have our Elders been lying to us all the time?’ Kim said that she was not sure how to respond, and when I heard this I was dismayed by the fact that so-called ‘modern science’ continues to undermine (and potentially destroy) Indigenous knowledge systems – which are inseparably intertwined with and connected to art and rock art in Country, as well as a solid sense of individual and collective identity.<sup>17</sup>

It is probably fair to say that for most people the so-called scientific version of historical events and the Indigenous view seem to be separated by an abyss of conceptual differences and epistemologies. I want to argue that it is possible to integrate so-called scientific and Indigenous knowledge in this context, but this will necessitate some deconstruction of the foundations of current scientific narratives of human origins.

## Narratives of human origins and their representation

The Out of Africa and multiregional explanations of modern human origins have been subject to much debate, as well as attempts to unpack their inherent epistemological assumptions and structures. In this respect, major analyses have been provided by science historian Landau and social anthropologist Stoczkowski.<sup>18</sup> Both concentrated on narratives of human origins in general, rather than on the origins of modern humans in particular. However, elements of their analyses are also applicable to the latter field. A thorough critical and reflective assessment of the assumptions that are guiding present models of modern human origins is a major research topic that still needs to be addressed.<sup>19</sup> Landau has emphasised the structural similarities between narratives of human evolution and folk tales to draw attention to the fact that these are fundamentally guided by deep, mostly implicit cultural convictions and motives.<sup>20</sup> Stoczkowski has criticised this approach, emphasising that Landau has not succeeded in unravelling the philosophical and historical origins of the structures that she described.<sup>21</sup> He identifies four ‘complementary assumptions’ that have structured explanations and narratives of human origins and evolution since the eighteenth century, and have produced surprisingly

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17 Blundell 2003; Blundell and Woolagoodja 2012; Layton 1992; Milroy and Revell 2013; Porr and Bell 2012; Redmond 2001; Vinnicombe and Mowaljarlai 1995.

18 Landau 1984, 1993; Stoczkowski 2002.

19 See for example Porr 2014.

20 Landau 1993.

21 Stoczkowski 2002: 188.

similar approaches despite vastly increasing archaeological and anthropological evidence. The most important assumptions are environmental determinism, materialism, utilitarianism and individualism.<sup>22</sup> As will become clear, these elements are key to addressing the status of scientific knowledge in relation to Indigenous knowledge and the question of human origins and evolution.<sup>23</sup>

I am interested in how these narratives are graphically represented in the literature, an analysis which takes some inspiration from Tim Ingold's exploration of lines across different historical and cultural contexts.<sup>24</sup> Graphic representations of the process of modern human origins are dominated by two elements: an area or point of origin, and lines in the form of arrows pointing away from the former.<sup>25</sup> It would be intriguing to analyse closely how differences in representation actually correlate with ideas and concepts proposed by the respective authors. However, in this chapter a more general question will suffice – what do these different elements represent in the assumed processes of biological evolution in the context of 'modern human origins'? Clearly, the area or point of origin has to be understood as the origin location of our species, *Homo sapiens sapiens*, if 'people like us' or modern humans supposedly originated in one area and spread from there all over the world. This assertion immediately runs into the problem that there is actually no morphological definition of our own species that allows us to clearly identify what an anatomically modern human is in biological taxonomic terms. For example, physical anthropologists Schwartz and Tattersall have drawn attention to the fact that this view has a long history in western thought, and was also a feature in the original Linnean formulation of the modern taxonomic system (first published in 1735).<sup>26</sup> In the case of humans, Carolus Linnaeus 'abandoned his usual practice of providing a [morphological] diagnosis for each taxon' and stated that to recognise a member of this species you should simply look at yourself: *Nosce te ipsum*.<sup>27</sup> Much more recently, one of the most prominent biologists of the twentieth century, Ernst Mayr, also argued that the identity of modern humans is not a matter of physical appearance or morphology:

If groups of apparently disparate morphology are more or less universally agreed on to be members of the same species, it is scientifically ludicrous (and racist) to attach biological, systematic, and thus evolutionary meaning to the differences between them.<sup>28</sup>

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22 Stoczkowski 2002: 16–17.

23 Ingold 2004.

24 Ingold 2007.

25 Klein 2008: 270; Oppenheimer 2009: 3.

26 Schwartz and Tattersall 2010.

27 Schwartz and Tattersall 2010: 95.

28 Schwartz and Tattersall 2010: 97.

After all, with the atrocities that were inflicted in the name of racism during the nineteenth and twentieth centuries there can be little doubt that from an ethical point of view this should be the case. The Australian colonial experience clearly demonstrates this in the most painful way.<sup>29</sup> But in the context of human evolution, this orientation causes a range of conceptual problems. It seems that in Palaeolithic archaeology this view is reflected by the fact that anatomical features have largely been rejected to define modern humans, and their actual origins are now supposedly to be found in ‘modern human behavioural features’ – hence, the often used terminology of ‘behaviourally modern humans’.<sup>30</sup> However, as material reflections of behaviours that are seen to signal ‘full behavioural modernity’ do not occur at one point in time but rather are scattered patchily across Europe and Africa over the next 100,000 years, this origin point is now increasingly and implicitly seen as the origin of the ‘capacity’ for modern behaviour or thinking.<sup>31</sup>

As you cannot observe a ‘capacity’ – neither in fossil human remains nor in archaeological artefacts – this point of origin gains an almost mystical quality and becomes completely defined by later history, by qualities that are regarded by different authors as specifically human and modern, creating a narrative that sees humanity as a slow unfolding of an essential human capacity or endowment.<sup>32</sup> Drawing on Derrida’s writings, Gamble and Gittins have eloquently argued that the whole study of the Palaeolithic is a reflection of western *logocentrism* (from the Greek *Logos*, meaning logic, reason, the word, God), a metaphysical desire for foundation and therefore tied to the notion of origins from single points in time and space.<sup>33</sup> These centres, as *logos*, are considered whole and indivisible and provide coherence for the structure of the argument. However, because they are considered indivisible, they escape structure and as such the origins for any phenomenon consequently become unanalysable. Like the ‘big bang’ in physics, it seems as if at the point of origin of modern humanity causality and analysis can no longer be applied, because the whole justification of the origin of the phenomenon comes from its later unfolding.

In fact, the current discussion about the so-called modern human origins – although supposedly grounded in modern evolutionary theory and modelling – is very much anti-evolutionary, because it assumes the creation of a capacity without a material or behavioural (phenotypic) expression that is then transmitted in essentialist and unchanged form through the generations without variation. The justification for its success and transcendental quality

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29 Anderson 2007.

30 Henshilwood 2007.

31 McBrearty 2007.

32 Ingold 2004.

33 Gamble and Gittins 2004: 105–107.

is rarely explained and seems to lie rather in its ultimate ability to produce modern culture and technology (as evidenced by modern human's success in colonising all environments around the globe). It is clear that there are distinct links with deep essentialist western traditions of thought, which are more thoroughly addressed elsewhere.<sup>34</sup> Here, I want to concentrate instead on the current amalgamation with a reductionist view of molecular genetics and the role of genes in processes of evolution.

## Genes and lifelines

Returning to the notion of graphic representations, the lines and arrows that are drawn across the maps radiating outwards from the 'epicentre' of modern human origins are drawn solid and unidirectional, and the question arises about what they actually represent. I would argue here that the similarity with maps of military operations or the journeys of early European explorers is not accidental.

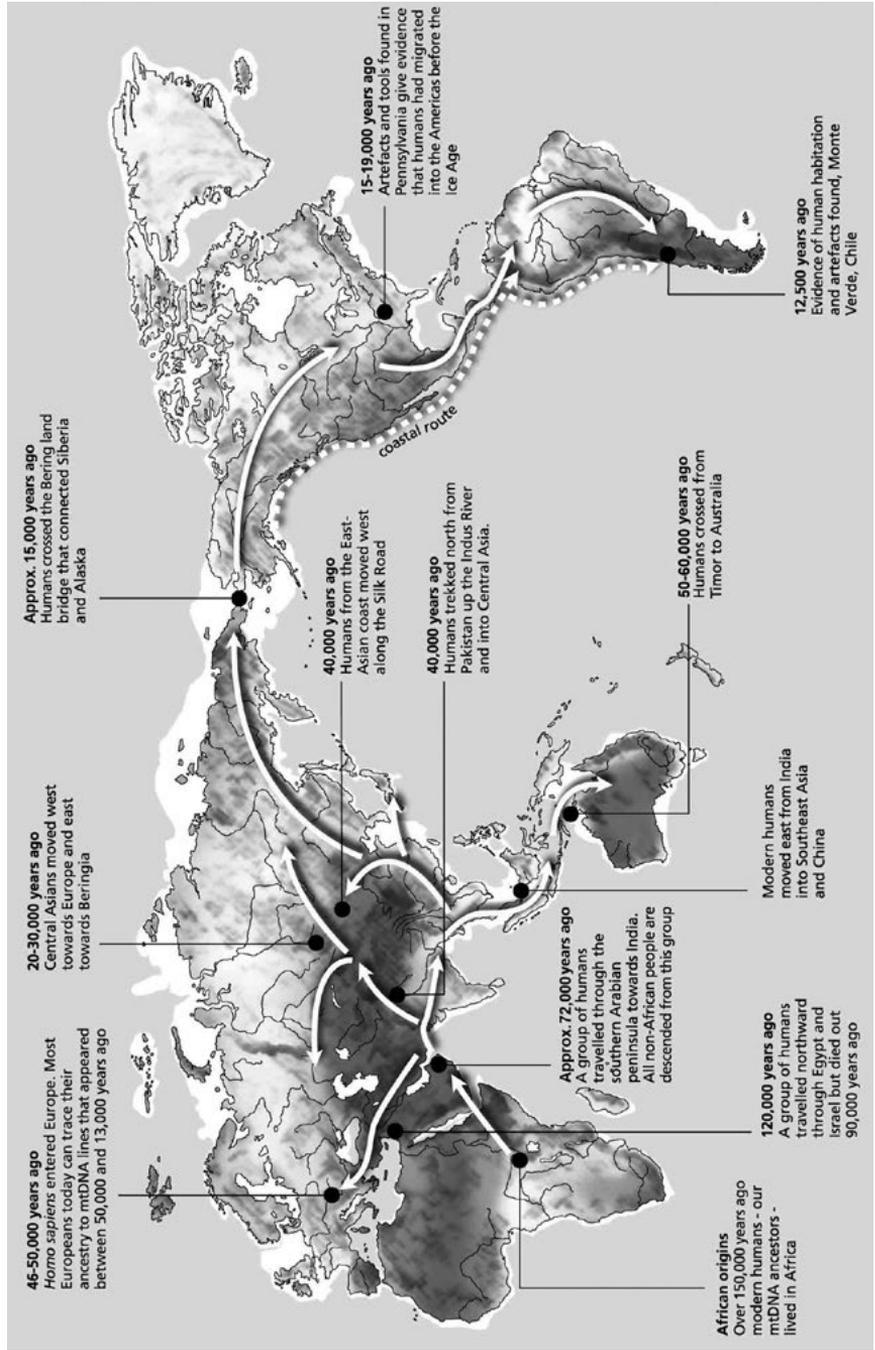
They collapse the depth of time of Upper Pleistocene human movements to a scale of an individual and directional narrative. They refer to the idea that modern humans originated at one point in time and in one place – where they acquired their essential identity – and that these humans remained *essentially* modern humans, because they carried a genetically fixed potential or capacity for modern behaviour or modern humanity.

This narrative of modern human origins is ultimately a reflection of the general view of biological evolution as established by Darwin and refined over the last 150 years. Darwin included only one graphic representation or diagram in *The Origins of Species*, but it is very telling in this context.<sup>35</sup>

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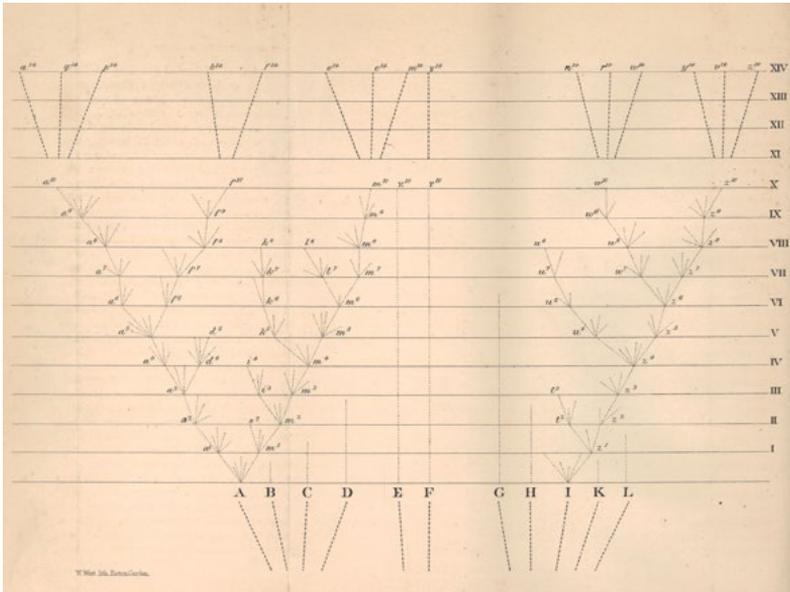
<sup>34</sup> Ingold 2004, 2006; Marks 2008, 2009.

<sup>35</sup> Ingold 2007: 114.



**Figure 12.1: Narrative map of modern human dispersals.**

Source: (c) Stephen Oppenheimer (modified from Oppenheimer 2003, 2009).



**Figure 12.2: Diagram from Darwin's *The Origin of Species by Means of Natural Selection* (1859) to illustrate the evolutionary process.**

Source: Reproduced with permission from John van Wyhe (ed.) 2002–, 'The Complete Work of Charles Darwin Online' ([darwin-online.org.uk/](http://darwin-online.org.uk/)).

The cornerstone of Darwin's book was the notion of 'descent with modification'. In Darwin's diagram, no solid lines are drawn to signify evolutionary processes. Darwin's original evolutionary branching trees consist of rows of single dots aligned to form lines that stand for successive generations of organisms in relations of descent. Each individual is seen as an essential representative of a genetic configuration inherited from its parents with added genetic variation or modification over time. While Darwin recognised in this way the necessity to view evolutionary processes as successions of separate and changing individuals and populations over time, he also assumed that each individual represents an inherited biological or cognitive capacity or potential in the same way as it appears in the current standard model of the origins of modern humans, the notion of universal capacity that defines and characterises our species.<sup>36</sup> This capacity supposedly encapsulates the identity of our species and the core of each and every individual human being. This view transports the idea that identity is preformed *before* a human being is actually developing within and into a specific environment.

36 Renfrew 1996.

In this chapter it is not possible to discuss the complex links between the dramatic discoveries and advances within the fields of molecular biology and genetics over the last 50 years and evolutionary theory.<sup>37</sup> However, it has to be recognised that the observations outlined above for the fields of palaeoanthropology and Palaeolithic archaeology are to a large extent reflections of a highly influential strand within biological evolutionary thinking that continues to have an important impact on academic and popular discussions.<sup>38</sup> With reference to the above-mentioned analysis by Stoczkowski, it can be argued that interpretations of human evolution seem to have explicitly, or implicitly, accepted the respective fundamental deterministic assumptions about genetic information and its relationships with human morphological, cognitive and behavioural characteristics.<sup>39</sup> In contrast, the extensive critique that has been put forward in this context on different levels has only made minor impacts on views of human evolution and ‘modern human origins’. These latter approaches raise concerns about the notion of genetic ‘information’ as such, the contingency of developmental processes, the complexities of organism-environment interactions and a lack of anthropological reflection of terminologies and concepts.<sup>40</sup> Consequently, the fields of palaeoanthropology and Palaeolithic archaeology appear very selective and restrictive in their choice of evolutionary models and concepts – a situation that contributes to the opposition between ‘interpretative’ and ‘evolutionary’ approaches within archaeological research as a whole.<sup>41</sup>

To overcome the division between these perspectives it seems particularly worthy to concentrate on dynamic aspects of individual and social development and situated learning. The importance of all these aspects is that they do take place in the real world and one might say are constantly locally negotiated and re-negotiated. Most importantly, they cannot be separated from growth and movement in the landscape or in Country. What emerges then is a world-view that is not essentialist, but relational, recursive and bound to processes of growth and movement within a particular environment.<sup>42</sup>

In my understanding, so-called Indigenous world-views concentrate on these aspects of life in which people, animals and so on are not realisations of essential categories, but are different forms of narratives that constantly develop along interrelated and enmeshed pathways. Building onto terminology by philosopher Henri Lefebvre, Ingold has put forward the notion of ‘meshwork’ to capture this way of looking at the world and to describe the lines that create places in Country

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37 Gould 2002.

38 Dawkins 1995; Dennett 1995.

39 Stoczkowski 2002; Bird and O’Connell 2012; Shennan 2008, 2012.

40 García-Sancho 2006; Griffiths 2001; Oyama 1985; Oyama et al. 2001; Griffiths and Stotz 2006; Jablonka and Lamb 2005; Stotz 2006; Ingold 2006, 2011; Marks 2003, 2009, 2013.

41 Cochrane and Gardner 2011; Hodder 2012a, 2012b.

42 Ingold 1998, 2004, 2011.

as life-lines along which particular narratives develop.<sup>43</sup> In this reading, places are locations where lines meet and art marks places within narratives; indeed, artistic expressions are narratives themselves, just as the Country and its myriad inhabitants are narratives and stories. To learn about the art and to learn about Country are consequently the same thing. But to learn about their significance you have to go there and experience it yourself. It is in this sense that art and rock art are 'time-archives' because they reflect the ongoing interrelationships between people's life-lines and Country. Any engagement with art or rock art in Country is irreducibly a process of growth and learning. This is why – in my understanding – knowledge is actually *in* Country and it cannot be separated from it. People and Country are inseparably and irreducibly intertwined.<sup>44</sup>

In this sense, modern scientific knowledge and Indigenous knowledge are not exclusive. In the realm of understanding human beings and their identity, they address different aspects of each living and growing organism. Beyond the powerful essentialist discourse of molecular biologists, who try to create momentum to receive funding for their expensive research, one should not forget that biology itself has for some time in fact moved into a post-genomic era and recognises the limitations of a very narrow genetic view of biology, and also recognises that the notion of 'the gene' has indeed mostly mystical and mythological qualities in current discourses and narratives.<sup>45</sup> Neuroscientist Steven Rose has compared this view with ideas surrounding the discovery of the mechanisms of human reproduction by the Dutch tradesman and pioneer microbiologist Antonie van Leeuwenhoek in the seventeenth century:

Genes and genomes neither contain the future of the organism, in some preformative modern version of the homunculi van Leeuwenhoek thought he saw in the sperm, nor are they regarded, as in modern metaphors, as architects' blueprints or information theorists' code-bearers. They are no more and no less than an essential part of the toolkit with and by which organisms construct their futures.<sup>46</sup>

Human beings develop and grow through these relationships, which provide both potentials and constraints. What humans are and can do is not a reflection of internal essences of human nature. It is a product of situated growth, reflection and interaction with people, places, materials, art. The 'origin' of modern humans did not happen at one point a long time ago. It is still, and continuously, happening.

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43 Ingold 2007: 80.

44 Blundell 2003; Blundell and Woolagoodja 2012; Milroy and Revell 2013.

45 Griffiths and Stotz 2006; Marks 2013; Stotz 2006.

46 Rose 2005: 137.

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