FILM REVISITS APARTHEID'S CRUELTY

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Untold suffering that's come from skin colour

SOCIETY'S DARK SIDE: At a time when people were being colour-coded according to their skin colour, a generational reshuffling of genes left Sandra Laing darker than her parents and siblings. Sophie Okonedo acts out Laing's personal hell in the film *Skin*.

SKIN colour is about ancestry. Our skin is the largest and most adaptable organ in the body and science tells us the structure of the outer layer (the epidermis) and the inner layer (the dermis) of our skin can change rapidly.

Our skin thickens and alters its texture in months, tans in hours and burns in minutes. But the basic colour of our skins is something that is much older and comes down to us from our long-dead ancestors.

Why do humans from different parts of the world have skin colours that are so different?

The general explanation from anthropologists who have considered this question is that darker skin colour helps to protect us from ultraviolet radiation (UVR).

One set of wavelengths of this radiation (UVB) is critical in the production of Vitamin D – something that is needed by all of us and generated in our skin.

The catch is that in the tropics the intensity of UVR is so strong that we need to block out enough radiation to prevent damage, yet let enough through for our skins to produce Vitamin D.

The solution is the production of small packets of the pigment melanin in specialised cells called melanocytes.

The skin is very dark when the packets are larger and densely spread around the cells of the epidermis. The melanin blocks and disperses the UVR before it can do much damage. Fewer packets of smaller size produce lighter skin and less protection.

Our distant ancestors used this simple colour technique to protect themselves from skin cancers and other problems when they lost their outer coating of protective hair. Naked skin helped us sweat and cool off on African savannas but it put us at risk of UVR overexposure.

The fossil evidence identifies Africa as the source of humankind and it is almost certain that the first humans were all dark-skinned.

Mitochondrial genetic evidence from living humans indicates that all of us descended from this original African population, so all of us would have had dark skin at one time.

The mystery comes not when we try to explain dark skin, but when we try to account for paler skin on people from outside of Africa.

The UCT pharmacologist Ashley Robins is currently involved in a debate with international experts about this in the pages of the American Journal of Physical Anthropology.

The traditional scientific view is that as people moved north into the ical vitamin in the winter months if the skin was dark. Sunlight deficiency in winter could result in rickets in children and increase childhood mortality dramatically.

Hence the selective evolutionary pressure to reduce the size and number of the melanin packets in the skin so that the skin would be paler and more efficient at generating Vitamin D in the weak winter sunshine.

tion that can account for the patterns we see around the world today.

Robins' academic battle will continue, but one fact is incontestable.

There is a direct relationship between geographic latitude of where your ancestors originated and the colour of your skin.

Some very recent research has added an interesting aside to this observation. The genes that control how melanin will be deposited in of thousands of years ago.

Today this fundamental belief in the ancientness of skin colour is no longer tenable.

We know that the modern racial patterns of skin colour are probably not much older than 50 000 years and are linked to the move out of Africa by modern humans, but some researchers are arguing that the patterns may be far more recent, perhaps even only in the range of 10 000 Maximum", between 18 000 and 25 000 years ago, when the climatic differences between the northern and equatorial latitudes were at their greatest and humans had spread to nearly every continent on Earth.

Where you lived and how much sunshine you were exposed to would have been extremely variable and intensity of skin colour would have been selected for differently colour and ancestry important to us? Unfortunately, the skin colour that marks your ancestor's history has also been used to discriminate between human groups.

We in South Africa are only too aware of the social issues of skin colour and how it was used under apartheid to identify and separate races.

The pale-skinned apartheid administrators went to great lengths

Back in 1965, Dr Hans Heese, an historian at the University of the Western Cape, published a book entitled *Groep Sonder Grense* in which he outlined exactly how many of the old-order politicians had coloured ancestors.

Dr Andries Treurnicht of the Conservative Party was incensed and absolutely denied that his ancestry was sullied by forebears from Bengal or Batavia.

All of this was "a calculated attempt by liberalists and some coloureds to demolish white identity and to prepare the way for integration between white and coloured". The test was in appearance. If you looked white, then you were white.

Poor Sandra Laing was born into this colour-coded context just as the apartheid administrators were locking in their system and using skin colour to sort individuals into the "white", "coloured" and "black" boxes.

The generational reshuffling of genes had allowed Sandra to express the skin colour of some of her tropical ancestors, and her skin was dark in comparison with that of her parents and siblings.

But the consequences for Laing were not biological, they were social, and the hell that she went through as she grew up was one that caused her suffering for the rest of her life.

The biography of Sandra Laing was published in 2007 and now her story in film is being released in the movie, *Skin*.

As a biologist, the issue of skin colour is no different to me than any other form of human variation, but the tale of Sandra Laing is there to remind me that I can't always be a dispassionate scientist.

Skin colour is about ancestry and it tells us about the evolutionary history of humanity, but we mustn't forget that we are a lot more complicated that other animals and biological things may have social implications.

I want my students to understand the nature of biology but I also want them to understand the social issues. I am going to ask them to see the film because I want them to see beneath the melanin.

● *Skin* opens at cinemas today. Tomorrow evening, *Skin's* director Anthony Fabian will hold a special question and answer session after the 7.30pm show at Cavendish Cinema Nouveau. Fabian will be joined by Dr Wilmot James of the Africa Genome Education Institute and Tracey Petersen of the Cape Town Holocaust Centre and the open conversation will cover discrimination, "race" and the genetics of skin colour.