

What's new from the PAST?

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In 2003, Bob Brain¹ wrote in this journal about the first decade of operation of PAST, the Palaeontological Scientific Trust (then known as the Palaeo-Anthropology Scientific Trust). Entitled 'A perspective on the PAST', and written in his capacity as the NGO's scientific advisor, Brain described PAST's creation at the dawn of democracy in South Africa in 1994 as an effort to 'avert a serious financial crisis at the University of the Witwatersrand that was threatening the future of palaeoanthropological research there', particularly at the world-renowned Sterkfontein Caves. Brain outlined the central role PAST played in resuscitating student training and research in palaeoanthropology at Wits, such as supporting the discovery and development of the Little Foot skeleton at Sterkfontein,² through public sector financial support from Anglo-American, Standard Bank, and other corporations.

By 2003, Brain wrote that PAST was funding over 90% of human origins research in southern Africa. With continued corporate support, a growing and prominent board of trustees, and the infusion in 2002 of research funds from the South African Department of Science and Technology (DST) via the National Research Foundation (NRF), PAST expanded its support to the broader field of southern African palaeontology, including notably research in the richly fossiliferous Karoo Basin.

Importantly at this time, PAST's then fund manager, Andrea Leenen, established its now widely acclaimed Walking Tall Educational Theatre Project.¹ The project's origin sciences workshops were designed to meet the additional elements of PAST's founding mission: promoting public education into the sciences related to our origins, particularly among school children, and protecting South African hominid sites to facilitate palaeo-tourism.

In concluding his article, Brain characterised PAST's ambition as creating

a proud and strong South African identity for each of its citizens as well as [bringing] its rich [fossil] heritage to the attention of the world...as part of South Africa's national drive towards unity and pride in our country and our continent.

PAST has continued to grow in the 12 years since the publication of Brain's article. Its student training and research funding now extends into East and West Africa, and totalled ZAR4 million in grant awards in 2015. PAST is now the leading independent, African-based supporter of the sciences related to our origins on this continent.

As part of its public outreach mandate, PAST initiated in 2003 a keynote lecture series in collaboration with Standard Bank that has brought to South Africa world-renowned scientists such as Richard Dawkins, Tim White, Berhane Asfaw, Richard Leakey and Donald Johanson. Walking Tall has continued to grow, and has now reached over one million learners, educators and community members in southern Africa and, increasingly since 2011, in Tanzania, Kenya and Uganda. PAST also uses Walking Tall to illustrate human origins lectures that contribute to corporate and government diversity and transformation initiatives.

While retaining long-term support from Standard Bank, PAST's principal corporate sponsor, and the DST/NRF, PAST has expanded its donor base to now include JP Morgan Chase, the First Rand Foundation, the Oppenheimer Memorial Trust, the Claude Leon Foundation, South Africa's National Arts Council, and Investec, as well as a number of private individuals.

The Board of Trustees, now chaired by Rick Menell, continues to comprise prominent individuals from government and business as well as the scientific community. Andrea Leenen leads the PAST Executive as CEO, and was joined in 2011 by Robert Blumenschine as PAST's Chief Scientist.

Since that time, PAST has formalised its unique integration of research, student training, school-level education and public understanding by funding all of these activities at Human Heritage Hubs. These Hubs include the Sterkfontein Valley, Olduvai Gorge in Tanzania, the Turkana Basin in Kenya, and Ethiopia's Afar Rift. Funding of African-based scientists and their research remains at the core of PAST's mission, with the goal of helping to establish Africa as the global leader in the sciences related to our origins.

The All from One campaign

In 2015, PAST greatly expanded its public understanding efforts with the launch of its global *All from One* campaign. Sponsored principally by Standard Bank, the DST, and the National Arts Council, the campaign uses the sciences underlying the shared origins of humankind and of all life forms to foster social cohesion and nature conservation.

The campaign recognises that the origin sciences can make a larger and more positive impact on society if they do not rely solely on the promotion of new fossil discoveries. While such discoveries capture the public's imagination, and provide the raw material of the origin sciences' service to society, individual discoveries have only a fleeting impact on public awareness. Further, media reports typically do not tie these discoveries into a broader view of the origin sciences, leaving the public with a series of disjointed findings that it is ill-equipped to integrate into meaningful social messages. Occasionally, if unrestrained by the lead discoverer, the media exaggerates the significance of fossil finds, breeding not only public scepticism of the discovery itself, but also cynicism toward the science in general. Such was the case with the South African media's coverage in 2015 of the hominid finds from the Rising Star Cave system in South Africa's 'Cradle of Humankind'.

All from One is based on the collective findings of a multitude of palaeontological and archaeological studies – and more recently ones in genetics – that document the origins and diversification of life and humankind. Because earlier findings about shared origins have stood the test of time, steadily gaining substantiation and meaning from

subsequent discoveries, the science underlying *All from One* does not require hyperbole to be compelling.

All from One can make a major contribution to society by using a basic understanding of shared origins to promote three messages. One of these messages – that Africa is the birthplace of humankind – echoes Brain's aspiration for PAST to contribute to unity and pride in South Africa and the continent overall.

Since Dart's³ discovery of the Taung Child in 1924, a remarkable series of fossil and archaeological discoveries, coupled more recently with evidence from the comparative genetics of modern human populations, have demonstrated the African origins of all species directly ancestral to and including modern humans, starting with the emergence of the hominid lineage some 6 to 7 million years ago.

These findings bestow on Africa the status of being the primary storehouse of the world's fossil human heritage, starting with the earliest known hominid, *Sahelanthropus*. Even after the initial hominid colonisation of parts of Europe and Asia by early *Homo*, Africa appears to have remained the centre of human evolution, with the earliest known representatives of *Homo sapiens* emerging in Africa by some 200 000 years ago.^{4,5}

Adding further to continental unity and pride is the abundance of evidence for the African origins of the fundamental characteristics that make us human and distinguish us from our closest living relatives, the chimpanzees. These findings, proceeding from the most primitive uniquely human traits to the most advanced, have steadily accumulated over the nine decades since Dart's recognition of bipedal adaptations in the Taung Child. Hence, discoveries at Olduvai Gorge of *Homo habilis* and the great antiquity of the Oldowan stone tool industry in the early 1960s^{6,7} were the first to indicate that our genus, as well as the beginnings of humankind's dependence on technology, emerged in Africa. By the early 1980s, substantial evidence had accumulated to indicate that early *Homo erectus*⁸ (a.k.a. *Homo ergaster*), and the more sophisticated stone technology of the earliest Acheulian⁹, also first appeared in Africa. At about the same time, discoveries in East Africa¹⁰ and the South African cave of Swartkrans¹¹ suggested that the controlled use of fire was also an innovation that appeared in Africa. And, more recent discoveries, such as those from the southern Cape coast of Africa of the earliest known ornamentation and engravings¹², now indicate that the advanced cognitive capabilities of *Homo sapiens* also arose on this continent.

All from One promotes a second socially relevant message emanating from our shared origins: the unity of humankind. This message is based not only on our long period of common ancestry outlined above, but also on the now abundant genetic¹³, palaeontological and archaeological¹⁴ evidence for the relatively recent dispersal of *Homo sapiens* from Africa, beginning some 60 000 years ago. It is therefore within only the last 1% of the 6 million year history of the hominid lineage that population differences between Africans, Europeans, Asians and peoples from other regions of the world started to emerge – a finding reflected in the widely cited 99.9% similarity between the nucleotide sequences comprising the genomes of any two people.

All from One extends the concept of shared origins beyond humankind to include all life forms, extending back in time to the Last Universal Common Ancestor¹⁵ that lived as many as 3.8 billion years ago. From this perspective, humankind represents one very small and recent branch among millions on the 'tree of life'¹⁶ that is sustained in part by complex webs of ecological interdependence among species.

These ecological webs have been disrupted severely over the last 450 million years by a series of mass extinctions, during each of which at least 75% of known life forms went extinct in a relatively brief period of time. It is now increasingly clear that a sixth mass extinction is happening currently.¹⁷ Extinction rates today are higher than in the last 66 million years, when the fifth mass extinction resulted in the demise of the non-avian dinosaurs and many other life forms. The ongoing wave of extinctions is widely and primarily attributed to human activities. If unabated, it could reach the 75% species-loss threshold

for a mass extinction in as few as 240 years¹⁸, leading to the loss of many of the essential ecosystems services¹⁷ upon which humankind's survival depends.

The *All from One* campaign seeks to increase public awareness of our need to preserve earth's biodiversity. Public appreciation of the shared origins of all life forms should help to replace the common view that we exert dominion over nature with one that emphasises our dependence on it.

PAST is promoting the *All from One* campaign in several ways. The campaign's digital strategy centres on a campaign website, www.past.org.za/AllfromOne, through which individuals can commit to four human ideals arising from a consideration of shared origins: tolerance, unity, collaboration and conservation. Individuals can add their 'selfie' to a rapidly growing digital 'Face of Humanity' they can subsequently share on various social media platforms. A centrepiece of the campaign includes a like-named exhibition that describes the basic science underlying our shared origins. The physical exhibition opened in Johannesburg in November 2015 on the launch of the campaign, and will tour South Africa and eventually internationally, along with the Walking Tall Educational Theatre Project. A website version of the exhibition can be found at www.past.org.za/Exhibition.

PAST invites people around the world to join *All from One* by using the basic science of our shared origins to promote tolerance of diversity so that we can together build an environmentally sustainable and prosperous future for all of humankind.

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