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The sky is not the limit: Adventures of an urban astrophysicist.

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## Book Review

Neil deGrasse Tyson, *The Sky is Not the Limit: Adventures of an Urban Astrophysicist*. New York: Prometheus Books, 2004, 203 pages, \$18.00 (paper).

The PhD bestowed upon Neil deGrasse Tyson by Columbia University in 1991 made him, by his own count, the seventh black astrophysicist in the world, with astrophysicists defined to include observational astronomers. He does not provide a list of the first six, but the following come to mind:

- Benjamin Peery (stellar spectroscopist, now Professor Emeritus at Howard University)
- Arthur Walker (late ultraviolet instrumentalist and a discoverer of interstellar deuterium)
- Carl Rouse (exponent of a nonstandard model of solar structure, now retired from a career spent largely in industry)
- Walter Rice (infrared maven, formerly at Jet Propulsion Laboratory, no longer in astronomy)
- Barbara Williams (University of Maryland PhD in radio astronomy, now at the University of Delaware)
- Gibor Basri (University of California, Berkeley, expert on stars, especially brown dwarfs)

This is indeed six with earlier PhDs, and there are at least a couple younger as well, but the author must have meant “black American astrophysicists,” because there are also, for instance, at the University of Nigeria, Sam Okoye (codiscoverer of the compact, low-frequency radio source in the Crab Nebula, now known to be a pulsar, with PhD about 1964) and Pius Okeke (also a radio astronomer slightly senior to Tyson). Chidi Ajujor is his junior, as are the three black South African PhD astronomers of whom I am aware. But the count is still small – comparable to the number of women astronomers at the time of the founding of the International Astronomical Union in 1919, and sprinkled through a community of 10,000 rather than a few hundred. Tyson has been, since 1996, the director of the Hayden Planetarium in New York, where, as a child of the city, he first saw stars in large numbers.

He has also made major contributions to education and outreach through books, public lectures, radio and television appearances, and interactions with school systems and government.

There is much wisdom in this book and many experiences that you will recognize. Scientists in general are apparently not favorites in the jury-selection process. Tyson describes his moment of dishonor in 1997 when he explained that he was just then teaching a seminar at Princeton on critical evaluation of scientific evidence and the relative reliability of human testimony. He was on his way home in 20 minutes. (By chance, I read this while waiting to be called for questioning in our local municipal court, shortly before being sent home for admitting that I didn't think I could tell whether people were telling the truth, and neither could anybody else, or there would be little market for lie detectors.) And you will surely resonate with his remarks about the different attitudes

on social occasions toward people who admit to “not getting” mathematics and science compared to anyone who would dare express a distaste for grammar or literature.

A charmingly written, but worrisome passage tells of his sharing with half a dozen other young physicists the multiple occasions on which they had been stopped or picked up by police officers while driving or walking after dark. Yes, it was a meeting of black physicists. Others of his experiences are probably also unique to minorities; but women in science share some. He was assumed to be ignorant of Newton's laws of motion in connection with the dropping of popcorn from a low-flying plane at a wedding reception, until his father-in-law asked him whether he was still teaching astrophysics at Princeton. Mine was a casual comment to the person in the next seat at a society meeting to the effect that “Half of all three-sigma results are wrong” (a favorite saying of the late Fred Reines, who often added “more than half in the case of Hertzlovakian results”). The prolonged explanation of Gaussian distributions and their meaning was interrupted only by my being called as the next speaker.

Tyson happens also to be tall, broad-shouldered, and strong. He wrestled through high school and college and was much pleased to discover that an older, world-class astrophysicist, David Schramm, had also won wrestling championships. Tyson put his strength to work lifting one end of a small European car out of the way of a tour bus in Italy (giving rise, he imagines, to an urban legend of some sort). I once lifted the wife of a colleague at a pre-conference reception (Tyson explains the trick), only to have Dave Schramm walk over and lift us both. The author declined to appear in the *Studmuffins of Science*, but agreed to a 2000 stint as “sexiest astrophysicist alive” for *People* magazine. I was *Miss Twilight Zone*, but not, of course, lately.

What is there not to like? Well, you might want to check astronomical items elsewhere before incorporating them in your permanent data file (but the editors have discouraged me from telling you about specific items). If you come from a culture that thinks the efficiency of an automobile is measured in how many liters it takes to go 100 kilometers, you might disagree about “miles per gallon” being irreplaceable. And indeed his discussion of metric versus conventional units, while noting the Mars mess, completely misses out the double effort required for manufacturers of nuts and bolts to be able to sell their products both in Liberia, Myanmar, South Yemen, and the USA and elsewhere in the world. His disparagement of *Mary Poppins* (the movie) almost broke my heart. Well, I'm the wrong generation for the film or video versions, but loved the books as a child, and am reasonably sure that they never led me to expect the baby sitter to arrive on an umbrella, any more than *Little Red Riding Hood* led me to worry that, when *Grandmother Farmer* took her teeth out, something dreadful was about to happen.

Some of the insights offered are connected with the space program. Tyson has served on several relevant advisory panels and thinks it is, on the whole, good that no one was excited about the last dozen or so shuttle launches unless something went wrong. It means that space has become part of our culture.

We also don't, he remarks, get excited about the wealth of choices in our supermarkets – another “resonant experience”: visiting a Safeway long ago with a newly arrived Hertzlovakian colleague, who thought the array so unlikely as fodder for the commoners of DC that he concluded, first, it was for professors only, and second that it must have been put together to impress foreign visitors. Tyson also points out that, throughout history, ambitious, expensive projects have been carried out only when driven

by defense, promise of economic return, or praise of power. Going to the moon in 1969 seemed to have all of these behind it; going back does not seem to.

Can you stand one more “blacks and women” story? A colloquium a decade or two ago on another UC Campus. I had arrived somewhat late and frazzled and asked the pre-colloquium cookie-eaters collectively, “Any chance of a cup of coffee before the talk?” “Not for you,” came a voice from behind. I straightened my back and turned, preparatory to saying in my iciest tones, “I happen to be the speaker,” only to collapse with laughter when I saw that the remark had come from the only black in the room (as I was the only female). He was, incidentally, the son of one of the black astrophysicists mentioned in my list above and is now in industry. Moral? We are still a small town, and indeed the year Neil Tyson spent at the University of Maryland (just barely mentioned in his autobiography), his office door was about 15 yards from mine.

Is Neil deGrasse Tyson a typical American black? No. He comes from a family sufficiently well established in New York academic circles that a random scam artist once succeeded in a small heist from another physicist (who shall remain nameless here) by claiming to be “Cyril Tyson's other son.” Is he a typical black astrophysicist? That, clearly, remains to be seen, but I think most of us would like the answer to be yes and the comparison sample to be large enough to have three-sigma events.

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