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NEGOTIATING, INTERPRETING AND REPRESENTING THE NATURAL WORLD: COGNITIVE ASPECTS OF INDIGENOUS AUSTRALIAN DREAMINGS

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Abstract. Negotiating, 'interpreting' and 'representing' indicate lifeway, culture and art, respectively, each in relation to a given ecological sphere of activities. This article has a theoretical basis in phenomenology, understood as a particular kind of analysis of human experiences. Its concern is cognitive, the ways in which hunter-gatherers 'know' their world via everyday practice, cultural expression and, specifically, art. The type activity we have chosen to investigate and which connects varied aspects of our argument is 'tracking', that is, reading the land for 'traces' of whatever may be hunted or gathered. We begin with introductory information regarding indigenous Australian hunter-gatherers, on which the article is focused, then turn to a phenomenological analysis of the tracking experience with support from cognitive psychology as well as from research on relevant biological mechanisms. Cultural expressions of lifeway are considered under the heading of indigenous 'Dreamings' in a section which gives an account of anthropological work on the subject. Finally, we consider indigenous Australian rock art and acrylics, foregrounding the mediating role of sand drawing, its connection with tracking, and the associated concept of 'trace'. We suggest that trace feet shed light on the genesis of image-making and the telling of stories in visual terms.

I was exceedingly surpriz'd with the print of a man's naked foot on the shore ... I stood like one thunder-struck, or as if I had seen an apparition (Defoe 1945 [1719]: 113).

Somewhere something has happened, there is a human impulse to recognise what it was, make it part of one's ongoing understanding of the world, and communicate it. The anthropological record relating to hunter-gatherer societies, in particular, its evidence for the observation of naturally occurring mark-making, holds the clue to understanding how humans came to tell stories, specifically in visual terms. Iconic trace images, such as hand stencils of Pleistocene age in France, Spain and Indonesia, offered a ready-to-hand affordance for human communication. With a narrow gap between signifier and signified, the hand *trace* — unlike, say, the hand image that functions as a traffic or pedestrian STOP sign — is a privileged form of symboling since it is intimately connected to its maker and necessarily indicates relatedness prior to any use to which it may be put — such as marking the maker's presence at a particular location. Likewise, traces of feet: the fact that every human footprint is unique and therefore recognisable as having been made by a particular person, constitutes an affordance taken up by hunter-gatherers, specifically, in the present context, members of Australian Aboriginal groups living

traditionally (Basedow 2004 [1935]; Meggitt 1962). One example is the stamping of a human footprint alongside material objects to display ownership (Roth 1897; P. Dobrez 2014). This practical utilisation of the trace foot image to prompt recognition of its maker brings to mind the classic situation of acknowledgement of con-specificity made famous by Daniel Defoe in *Robinson Crusoe* via Friday's footprint in the sand. In the modern world, the likelihood is that the imprint of a shoe with its brand identifiers will pose the ownership question, as it does for Arthur Upfield's Aboriginal detective Napoleon Bonaparte in *The Devil's steps* (1946). Beyond the signifying affordance of a single print, a line-up of pedal prints will show that a human, kangaroo or emu passed this way, a state of affairs essential to hunter-gatherer tracking pursuits. It is not an exaggeration to say that the ability visually to recognise an event through its trace marks comprises a distinctive part of what makes us human. It has not been shown that animals use sight to respond to tracking cues, although tentative evidence has been provided for communicative branch-dragging by bonobos to indicate direction (Schamberg et al. 2017; Savage-Rumbaugh et

al. 1996). In this article, we investigate a critical human capacity: the reading of events from the traces they leave behind. We also discuss cultural superstructures erected on that initial understanding, focusing on the Australian situation.

Hunter-gatherer lifeway

Present-day indigenous Australians, who live in cities, country areas and remote settlements, are as likely as not to be in touch with the world, like everyone else, via social media. In all cases, they no longer or only in part live off the land. This article is concerned with ways of life predating the arrival of Europeans but at the same time needs to stress that today's indigenous people continue to appeal to frameworks of ideology and practice they regard as immemorial, not least in a context of contemporary economic and political action, such as land rights or negotiation with mining companies. The single most important structure to which all else is generally referred is the relationship with the land. Accordingly, and with an eye to the current centrality of ecological issues, this article will foreground interaction with the land. It will do so both with regard to subject matter and theoretical orientation, beginning with an account of the phenomenon of tracking, which will inform our entire argument.

Australian hunter-gatherers: negotiating the land

By general consent, the arrival of indigenous Australians is dated at c. 65 000 BP. Hiscock (2008) gives a conservative date of 50 000 to 60 000 BP. At the arrival of the British in 1788, indigenous numbers are estimated at c. 500 000. The same figure applies now (Arthur and Morphy 2005), these being divided into some 600 distinct groups speaking 200 related languages (Dixon 1980) or perhaps 250 (Arthur and Morphy 2005) — only a few of which continue to be spoken. Aboriginal people occupied all habitats — from rainforest to sclerophyll woodland to savanna grassland to shrubland to harsh desert — in a land area roughly the size of the United States. The country's climate varies from the monsoonal north to alpine parts of the southeast.

Nomadic travel occurred within specified territory except for important ceremonial gatherings and occasional long journeys for specific material such as ochre. In some cases, people were sufficiently sedentary to build stone-foundation huts, as at Lake Condah (Victoria). We will refer to this economy as 'hunter-gatherer,' though some scholars prefer 'foraging' (see Hiscock 2008 for support of this last term, *contra* Ingold 2000). It should be said at once that since Pascoe (2014), there has been much public discussion as to whether indigenous Australian lifeway had more in common with farming communities than previously assumed by white scholars. Unfortunately, the argument was intended to suggest that indigenous people were not as 'backward' as to be mere hunter-gatherers. This was unfortunate on at least two counts: (1) it gave an inaccurate account of scholarly opinion, which has for a

long time shown clear awareness of elements of indigenous life that suggest its material complexity, and (2) it implies that there was indeed something 'backward' about the hunter-gatherer lifeway. To the average anthropologically uninformed reader, Pascoe's book became a celebrity publication. To the scholarly community, the book merely repeated, highly selectively, well-known facts and, worse, used these to support a painfully patronising view of the original Australians and, by implication, any hunter-gatherer society — though totally unintentionally, indeed aiming to do the opposite. Accordingly, Sutton and Walshe (2021) responded and set the record straight, both on factual historical grounds and as a defence of hunter-gathering as a legitimate human response to a given situation.

In what follows, the authors take this non-judgmental, non-progressivist, non-teleological view for granted and have no reservations about referring to the lifeway under discussion as hunter-gatherer. It meant, in the words of a key authority, no 'gardening or animal husbandry' (Elkin 1974 [1945]: 31). The major mid-twentieth-century anthropologists Ronald and Catherine Berndt (1977 [1964]) posit nature itself as the original Australians' garden, illustrating with the story of an Aboriginal patronising a missionary working on his plants by pointing out that for Aboriginal people it was all there anyway and a lot less trouble. Nonetheless, and in line with our above comments, the term hunter-gatherer is not to be read in a narrow sense: the original Australian was not a child of nature. Aborigines left seeds behind when collecting, for regeneration, or sprinkled them about (Berndt and Berndt 1977 [1964]). They relied on permanent stone fish and eel traps at, for example, Brewarrina (New South Wales) and Lake Condah (Victoria) and brought domesticated dogs with them from Asia, though probably more as pets and winter blankets than for hunting (hence the expression, two-dog, three-dog night). Above all, they practised what has been called 'firestick farming,' that is, seasonal burning for the regeneration of grass so as to attract animals. To what extent these and other practices altered the land is disputed. Early European commentators saw Aborigines as static societies living in equilibrium with natural resources. More recently, the stress has been on change (Hiscock 2008). We refer the reader to the Berndts (1977 [1964]) quoting another authority, Tindale, on the effects of burning and also of the underrated digging-stick. Moreover, though this is debated, it seems likely that Aborigines, like their counterparts in other continents, largely brought about the demise of megafauna. Having said this, the extent of change to the land compared to that brought about by Europeans is minor. Hence Stanner's (2009) assessment, in important articles written from the late 1930s to the early 1970s stressing the stability of Aboriginal economic life, seems fair.

This is why the cognitive key for indigenous Australians is the relationship with the land. We can say that for hunter-gatherers, any activity involves negotiating

the natural environment, living close to the land. Of course, there is a sense in which twenty-first-century humans remain dependent on the environment, a fact brought home not least by current climate change. But in the case of hunter-gatherers, there is less of a technological 'buffer' (Berndt and Berndt 1977 [1964]: 107) to mediate between humans and the environment. For hunter-gatherers, knowledge is precisely knowledge of the environment, something perceived, reasonably, as immediate or unmediated. For indigenous Australians, the bond between the two is such that one does not say 'I know the land' but rather 'the land knows me' (Elkin 1974 [1945]: 43). Knowledge is of topography, the seasons, plants and animals and their seasonal signs, the availability of food, whereabouts of water etc. As a traditional owner of the Kakadu area, Bill Neidjie, said to the present authors, 'Aborigines eat anything' (pers. comm. 1984) or, in the words of Daisy Bates, they are 'omnivorous' (Bates 1985: 239). The Berndts (1977 [1964]: 109) give a surprisingly long list of edibles they drew up in 1941 in a semi-arid region of South Australia, including meat, insects, roots, seeds, fruit etc. Elsewhere there will be fish, crustaceans etc. In the High Country, the Bogong moth aestivating on alpine peaks brought people from a considerable distance to participate in the yearly feast. Moths in immense numbers were thrown on coals to cook the protein-rich abdomen. In Queensland, a similar ceremonial feast brought people together for the nuts in Bunya pines. Aborigines sometimes dried their fruit; they knew how to leach poison out of cycads so as to make the cones edible. They got their sugar from the honey of native bees or the desert honey ant, celebrated in song. They knew the way to the nearest drinking water. For all this, minimal technology was required: the digging-stick for women, spear-thrower (the American *atlatl*) and spear, club and, in some places, boomerang, for men — in general, a technology which could be carried about. Division of labour was general, though not inflexible (Berndt and Berndt 1977 [1964]: 119), with hunting left to men, gathering to women. This meant that in practice, women's work offered the more reliable food source. Outside the odd catastrophic act of nature, it was more than a subsistence economy, even in the driest regions. While surplus was of little use outside large ceremonial gatherings, it was an economy which, contrary to initial European judgements, left a deal of time for the life of the mind and for socialising. Kevin Gilbert, a black artist and activist, wrote of Aborigines building 'cathedrals of the spirit' (1978: 2), and they did so with poetry, song, stories, decorative work, sculpture, painting — including over thousands of years, rock art. More on this below, though for the present, we maintain our emphasis on sustenance economy.

Tracking as a type activity: knowing the land

Familiarity with the environment meant sensitivity to every minute sign in the landscape, a fundamental everyday hermeneutics. The type activity for this is

tracking, broadly understood. Given its likely time depth, it may be regarded as a primordial activity, even if the thesis is not amenable to scientific proof (see Liebenberg 1990). Tracking is best thought of not simply in the specific situation of following an animal in the hunt, but as something Aboriginal people, like other hunter-gatherers, did continually — men (mostly) in the hunt, women (mostly) in gathering. In short, it is less a discrete activity than an everyday manner of negotiating the environment. So, it is a type of cognitive, as well as physical, engagement with the environment. As such, it may be taken as a definitional activity for the hunter-gatherer way of life, and perhaps even, and in varying historical contexts extending to the present, what defines us as humans: we are interpreting animals. At any rate, proficiency in tracking is one of the few feats arrogant Europeans have found impressive in hunter-gatherers. In Australia, as elsewhere, the skill of indigenous trackers is legendary: 'the indigenous man of Australia is noted for the phenomenal intelligence he displays when running down the spoors of an enemy or game' (Basedow 2004 [1935]: 102). Struilly (1863) enthused about Aboriginal trackers finding lost cattle. These trackers were regularly used by police for lost children, hunting down criminals (such as the famous outlaw Ned Kelly, equivalent to Jesse James or Billy the Kid in the United States) and, notoriously, for the 'pacification' or 'dispersal' of Aborigines themselves. A newspaper, *The West Australian*, on 14 April 1952, has the headline 'Uncanny ability of Aboriginal tracker' (Jay 1952). Pat Lowe, long-term partner to the black artist Jimmy Pike, explains with many examples how 'an experienced tracker can read the ground like a storybook' (2002: 35). The Berndts spend time detailing the interpretation of 'tracks and other evidence' (Berndt and Berndt 1977 [1964]: 115), and Elkin (1974 [1945]), the other major anthropological source cited above, stresses the readiness of Aborigines to respond at a moment's notice to any sign of animal life. The same point about Aboriginal vigilant readiness for action is made by Daisy Bates (1985). Notably, Elkin includes female activity in this sort of observation, underlining the point we make above: tracking is something everyone does and more or less all the time.

The phenomenon of trace: presence and event

Tracking is best understood in the larger context of the phenomenon of 'trace'. Trace has been analysed, to our knowledge for the first time, as a major category of representation, unintentional and intentional, by Patricia Dobrez (2013, 2015, 2017, 2018, 2021a). With respect to natural tracks, its immediate impact is captured in the vivid moment of recognition when Robinson Crusoe comes across that celebrated footprint (Defoe 1945 [1719]: 113). A trace has two critical aspects: it registers *presence* and *event*. These are, of course, past — trace being what remains of or is left behind with the passing of X, human or animal. Its impact is as it is because both presence (of X) and the event of its passing continue

to exist, after a fashion, into the present. Trace might be thought of as memory stored in the outside world, accessible to the tracker, an unintentional, perhaps the first, exogram (Bednarik 2014). It registers what Patricia Dobrez (2015: 262) has termed an 'author-identity' and an 'act-identity', that is, indicates the nature of the X in question (a kangaroo, a human — for Aborigines, usually a particular human (Roth 1897) — and what X *did*. The fundamental force of any trace is that it speaks of an act. In terms proposed by Peirce (1991) it could be classed as an indexical sign. However, we do not intend to pursue a semiotics line but rather to focus on the *experiential* structure of tracking, that is, on tracking as a phenomenon, as stated above. The initial point we wish to make is that tracking, while it may involve any amount of speculative thinking about what the X being tracked may be doing, where going etc., is best envisaged not in terms of inferential processes, a form of detective reconstruction, as Liebenberg (1990) suggests, but in much more directly biological terms. Of course, this is not to deny that prowess in tracking must be learned or that it involves rational processes. It is just that our emphasis is on those aspects of the activity which constitute biological universals. Hence, though we share Carruthers' (2002) enthusiasm for the wealth of detailed information in Liebenberg's book, we prefer not to follow either Liebenberg or Carruthers in the thesis, which has tracking as an inferential science, not so much because we think this is wrong, as because the argument can be taken further. We intend to carry out our analysis of the actual working of the tracking activity under the following headings: (1) iconicity, (2) grouping, (3) directionality, (4) sequence and (5) the urge to 'follow'.

Tracks and trails: (1) iconicity, (2) grouping, (3) directionality

A set of tracks in the situation of a chase, whether of a large or minuscule creature, is read as a *trail* rather than as discrete pedal prints — and the five points just listed constitute a definition of a trail as perceived by the tracker. For a start, the tracks, as iconic, must be recognised, read as traces of the past presence of a particular creature — just as Crusoe at once knew the single print as made by a human. Recognition of the specific animal or human must be learned, but the understanding of a trace as being just that — a causal alteration to the environment — need not be further mediated by culture. The accompanying awareness of prints as a set may be expressed by the Gestalt principle of 'grouping', whose characteristics Köhler, following Wertheimer, lists as presentation of 'equal and similar items' having 'relative proximity' and inherent 'direction' (Köhler 1947: 146, 136–150). A trail must *cohere*, and common directionality reinforces that perception, but in the tracking situation it serves a deictic function as well: it illustrates the unfolding of a trajectory, whose goal the tracker, gradually piecing together sensory cues, is required to anticipate. At the same time, this

presupposes that the trail is perceived as a sequence as well as a grouping, that is, that the tracks are perceived as moving — in a particular direction. In order to consider the notion of sequence (point 4 above), we first require some analysis of the perception of motion.

Seeing motion in a still

We are aware of the Gibson (1979) argument that what evolution has geared the brain to see is not stasis but motion. Our visual world is Heraclitian, with movement continually occurring in perceiver and perceived. We are also aware from Johansson's (1973, 1976) point-light displays that we perceive motion before form. This makes evolutionary sense: we see 'movement' and respond before seeing 'lion' — and if it turns out not to be lion but antelope, no harm has been done. The perception is hardwired in two neural pathways, the first from the occipital visual area to the superior temporal (V5) for the processing of motion-detection (faster), the second to the inferotemporal (V4 to TE) for the processing of form (slower) — these pathways discovered by Ungerleider and Mishkin (1982). But all this is for actual movement. The set of tracks is, after all, not actually moving. So how is it that we see motion in a still image? For a lengthy account, we refer the reader to Livio Dobrez (2013). Of course, we know from experience that we see motion in stills. If we did not, we would not register 'events' in pictures: we know perfectly well that the depicted horse is galloping. Do we 'know' it, or do we 'see' it, immediately, that is, without mediation, automatically, as pre-packaged by evolution? Or something of both: a 'two stage' model (Hubbard 2006)? The present discussion will stress automatic response without discounting cognitive elements.

Freyd (1983) first demonstrated experimentally that we *see* movement in stills, though this was not exactly her aim. The experiment consisted of showing subjects paired images, one of these being the photo of a man jumping down from a wall, then, after a break, a later shot of the ongoing event. Freyd asked if the two pictures were 'same' or 'different', and the general response was 'same'. But in fact, the second image showed the man as having jumped a little further. Freyd decided her subjects' memory of the first image *shifted* the position of the jumping man. (Regardless of the precise role played by memory, this implies that the subjects saw the *first* image as already in motion since you cannot remember something you have not first seen.) For Freyd, what the second image was able to do was to demonstrate the measurable extent of the shift, and the phenomenon was labelled 'implicit motion'. Our focus is a little different: that it was a case of perceiving motion in a still picture. In an experiment with Finke (Freyd and Finke 1984), a similar visual effect was shown in connection with motion in a given direction which the authors named 'representational momentum' (RM). RM is now generally accepted (see Hubbard's 2005 review of responses to the RM thesis

which, among other things, suggests limiting the term to specific *momentum* effects while advocating general application of 'displacement'). As a fundamental explanation for the phenomenon in question, Freyd (1987) hypothesised that mental representations were themselves dynamic. Hubbard and Bharucha (1988) and Hubbard (2005, 2006, 2010) listed experimental evidence for multiple influences on displacement. In a recent paper, Hubbard has extended the idea of dynamic mental representations in a way potentially providing a bridge to a modified Gibsonian position. With specific reference not to momentum but gravity (as in Freyd's jumping-man situation), he suggests that gravity effects might be incorporated into the functional architecture of mental representations (Hubbard 2019). This would make response automatic and provide a mechanism for the dynamism of mental representations as envisaged by Freyd. At the same time and in accordance with the two-stage model mentioned above, it could also allow for flexibility of response, that is, cognitive intrusion modulating an otherwise automatic process. For present purposes, however, it suffices to point out that displacement experiments support the experiential phenomenon of perceiving motion in a still. Of course, they could hardly do otherwise, though they are impressively able to clarify underlying structures of the phenomenon. We refer the reader to Livio Dobrez (2013) for a neural substrate commentary.

Trail as (4) sequence (5) to be followed

In light of the above, it may be argued both experientially and experimentally that we might expect to see a trail precisely as a *sequence*, that is, an event. If we could not, we would not register 'sequence', simply static images. However, this at once raises the next perceptual element in the situation of tracking. As the rock art scholar Sognnes (2011) observed, trails lure us to follow, that is, imitate the sequence, this being as true in the case of real as of represented tracks. One of the more labyrinthine libraries at our university features a trail of human footprints on the floor to assist students. Do we respond to the lure simply by way of a convention, that is, prior knowledge? That doubtless plays its part, but there may be more to it. When our local Botanic Gardens marked dinosaur trails to lead children to dino-replicas we saw a child calling back his mother, who was ignoring the tracks so as to head for the garden café. Might it be that the trail prompted a spontaneous, pre-rational 'come this way' to the child? (Let us note by way of a digression that the desire or willingness to follow *itself* demonstrates that a tracks sequence registers as motion: why *follow* if the trail registers as static?) Of course, in hunter-gatherer tracking, one has a clear, perfectly rational, intention to follow in order to catch up with the quarry. Nonetheless, we propose a powerful, possibly biologically fundamental urge that is indeed automatic in the complex process of reaching that quarry — in the case of the above child,

his dino-replica.

Tracking and proprioception

The question then becomes: what is the mechanism of this urge to follow, focusing, for our part, less on the clear intention involved than on the more or less conscious bodily process that might also come into play? We suggest proprioception, on the basis of the visual prompts discussed above. Proprioception, as defined by Sherrington (1906), is distinguished from perception (or 'exteroception'). It may be *literally* translated as 'own-body awareness' (P. Dobrez 2013). The present article will retain the term proprioception, noting at once that it is mostly *unconscious* and, at least in the first instance, not 'owned'. The sense of 'bodiliness' operates by means of receptors in the skin, muscles and joints to generate limb motion, mainly via muscle spindles. Through afferent groupings, it is ultimately referred to as a body map for the location of our limbs in space (Knoblich et al. 2006; Proske and Gandevia 2012; Tuthill and Azim 2018). While neural pathways for proprioception, in the end to relevant brain areas, are still little known, it seems that signals from the limbs project to neural ganglia in the dorsal sensory root of spinal nerves whose rootlets enter the spinal cord — in the direction of a motor neuron pool that will innervate a given muscle.

Proprioceptive feedback ensures bodily stability in the course of motion. For the sense of bodily position in space, the argument is that we require a body map, as stated above. This representation, most frequently referred to as the body schema, first proposed by Bonnier at the turn of the twentieth century and in the early twentieth century by Head and Holmes, may in fact be legion. The usual distinction is between two: body schema and body image. However, other candidates have been proposed: multiple level representations in Corradi-Dell'Acqua and Rumiati (2007) and body-form in Proske and Gandevia (2012). Gallagher has tried to reduce the legion of proposals to two, clearly distinguishable, namely schema as 'non-conscious' and 'unowned', in short, something 'performed' by the body, as opposed to image as conscious, thematised, my-body awareness (Gallagher 1986: 545). In the phenomenology language, this latter would be an intentional object of consciousness. Thus, I walk in automatic mode, then, in attention mode, am made conscious of it, perhaps because I am getting tired or have a stone in my shoe. Bodily knowledge is distinct from knowledge of the body — and in becoming conscious, knowledge ceases to be bodily. We find Gallagher's clarifications appealing, not least since we practise a type of phenomenology ourselves, as explained below. We note his difficulty, however: his large, logically-consistent distinctions are liable to be constantly left behind in an accumulation of new phenomena presumed 'dissociable' and identified as new proprioceptive categories, say with reference to clinical cases such as lesions in any number of brain areas.

Becoming the tracked

For present purposes, it is the concept of a schema, arguably along the lines defined by Gallagher, that is of interest since this opens the way to a consideration of inclusion or incorporation ('off-line' representation in the terminology of Carruthers 2008). It is well known that we extend our body by using a tool, which is (unconsciously) made part of the hand that grips it (P. Dobrez 2021b). Likewise, we make the vehicle we drive through a gate part of our own bodily space so as to judge the width of the gap. More famously, we can accept a rubber hand (Kalchert and Ehrsson 2012) or rubber foot (Lenggenhager et al. 2014; Flögel et al. 2016) as sensible bodily adjuncts. Considering long-term human engagement with the tracking situation, we hypothesise that, given the visual recognition of movement in a tracks sequence via the phenomenon of RM, we might explain not the *fact* of but the *mechanism* of 'following' the tracks as, in no small part, an unconscious proprioceptive activity. This would be in line with the thinking behind the rubber-foot-illusion experiment, extended to incorporate tracks (of a non-conspicuous — if it happens to be animal), something that need be no more alien to a human than an incorporated tool or vehicle. It would involve adjusting our body schema, itself constantly labile, to incorporate the trail, to make it our own in the very act of following, adjusting both peripersonal and distal space to the space of the tracked, transferring motor anticipation to the implicitly moving tracks images. That means *becoming* the tracked in a very real sense, and not merely by means of conscious inference: we, in a manner, share the body of the tracked, its movements and trajectory and, to a degree inferentially, its likely destination. This would help explain the *pars pro toto* element in the activity of tracking: you incorporate the whole animal in question, not just its tracks. In other words, you follow the *animal* rather than its tracks (see Lowe 2002). That puts the idea of animal mimicry in a new light. No doubt, as we might suppose, acting out animal parts in the context of re-enacting details of the hunt around the campfire has been a common event. But we wish to source the mimicry of 'becoming' an animal *before* that campfire, locating it in all-day foraging activities, including that of game-tracking. This explanation nicely fits those accounts given by Liebenberg (1990) of the tracker 'feeling' like the animal, on the basis of the Bleek and Lloyd archive (for which see the archive itself in Skotnes 2007). It also fits Aboriginal mimicry, say in David Gulpilil's superb dancing, which many Australians have witnessed over time.

A phenomenological analysis

Consideration of the five points we propose as definitional for a trail as perceived by the tracker (iconicity, grouping, directionality, sequence, and the urge to 'follow') takes the argument well beyond the moment of recognition of that fateful footprint in *Robinson Crusoe*. It underlines its import, not in terms of

the individual psychological situation depicted in the novel, but as a deep-time universal phenomenon. That is the phenomenon of registering *trace*. We recognise an identity X (via iconicity), understand coherence of signs (grouping) and their directionality (deictic), perceive their sequence (implicit motion/RM) and are prompted to follow (proprioceptively, adjusting our body schema to 'become' the tracked X). While inferential input should not be ruled out, we suggest tracking may be understood as a largely unconscious form of bodily cognition and, still more significant, one that merely reproduces the primary form practised by hunter-gatherers, namely the ongoing process of negotiating the immediate environment. Unconscious and conscious reading of traces of past events in the environment may be taken as the most fundamental cognitive activity required of hunter-gatherers. We have opted to analyse this activity phenomenologically, that is, by means of a descriptive methodology (see Husserl 1970 [1900–1901]a): a description of the structure of the phenomenon of trace (phenomenology being a particular analysis of a given experience *as experience*). Husserl, the founder of the discipline, might have had, at the very least serious reservations about our stress on embodiment, since his method consisted of the analysis of intentional acts, that is, acts of consciousness. Still, his work from the mid to late 1930s (see Husserl 1970b) involving references to a *Lebenswelt* or lifeworld may be and has been taken as evidence of something more than a philosophy of consciousness. It was so taken by Merleau-Ponty (1962 [1945]) and in that form has been influential, not least on Gallagher (1995), Gallagher (2017) commenting on Varela (1996) and on Gallagher and Varela in collaboration (2001). Varela wanted to combine the perspectives of phenomenology and cognitive sciences ('neurophenomenology'), and together Gallagher and Varela sought to naturalise phenomenology. This meant, in the first instance, working Husserl's methodology away from consciousness and in the direction of bodily experience, what Gallagher refers to as the unconscious, schema-driven 'performance' of the body — while preserving a phenomenological emphasis on the irreducible nature of first-hand experience as against objectivist, third-person accounts of that experience. At the same time, it meant a critique of a reductivist science that discounts the evidence of experience. Gallagher (2018) has eagerly accepted various forms of cognitive science experiment while rejecting purely neural explanations for human cognition (the so-called 'brain-in-the-vat' approach) and, beyond that, even the idea of the body as separable from its environment. The body cannot be reduced to the brain; at the same time, bodily experience cannot be reduced to the body. This position readily recalls Gibson (1979), especially his late theory of affordances. We cannot separate human capacity for a given operation from the opportunity to express it. Thus, I sit on a rock because my body is geared to, among other things, sitting and because

there is a rock handy. In short, my bodily evolution has already taken into account the availability of sitting affordances — which is a way of saying that human animal activity cannot be divorced from the world in which it operates. In cognitive terms, this presupposes a meaning-making capacity in the act of recognising an affordance by using it: I know the rock as able to be used for sitting.

In the above analysis of tracking, we have taken a position broadly compatible both with Gibson and the Gallagher/Varela approach. Insofar as it focuses on a 'first-hand' account of the experience of tracking, we remain in the sphere of phenomenology, as does our previous work (L. Dobrez 2013; P. Dobrez 2013; Dobrez and Dobrez 2013). Insofar as we support this account with experimental cognitive science, we naturalise the phenomenon in the present case relating to RM and proprioception. However, the key point on which we want to end this section of our argument is the point at which we began: the hunter-gatherer body in the environment and tracking as a type of living-in-the-world, Husserl's *Lebenswelt*, pre-given in all our analyses, whether philosophical or experimental. Heidegger (1962 [1927]), both influenced by his teacher Husserl and probably, in turn, influencing Husserl's 1930s development of the life-world idea, began his philosophical ontology not with the solitary Cartesian consciousness but with a being always-already placed in an environment: *Dasein* or 'being-there'. He famously uses the term *in-der-Welt-sein* or being-in-the-world. Accordingly, human performance begins not with cogitation so much as *doing* — and 'thinking', 'feeling' etc. are seen in the light of projected activities. We have wanted to emphasise indigenous Australian and, more generally, hunter-gatherer life precisely in terms of activities, in the first instance those of getting a livelihood, namely getting what the environment affords — in Heidegger's terminology what is 'ready-to-hand' or *zuhanden*, that is, suits our particular purpose or current project.

The Dreaming: interpreting the land

To sum up: indigenous Australian embeddedness in the environment already constitutes a cognitive system, the environment internalised. At the same time, this practical knowledge plays out in cultural forms and, according to various authorities, most notably in the notion of the Dreaming.

Other names have been offered for it: 'world-dawn' (Radcliffe-Brown 1952); more recently, 'songlines' (Chatwin 1987), under which rubric it is available as airport reading. But 'Dreaming' has been accepted by Aboriginal people as their own, as noted by the anthropological celebrities Spencer and Gillen (1927), and nicely underlined by the definitive comment of a Murinbata man (Muta) as quoted by the most articulate anthropologist of all, Stanner (2009: 57): 'white man got no dreaming'. Though known worldwide, the term has been disputed. It comes initially from

Spencer and Gillen (1899: 1927), who referred it to the central Australian Arunta (Aranda) *alchera* — not meaning 'God', the *faute de mieux* translation given by Carl Strehlow, but indicating a totemic belief-system while simultaneously relating linguistically to the word for 'dream'. Theodor G. H. Strehlow (1970), brought up on the Hermannsburg mission where he came to speak fluent Aranda, understood the limitations of his father's usage but defended Carl Strehlow from the patronising unwillingness of early anthropologists like Spencer to dignify Aborigines with any concept of a supreme deity — a fact brought into focus by Stanner (1984 [1965]). At any rate, the term 'Dream-time' has had staying power (it was used by Elkin 1974 [1945]), though most now prefer to follow Stanner (2009) and call it the Dreaming.

It is easier to chart the use of the terminology than to define the idea. The Dreaming is another cognitive system intimately tied to the original knowledge of nature discussed above, and in giving an outline of it, we enter the sphere of cognitive anthropology. It is sometimes referred back to acts in primordial time, Aboriginal cosmogony resembling less the Christian idea of creation *ex nihilo* than the Greek one of order out of chaos. Of course, to make order, that is, to make something humanly understandable, is a quintessentially cognitive act. Temporarily leaving aside any reservations we may have about the common idea of the Dreaming as primarily a metaphysics of *time*, we turn to the seminal account of Spencer and Gillen (1899: 388), who outline the story of two sky-beings in the mythic past, Ungambikula ('out of nothing', 'self-existing', that is, uncreated). These primal protagonists operate on inchoate, undifferentiated Inapertwa creatures and turn them into humans — with an original connection to various plants and animals (hence 'totemic'). A similar story in Spencer and Gillen (1927: 308, 592), now featuring Numbakulla and Inapatua, is set in 'far past times'. T. G. H. Strehlow's version in the same Aranda area is of an already-existing flat plain from which previously-sleeping beings emerge, most linked to plants or animals, to generate the featured landscape and its human and non-human creatures before returning to the earth or to particular natural formations. The main point in all this, though, is that primal activities continue to this day. As Elkin and Stanner repeatedly observe, they are 'sacramental'; they still *work*, as the theologians had it, *ex opere operato*. In Stanner's words (attributed to an exasperated Aboriginal addressing an anthropologist): 'like engine, like power, plenty of power; it does hard-work; it *pushes*' (Stanner 1984 [1965]: 166). In this sense, the past still exists and is 'ever-present' (Elkin 1974 [1945]). Or, as wittily put by someone from northeast Arnhem Land: 'we are just rushing up to [ancestral beings] ... to catch up with what they have been doing before' (Morphy 1984: 16). Stanner, who wrote the classical account of the subject, called the Dreaming a 'founding drama' (1984 [1965]: 146), a tale of 'how the universe became a

moral system' (2009: 61), 'reality-as-it-is-and-must-be' (1984: 153), the final arbiter of the how and why of all things, strictly speaking not a time (past or present) at all, but a temporal 'everywhen' (2009: 63). To anyone familiar with the Christian tradition much of this will bring to mind Book XI of Augustine's *Confessions*, with its analysis of time — and of eternity as an eternal present. Swain (1993) thinks of Augustine and puts the argument for Aboriginal self-understanding as based on *place* rather than time. Livio Dobrez (2014) put it as follows: Dreaming time involves two separate, yet interconnected, temporal dimensions. The subject, individual or group, either ritually or in everyday activity, re-enacts in time the action performed by the Dreaming being in mythic time, once-upon-a-time; or, as Eliade had it, *in illo tempore* (1973: 2), acting out temporally what is done by the primordial being outside time, the always-now of the Dreaming. While project-oriented, time-poor Western culture puts past events in a past accessible by memory, Dreaming culture 'stores' events — in stories — which are themselves stored in the natural world, that is, identified with some creature, idea, formation etc. in the natural world. So, it is not a question of recalling past events. Eternal events remain immediately accessible in the story-laden world, not envisaged as past but as in another, ongoing time — given the abiding nature of the natural world (L. Dobrez 2014: 712–713). It was Stanner who characterised Aboriginal life as a metaphysics of 'abidingness' (2009: 70). What we wish to stress is the central role of the (humanised) natural world, an exhaustive database and starting point for a metaphysics less of time than of space, that is, of the land.

Dreaming or Dreamings?

But is there anything resembling a single, Australia-wide notion of the Dreaming? Does it really constitute a system, and if it does, what kind of system? Doubtless, the case for a system of sorts can be made. Sutton (1988: 13) notes an Aboriginal comment (made by Peter Peemuggina in Cape York, Queensland): '*Epama epam!*' ('nothing is nothing!'), meaning that all things in the world have meaning. All these meanings are connected insofar as they are tied to our relationship to the environment. Of course, anthropologists sought to make sense of the bewildering detail of this connectedness of human and non-human in terms of the concept of totemism. But the concept was queried from the start (beginning in America, as the term is Ojibwa) and definitively dismissed by Lévi-Strauss (1962) as an anthropological invention. Though much used in Australia, notably by Elkin (1974 [1945]), whose detailed account deserves respect, it was criticised by Stanner (1984 [1965]) for its considerable, sometimes erroneous, baggage. For our purpose, the original purpose of the idea, namely, to illustrate the intimacy of indigenous relationships with the land, its features and creatures, is adequately conveyed by the notion of the Dreaming — which has itself always been understood

as providing a basis for the totemic. But if totems have been taken to be multiple — Elkin listed seven major categories, and Stanner insisted on 'totems' rather than 'totemism' (1984 [1965]) as well as consistently linking this variability with the Dreaming — then the same must be said of the Dreaming: it too must be multiple. Indeed Sutton (1988) wrote of hundreds of Dreamings and made a point of entitling his book and the New York exhibition of Aboriginal art, which accompanied it, not 'the Dreaming' but 'Dreamings'. Nonetheless, even if Dreaming accounts differ across the continent or even differ in the same territory, as exemplified by the difference between Spencer's and Strehlow's Aranda accounts, there are structural similarities, perhaps best outlined under the general rubric of Aboriginal 'religion' by Charlesworth (1984) and notably picked up from Australian sources by the scholar of comparative religion, Eliade (1973). Accordingly, we will continue to speak in the singular while signalling a plural in the title of our article. Thus, we emphasise that though the *locus classicus* for the Dreaming relates to those immense arid regions of central Australia, analogous or at any rate comparable myth-complexes going under different names are ubiquitous — *altjera*, *djugur*, *bugari*, *ungud*, *wongar* as given by Elkin (1974 [1945]); to which the Berndts (1977 [1964]) add a further half-dozen. Swain (1993: 9) appeals to Stanner's authority for 'very much the same 'architectonic idea ... underlying Aboriginal societies continent-wide'. So, it seems fair to say that in varied forms, the centrality of the Dreaming as referring back to that momentous 'in the beginning' (Eliade 1973: 43) is continent-wide. What the creative, themselves uncreated, beings of the centre did, what the sky-beings of the southeast did, what the fertility-mother figures of the north did, what the multilocational rainbow serpent did — all set a primal pattern for people to follow.

However, we have not fully answered the question of a 'system', which clearly exists after a fashion. Is it in any way unified? Stanner (1984 [1965]), though he was specifically addressing the idea of totems, saw it as a sign system which, presumably with an eye to the dominant role of structuralism at the time, he defined as arbitrary. With the benefit of his work and that of others, we suggest it is systemic insofar as it covers (almost) everything but is not a unified whole. Rather it is a somewhat heterogeneous entity or, to take up the Lévi-Strauss (1966: 16–17) term, a form of *bricolage*. The *bricoleur* or do-it-yourself man makes-do with whatever is 'at hand' (we recall the Heideggerian *zuhanden* or ready-to-hand, that is, available). Unlike the engineer, he has no overall plan, there being no overall system of availability, only whatever happens to be there. So, Stanner is probably right: Aboriginal meaning-making is of an ad hoc variety. A good comparison might be with the evolution of the brain — not by prior design but the gradual accumulation of responses to particular situations, which results in parallel, sometimes repetitive, structures.

Of course, repetition has advantages. If one combination fails, another kicks in. So too, with Aboriginal cognitive systems: they are flexible and adaptable. Moreover, arbitrariness is partially reduced to structure by the relation with the land, its constraints and affordances. It might be most accurate to think of Dreaming stories as 'given'. They have a reason, but only as part of that heterodox accumulation of preceding meaning-making events. Still, in the light of all this, the degree of cohesion both in the concept itself and in its variable continent-wide forms is surprising and once more attributable to the factor of the land. Here we wish to stress, above all, the cognitive aspect of the argument for an Aboriginal intellectual/religious structure as a *bricolage* codification of the founding relation to nature, given cultural shape through the idea of the Dreaming. In this context, moreover, we prefer to speak not of a *sign* system, like Stanner, but a system of *meanings*, in which, in the language of Sutton's Peemuggina, everything is meaningful.

The Dreaming as praxis

It is important to add that the Dreaming is less belief than a set of practices required to keep the original alive. Primal acts need to be re-enacted, 'lived out' (Elkin 1974 [1945]), and the reason for it is that original acts established all aspects of Aboriginal material and social life, so constituting what is referred to as 'Law'. This re-enactment may take the form of increase rituals for particular natural species, of which Spencer and Gillen's *intichiuma* is the most celebrated, though there are many other recorded ones, such as *talu* in the west, Wandjina rituals in the Kimberley etc. Or it may take the form of initiations, especially in the southeast of the continent. Indeed, the first of these to be recorded is a lengthy account, with illustrations, of a ceremony witnessed on 25 January 1795, by the sceptical Judge-Advocate of the recently-founded British colony (Collins 1975 [1798]). Eastern Australian initiations were held to have been instituted by sky-beings going under different names (Baiaame, Daramalan, Narunderi, Bunjil etc.). In general, they acted out a dying and rebirth, in the specific case of those higher initiations discussed by Elkin (1977 [1945]) a birth into mystical experience. However, the most impressive of all accounts of Aboriginal ceremony must be Stanner's of the Murinbata *punj*, published between 1959 and 1963 for the journal *Oceania* and reprinted as Stanner (2014 [1959–1963]).

Dreaming as tracking

Given our previous focus on tracking, we must stress that it is the *travels* of Dreaming beings, ceremonially repeated, which are of special interest. Unsurprisingly Aborigines themselves made the link between Dreaming mythology and following a trail. Basedow (1925: 279) noted this but was dismissed on linguistic grounds by Spencer and Gillen (1927: 594). Be this as it may, a more authoritative version of the idea is put forward by Stanner: 'following up the

Dreaming' uses the 'metaphor of following a track' (1984 [1965]: 169). The obvious point is that Dreaming beings throughout the continent are usually, if not inevitably, walking — in arid areas, over vast distances. Wherever they pass, they perform significant founding acts, making land features, giving birth to the tribes, naming places, and instituting Law (Berndt and Berndt 1977 [1964]: 243). Rituals, in given cases spanning large distances covered by these acts, will be shared by different Aboriginal groups, so instituting relationships involving mutual obligations. These are the 'songlines' popularised by Chatwin (1987), two of the best known being the Tingari of Western Australia and the story of the Pleiades, which spans a large part of the entire continent and was celebrated by a major National Museum exhibition entitled (for our purpose, comprehensively) *Songlines: tracking the Seven Sisters* (Neale 2017). However, the sky-beings of eastern Australia also travelled, as did the various fertility-mothers of the north, sometimes associated with the rainbow serpent, for which we refer the reader to Elkin, the Berndts and Stanner cited above. The mothers include the Djanggau and the Wawalag sisters, Kunapipi and Mutjingga, and well-known rituals like the *nara*. For a sense of how Dreaming stories might identify even the most minor features of a place, we refer to the wealth of mythology connected with every detail of Uluru or Ayers Rock (Mountford 1965). All this is not least an illustration of the way indigenous Australians, with minimal technological distractions, spent campfire time elaborating a gigantic edifice of poetry, song and art — in words quoted above, building 'cathedrals of the spirit' rather than of stone, whose chief purpose was to make the world meaningful, in this way bringing it into the sphere of the human.

Returning us to the earlier economy-directed reference to changes in Aboriginal life, this section of our argument requires a footnote focusing on the cultural. Whereas early anthropologists saw Aboriginal societies as static, the subsequent tendency has been to stress their capacity for change. There is partial truth in both positions. Aborigines have themselves read their situation as permanently locked into the Dreaming. Thus, any change, if significant, was simply shifted to the sphere of the Dreaming and so kept secure from any notion of mutability. To the extent that this remains, Stanner's 'abidingness' continues to be a living issue. At the same time, of course, Aboriginal societies have always altered — drastically from the time of the British invasion — and, like Australian society in general, continue to do so. A witty commentary on this was made by the American anthropologist Eric Michaels (1994), working in a central Australian settlement. However, the point we want to stress at this junction is less about supposed or real change in Aboriginal life. Rather it is about radical changes, usually glossed over, in the founding myths and ritual methodology of the discipline of anthropology. Initially, anthropologists found Aboriginal religion a closed book since they were usu-

ally religious sceptics (see Evans-Pritchard 1965; Stanner 1984 [1965]). Hence Aboriginal religion was read in any terms rather than its own. Though this situation improved with the generation of Elkin, Stanner and the Berndts, anthropological practice continued along broadly positivist/functionalist lines. But in the second half of the twentieth century, the discipline found itself in crisis because the colonial/imperial enterprise on which it relied and which had generated it was coming to an end. 'Postmodern' anthropology (Marcus and Fischer 1986; Clifford and Marcus 1986; Clifford 1988) now required self-critique. (For an analysis of this with reference to Michaels, see L. Dobrez 1996, and with reference to postmodern theory, L. Dobrez 2014). It was referred to as 'reflexivity' and associated with anti-essentialist perspectives. 'Heterogeneity' was also a key concept: Aboriginal systems could not be 'totalised'; they had to be ambiguous, problematical, negotiated and contested. For Keen (1994), following Foucault, knowledge had to be reducible to power. In his day, too, Stanner had not minced words: Aboriginal power was exerted by the old against the young and by men against women. But this was a statement of fact, not an ideological position. In short, the postmodern focus on reflexivity and what Derrida made famous as *différance* undercut both the authority of the anthropologist and the capacity to make any sort of unified sense of the admittedly complex thesis of the Dreaming. This leaves contemporary anthropology, cognitive or otherwise, in an unenviable position.

Representing the land — and the concept of trace

Thus far, we have discussed physical engagement with a particular material world and intellectual/religious engagement with the world as interpreted that is, as a matter of culture: the Dreaming. Insofar as this involved myth and ceremony, it was a specific mode of communicating knowledge requiring specific modes of representation. We need to add to this last point, going back to the idea of *trace*. Of course, speaking in cultural terms, we could say that, in light of comments made above, the entire Aboriginal world may be conceived as a trace, or multiple traces of, Dreaming activity. But trace for indigenous Australians, perhaps for erstwhile hunter-gatherers in general, has a likely connection with the origins of representation itself. The hunter-gatherer world provides those Gibsonian affordances ('complementarity of the animal and the environment': Gibson 1979: 127), which allow not only rocks for sitting, caves for sheltering etc., but also horizontal and vertical surfaces for marking. It might be as basic as stamping a foot (a bodily capacity) in dust or sand (an ecological affordance) or making a handprint (capacity) on a rock (affordance) — for a given purpose or even initially simply by chance. In this scenario, the hand and/or foot trace could well be the first image intentionally made by humans. The worldwide frequency of printed and stencilled hands as well as, sometimes, stencilled feet — more usually, for reasons

we do not have the space to cover here, *pecked* footprints (P. Dobrez 2018), single or sequenced — suggest this could be so. Indeed, the oldest currently dated motifs in the rock art record include hand stencils (Aubert et al. 2018). Our present focus is on the foot rather than the hand. However, the two have to be considered together, since both return us to the possible trace origins of representation, with representation understood as intimately tied to place, not least by the act itself, which is one of marking the land. With specific reference to our present discussion, we suggest that everything might be said to begin with tracking, the case for which has been put by Patricia Dobrez (2015, 2017, 2018, 2021a). Indeed, insofar as following a trail, that is, sequenced tracks, amounts to a narrative (however implicit), a sequence of events read as such, we might call the tracking situation the first — visuomotor — narrative and possible origin and foundation for all subsequent visuographic storytelling.

Tracking and sand drawing

In this connection, we point out that hands and feet have different potential for communication. While, as argued by Patricia Dobrez, the foot provides options for narrative, the hand allows for gestures to convey significant content (P. Dobrez 2013). Thus, many have put the case for gestural or co-gestural origins of language in neuroscience (Arbib and Rizzolatti 1997; Rizzolatti and Arbib 1998; Corballis 1999; Rizzolatti and Craighero 2004; Arbib 2005), linguistics/gestural studies (Kendon 1988, 2011; Corballis 2002; McNeill 2005) and ethology (Tomasello 2008). Likewise, a case has been put for gestural communication in rock art by means of digital manipulation in hand stencils (Le-roi-Gourhan 1967; Walsh 1979; Wright 1985) — this in view of general abandonment by scholars of the notion of digital mutilation (for an account of the debate see P. Dobrez 2014). To our knowledge, no one has brought all this together, as Patricia Dobrez has done, in the context of inscription. Given insufficient variability offered by stencilled hands on their own, another option and one pre-eminently taken up in Australia was ground-marking in which readably iconic tracks (expertly devised by moves of the hand) and sequenced as trails, could inscribe events, that is, tell a story. It is worth noting that Spencer and Gillen (1927: Ch. XIII) record the first ground-marking as having been the work of an uncreated Dreaming being!

The idea that pictorial systems worldwide might go back to this basic activity is attractive. In Australia, at any rate, the type of sign referred to as 'Panaramitee', featured in the rock art of desert regions and arguably throughout the continent, is taken to be the oldest form of representation and is without difficulty linked to continuing ground-marking traditions reliably recorded by ethnography. These traditions are multimodal, involving speech, gesture and inscription, with tracks as a major element and the line-and-circle as major iconographic features. Patricia Dobrez (2017), follow-

ing Munn's (1973) landmark study of this system of inscription — to be read in conjunction with Strehlow (1964) and Green (2014) — has argued against the tendency in rock art studies to read the line-and-circle-plus-tracks ensemble as consisting of geometric abstracts. Rather they are trace-view or plan-view (schematic) icons, the world as seen from above, with the circle as a stable form (obeying the Gestalt law of unitary enclosure) and tracks or their abbreviation to a line (obeying the Gestalt law of continuation) as illustrative of motion. Put another way, the circle denotes place, while tracks or lines denote travel. This is what Munn (1973) referred to as the site-path complex. So, we are returned to major themes of our argument relating to Aboriginal engagement with the environment and our discussion of Dreaming travels. Other parts of the world have ground-drawing traditions, as well as rock art which appears to have affinities with the Australian Panaramitee (in the United States, one thinks of Great Basin styles). Additionally, in Australia, there has been a massive revival of the iconography of ground-drawing transferred to painted portable surfaces (acrylics on canvas), and these images have entered the world art market with considerable publicity (Myers 2002). Patricia Dobrez (2017) has suggested the investigation of the phenomenon of ground-marking in combination with speech and gestural modes of the system as potentially throwing light on the question of the origins of graphism/writing. She has also drawn attention to the active role that hand and foot images continue to play in contemporary Western society: American traffic lights STOP us with the image of a hand, and the selfie spot is identified with prints of feet; both of these as traces of a previous act which remains efficacious.

In summary, it may be that everything actually does begin with tracking. Focusing specifically on indigenous Australians, we can say that tracking is how humans in the hunter-gatherer context come to astonishingly intricate knowledge of their environment. Unsurprisingly practical knowledge takes intellectual form in the myth and ceremonial complex of the Dreaming, which is in fact many Dreamings. It takes narrative-graphic form in a system based on the combination of static (enclosed) and moving (continuance) signs, with sequenced tracks at its core — those same tracks which feature in primordial Dreaming journeys and which require re-enactment for the preservation of the Aboriginal world. At this point, the cognitive act is a meaning-making, order-making one, rescuing the natural world from formless, undifferentiated chaos.

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