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The Origin of Our Species
Chris Stringer
2011. London: Allen Lane

Review by Rob Rownd
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The Origin of Our Species by Chris Stringer is an old guy's book. But it's far from tired.

Patient in tone and deliberate in pace, the book has been mildly chastised by some scientists for allotting too much space to discussion of some 'flighty' scientific ideas (Hawks 2011). It has also been mildly chastised by some popular intellectuals for not living up to its title and summing up the history of humans in half a dozen declarative sentences (Forbes 2011). But the key word in both cases is mildly. Even people who don't accept his ideas or admire his work, respect the civility and openness Chris Stringer brings to its defense. Still, I doubt Stringer would worry much about either opinion even if they were harshly expressed. This book, like his other writing, his public lectures and video interviews is always focused on the work and the ideas behind it.

Since joining the research staff of the British Natural History Museum in 1973, Stringer has acquired over a yard's worth of credits for journal articles and written 10 books for general audiences, all while serving as the very public face of the out-of-Africa theory of Modern Human origins. This is someone who is very comfortable contextualising

new ideas for non-specialists and the interested general public. Stringer's prose rolls off the page as easily as his many public lectures roll off his tongue. Common sense doubts and admissions of the incompleteness of certain ideas are treated with the same understatement that is used to stress the things he is relatively sure of. His simple concise descriptions of complex theories and scientific processes are fair, well balanced and easily followed even when he does not agree with them. He also has a nice way of doubling back to clarify or reinforce points that never seems pedantic or unnecessary.

What makes this all the more impressive is that *The Origin of Our Species* is a significant modification of his previous very publicly stated views on the Origins of Modern Humans. In the book, he addresses the overwhelming evidence that we are not entirely Out-of-Africa after all. The bigger, more detailed and most likely more accurate picture of how we came to be us is a work in progress. Genetic evidence from the last decade has backed up the common place observation that we look kind of different from each other and those differences seem to be based on where our immediate ancestors came from. It turns out that we are genetically different from each other but only very, very slightly. Does it matter? Stringer does not think so but he is not sure. It's going to be an interesting few decades while we figure out what *slightly* actually means.

The book is laid out as a personal history, a genre a lot of scientists seem to find tricky. But Stringer's restraint serves himself and the material well by keeping the book centered on how the ideas about human origins came up and were modified over the past 40 years rather than veering into his personal reaction to them or the people who developed them. There is a good deal of personal opinion and reflection here but it is used to tie single ideas into threads or mark the contrasts in shifts of opinion over time. This is science as we all know we were supposed to be doing it.

After summarising the dominant theories of the origins of homo sapiens circa 1970 (when his career began), the narrative begins with describing how the introduction of room sized mainframe computers (less powerful than the current IPhone) changed the study of skulls. Suddenly comparing multiple measurements across dozens and then hundreds of samples was possible if one put a couple of years into the project.

Stringer did. Lacking the precision and speed of the scanning and number crunching software that is so cheap and easy to use in the 21st century,

the new method of the 1970's seems almost quaint to those of us who were not there at the time. But the ability to compare so many sample skulls on so many points was a great leap forward.

It was also the beginning of the end for any serious consideration of Neanderthals as the species who developed into early modern humans. They are just too morphologically different from modern human to be a possible immediate ancestor. Those differences became unarguably apparent when the data derived from the computer aided morphological studies became public and the idea was dead and buried within a decade.

Stringer freely acknowledges that a lot of his best ideas and observations began as vague hunches. He saw something was amiss in the then current thinking and wondered what it was. But he considers himself lucky to have been begun his career when the "standard approach [was the same one that] had been in use since before the time of Charles Darwin" (Stringer 2011: 86) and to have then been able to take advantage of the development of much more precise ways of measuring nearly everything involved with Archaeology. It was the 'pictures' that emerged in the computer age, the high resolution representations of the material (whether expressed as numbers or graphs or images) that we have access to now which changed things.

Even if we limit the discussion to new high resolution images of the original Neanderthal and Cro-Magnon 'type' fossils that were found before the turn of the 20th century, the images of them simply tell a completely different, and more accurate, story than was readable prior to the 1980's. There are, of course, additional finds that add to the narrative in hugely significant ways and individuals who have done some amazing work but to hear Stringer tell it, it is the discipline as a whole that has undergone the sea change. The explosion of understanding that occurred in the last 40 plus years is as much about the tools now being brought to site and into the lab as it is about the people using them. Vague hunches are just much more easy to confirm or negate now than they were before.

For example, back in the later 1970's, based on little more than one of those hunches and some long conversations, Stringer along with some American colleges began arguing for limiting homo sapien status to fossils that 'look' like us. By extension of the same idea, they argued that sets of fossils which look like each other should also be assigned to a common species even if they were found in disparate locations. The *Homo heidelbergensi* in Bodo and Broken Hill, their argument went, are the

same species as the German based name specimen even though they are some nine thousand kilometers apart. Flipping the same idea on its back to exclude non-like parts, Neanderthals were not directly ancestral to Modern Humans despite the fact that their remains had been found in different layers of the same cave in more than one location because they looked too different.

Using this new conceptual framework essentially threw out physical distance between finds as a significant consideration for typology and specification and replaced it with a morphological similarity/difference that was barely measureable at the time. And, with that shift in thought, Heidelbergensis was spread out across an area large enough and at an appropriate time in the past to be the potential immediate common ancestor of both Homo Sapiens and Neanderthals.

While the difficulty of measuring this 'significant difference' didn't make their idea untrue of course, it made it very difficult to substantiate. Hence it was a fairly risky and unpopular idea despite being internally consistent and working well as an explanation for the similarities between Neanderthals and Homo Sapiens. They shared a common ancestor but had developed differently from that common point.

Over time, the degree of difference and similarity between skulls has been much more observable as measuring techniques and number crunching abilities improved to their current state. Stringer's acceptance of a difference that was barely measureable at the time now looks like a combination of brilliance and blind faith in technology but its really neither. It is just a very careful consideration of how an artefact could fit into an extended context. Stringer seems to be able to think and consider finds in multiple contexts more easily than most. Further evidence of that the same willingness to follow a strange hunch to the place it logically leads in the meta-context of our collective data can be seen in his consideration of the 'hobbit' as possibly an Australopithecus afarensis gone a wandering and then surviving in isolation till 17kbp.

To contemporary eyes, this idea is at least as much of an outlier as the idea that Heidelbergensis had a range from Africa to Germany during its peak was in 1978. But since then we have uncovered Box Grove and Swanscombe, which only adds to their range and takes us even further away from reasonable doubt about how successful this 'species' was in its day. So the possibility that we will have out-of-Africa-1 reassigned to a creature that was pre-human in brain size and body type but somehow

learned to use tools to hunt stegodons should remain open for awhile. In 2015, *Nature* featured a description of evidence of human-like hand use in Australopithecus africanus. (Skinner *et al.* 2015). Hmmm, Looks like it is going to be an even more interesting couple of decades.

Stringer is far more interested in Anatomy (and Morphology in particular) than he is in Genetics, Tools, and, surprisingly, behaviour. But he gives all the elements their due in his story. The lengthy and balanced consideration of what likely went on in Africa, Europe and the Middle East between 200kbp and 25kbp is so wonderfully written, you wish it would have included more of the world and gone on for another 350 pages.

Stringer is not at his strongest discussing Theories of Mind, 'symbolic non practical' activities such as playing music and painting or the beginnings of pre-planned collaborative behaviours that do not have an obvious purpose. The two chapters on behavioural modernity are the weakest part of the book as he falls back on the discipline's long tradition of interpreting every found symbol to be a sign of communion with powerful things unseen. Was the late Pleistocene really devoid of boredom, joy, beauty, doodling and friendship? If so that would make it rather unique in the human adventure. Somewhere in the material record, there is probably solid evidence of somebody drawing an elk on a wall, playing the bone flute or smearing ochre on someone else just because they liked doing it. And it is probably being misread as being deeply, deeply, deeply symbolic. It is hard to believe that Neanderthals and early Modern Humans cared for their injured and maimed, buried their dead with grave goods or showed any kind of compassion towards each other without some memories of good times to bond them together. We see the jokes in the art from our era, even including art from Rembrandt to Andy Warhol. Yet, we do not extend that courtesy backwards in time. Rather Victorian of us.

Stringer's section on DNA however is a wonderfully concise and accurate description of some extremely complex material. We all "know" that we are connected to "Eve" and later to "Adam". We also know that everyone outside of Africa, has a little Neanderthal in them. And we know that Genghis Khan and Brian Boru and another half dozen super donors really got around. DNA does seem to be an amazing tracker of human interaction. However, as with the first version of carbon dating, workers have realised that there is something slightly off about the clock

and it is in need of calibration. That work has not been done yet. So, for now, we should take the dates it suggests with a grain of salt.

Stringer also spends time earlier in the book considering the limitations of the Biological Species Concept (BSC) that so much of the multi-regionalist argument is predicated on and then returns to it for his consideration of the meaning of the admixture in our own DNA. To paraphrase Stringer's already broad strokes, a species consists of the largest community of a group of plants or animals that breeds amongst itself but not with any other community . This is one of the old chestnuts of biology we all learn in high school and then have to learn a series of exceptions to in graduate school. One of the latest ones to be confirmed, polar Bears and grizzlies (Paabo 2014) is not discussed by Stringer but it sums up his assessment particularly well.

Over the past ten years, grizzlies in the wild have been observed migrating into polar bear only habitats in Manitoba, the Northwest Territories and even far northern British Columbia. Perhaps driven by various environmental stresses due to increased human populations in the area or simply in search of food, bear nature being what it is has led to the creation of a hybrid animal nicknamed 'the prizzlie'. Confirmations by DNA tests of hunter kills have even revealed a specimen that is a 2nd generation hybrid. This, of course, means that at least some of the first generation hybrids are fertile. A similar 'process' has be repeatedly induced between grizzlies and polars in zoos (although the use of Barry White classics during the 'inducting' process does tend to call the results into question).

While these cases should have multi-regionalists jumping up and down with joy for its apparent support of a continuum between species in the classic Darwinian sense, the simple math (including the DNA tests) actually points in the other direction.

There is ample evidence of hybridisation between related species occurring throughout nature. It simply happens. But it is always a small minority of the individuals in a species at any given point in time who are hybrids and that small minority decreases significantly in size as the organisms increase in complexity. Vascular plants feature 25% hybridization, butterflies 16%, birds 9%, and mammals 6% (Mallet 2008). We feature evidence of about 2-4%, hybridisation that has degraded over time to about half of its original strength because of the usual gene mutations. While we know that we need to further calibrate the genetic

clock to make it more accurate, this is in line with what one would expect for a fairly recent 'encounter' between higher mammalian 'species'.

Returning to the members of the Ursidae (bear) family, we find there is ample evidence of ancient admixtures between nearly most of them in the wild just as there is between Homo Sapiens and at least three archaic human 'species' (Kutschera *et al.* 2014; Miller *et al.* 2012). But that does not change the current reality that polar bears and grizzlies are two very distinct animals both physically and behaviorally who have adapted to thrive in completely dissimilar environments. Each of them is at the top of their respective food chains and there is no way you would confuse one for the other. It's certainly a surprise that they can successfully interbreed but, at the end of the day, does that actually change anything about the way we understand them?

Instead, it seems more likely that there is something more to being a type or 'species' of bear than who they can mate with. And by extension the same should apply to humans. For me, one of the strangest things about the discovery of the Denisovan genome is how quickly it turned up in our own admixture. It was literally within the month. It is as though as soon as they knew what to look for they found it. Stringer's take on the hominin admixing that has been documented in our own genomes is more of a polite shrug at the oddity of it than anything else. In his opinion we are, based on both the majority of our own genes and our peculiarly 'globular headed' morphology, mostly out of Africa. The things that are most significant and interesting about us are also mostly out of Africa too.

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Pangasinan, Pinablin Dalin: History, Culture, Development
Edited by Virginia J. Pasalo and Fe B. Mangahas
2015. Lingayen: Pangasinan Historical and Cultural Commission, 808 pp.

Review by Erwin S. Fernandez
Abung na Panagbasay Pangasinan

Edited by Virginia J. Pasalo and Fe B. Mangahas, then Commissioner of the National Historical Commission of the Philippines, the book was a product of Memorandum of Agreement (MOA) between the provincial government and the Pangasinan Historical and Cultural Commission (PHCC) in 2011, which led to a formation of a research team headed by Dr. Perla Legaspi. In August 2012, the last draft was submitted to the PHCC editorial board, which, then, decided to commission six new authors – myself included – to revise and add new chapters to the manuscript. Thus, in January 2013 I signed a contract to write two chapters for the "new" book. In the summary for Parts II and III, the