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Dr Valerie Thomas, Black History Month 2023

Our fourth article in our series of articles celebrating Black History Month shines a spotlight on the pioneering scientist and inventor, Dr Valerie Thomas.

Dr Valerie Thomas is most widely known for being the inventor of the illusion transmitter and for her contributions to NASA research. The illusion transmitter is used widely in many scientific fields: it is famously the precursor to 3D-video, and the reason we have so many 3D technologies today!

At university, she was one of just two women majoring in Physics in the early 1960s during the Jim Crow era, a time when racial segregation was enforced in the Southern United States.

Dr Thomas started working at NASA in 1964 as a data analyst where she developed real-time computer data for supporting satellite control centres. This work led to the creation of the Landsat programme in 1970 - the longest running program for collecting satellite imagery of Earth.

In 1980, Dr Thomas was granted a patent for the illusion transmitter (U.S. Patent No. 4,229,761). Her inspiration for the invention stemmed from seeing an illusion of a lit-up lightbulb that was out of its socket at a science exhibition in 1976: she then decided to see if she could apply concave mirrors and the reflection of light to her own research at NASA. The technology she developed is still used at NASA today, as well as in the field of medicine (for use in surgery) and in television and video screens.

Patents at the time were difficult for Black women to obtain, with Black inventors facing substantial barriers in the American patent system. From 1970 to 2006, only 6 in one million Black Americans received a patent, compared to 235 patents per million for US inventors [1], highlighting significant gaps in the patent system due to systemic racism. In

achieving a successful patent application despite these massive barriers, Dr Valerie Thomas has contributed to dismantling obstacles in the patenting process for women and ethnic minorities, and by extension, in STEM (science, technology, engineering, and mathematics) fields as well.

Later in her career, Dr Thomas served as the Space Physics Analysis Network (SPAN) Project Manager, developing computer programmes to research Halley's Comet, supernovae and holes in the ozone layer.

In 1990, she spearheaded the creation of the Minority University-Space Interdisciplinary Network (MU-SPIN), which gives minority students opportunities to partake in NASA-related research and in 1995 she became an Associate Chief of the Space Science Data Operations Office at NASA.

In her final years at NASA and post-retirement, Dr Thomas has campaigned tirelessly for opportunities in scientific research for women and ethnic minority students, speaking and volunteering at universities and colleges across the US. She has been awarded multiple incredibly prestigious awards for her research and outreach activities, including the Goddard Space Flight Centre Award of Merit and the NASA Equal Opportunity Medal.

Dr Thomas is not only a lifelong researcher, but a lifelong teacher as well. Currently, aged 80, she works as a substitute teacher at DuBois High School, showing her dedication to mentorship and her understanding that producing future scientists is just as important as scientific research itself.

Her legacy and impact on the field of science cannot be overstated: her work spans multiple scientific disciplines, and she has influenced countless generations of students, something she continues to do to this day.

[1]

https://www.americanbar.org/groups/intellectual_property_law/publications/landslide/2018-19/march-april/colorblind-patent-system-black-inventors/