BOOK REVIEW

# Hidden Figures: What Color Is Genius?

by Dennis Speed

Part I of II

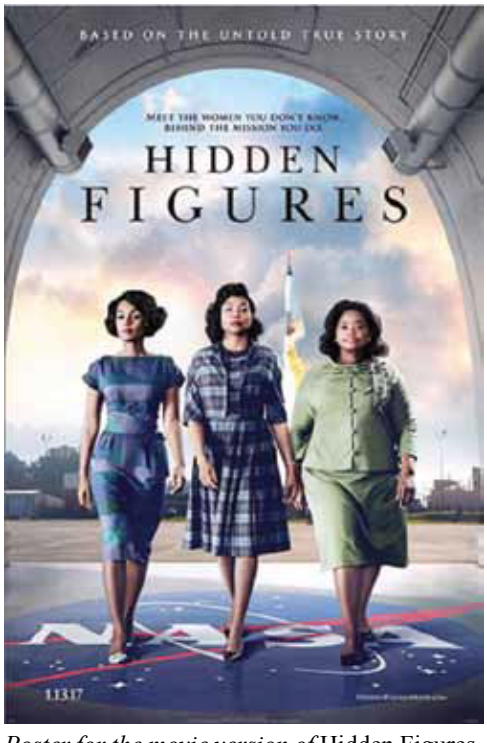
*And there were times when they said, Well the computer gave an answer, and it was so unexpected, they would ask me to check and see if that was the correct answer. And it either was, or it wasn't. And they accepted whatever* I *said.*

—Katherine Johnson,
May 5, 2016, interviewed at Langley
Research Center in Hampton, Virginia

There was a time, when Americans still spoke literate English, that a computer referred to someone that computed, and not a machine. That was when human scientific insight, and imagination, was known to be the true domain of scientific discovery, for which mathematics was merely a useful tool.

In 1943, at the height of American involvement in World War Two, eleven African-American women from Hampton Institute in Virginia, were enrolled in a "war training class," called "Engineering for Women." They qualified for employment upon completion of the course, to work at the Langley Aeronautical Laboratory, part of what was called the National Advisory Committee on Aeronautics, or NACA—the precursor to NASA. They worked on assisting in the design of the safety aspects of the new aircraft being developed in the context of the war effort.

This was the beginning of the "human computer" unit of over 30 African-American women, led by scientist Dorothy Vaughn, that Katherine Johnson would join ten years later, in 1953. Johnson is credited with calculating the flight trajectory for Alan Shepard, the first American in space. The film *Hidden Figures* portrays her as the person most trusted by astronaut John Glenn, who refused to fly his famous 1961 mission until the "machine computer's" contradictory figures were checked by human computer Johnson, referred to as "the smart one."




*Poster for the movie version of* Hidden Figures.

## Mobilizing the Best Resources

Progress in America—or anywhere else, for that matter—is neither continuous, nor linear. The FDR era (1932-1945) was not the Hoover era—and also was not the Truman era. America was a better place after President Hoover's departure, and before Truman's arrival in the Presidency. Axiomatic change in America's institutions was necessary for its climb out of the Great Depression, and for the success of its two-front Japan/Germany war effort. That "all hands on deck" mobilization of the best resources of the American people would see the United States develop the most successful economy in world history, as its fundamental and irresistible capability for defeating the forces of fascism worldwide.

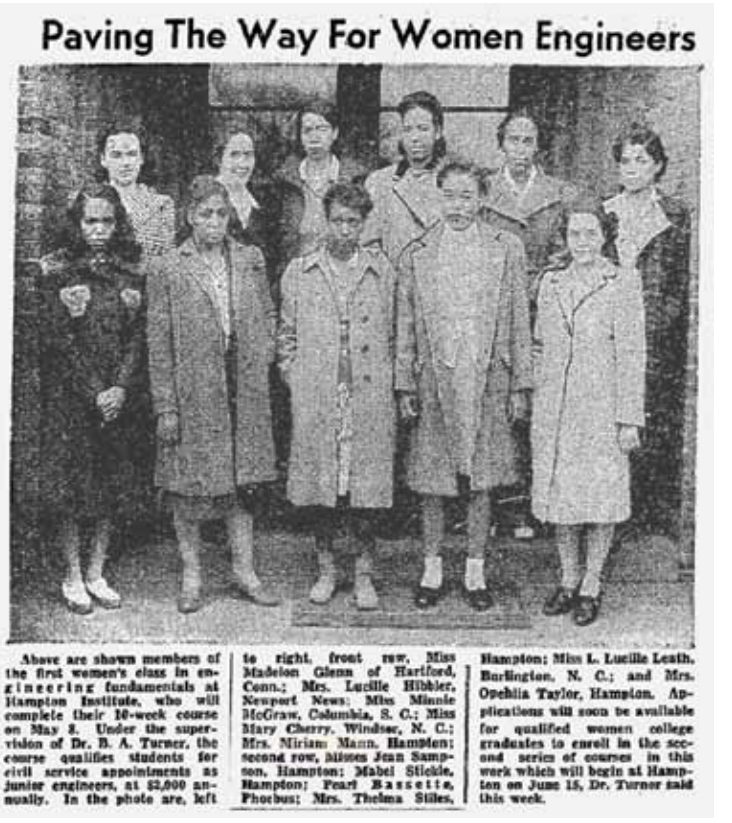
FDR's three-plus term Presidency was fundamentally transformative for the United States as a whole, and for African-Americans in the United States, in particular. The Reconstruction-era promises of a better America, which had been stifled by 1876 and wiped out by *Plessy v. Ferguson* in 1896, were reborn.

This is beyond the immediate scope of the *Hidden Figures* movie, as well as the excellent eponymous book written by author Margot Shetterly. Yet, it must be revealed, such that the actual socio-historical context of the film, which is not a documentary, but a docu-drama, be acknowledged.

Aside from the well-known 1940s migrations of African-Americans to Northern cities like Chicago, Cleveland, Philadelphia, Hartford, and New York, to work in defense-related industries, in

Hampton, Virginia and a few other locations, something unique existed in the United States. Functioning industrial schools had either already been established, or were being established in "Historically Black Colleges" such as Tuskegee Institute. Ironically, it was precisely because of segregation that skills in "forbidden fields" for "non-credentialed" African-Americans, such as chemical engineering, were passed on and acquired by those that had "gone beyond the scope of the classroom."

Persons of genius such as George Washington Carver taught at these institutions and were temporarily allowed, starting in the 1930s, to emerge and flourish. These pools of developed and skilled capability were tapped for the war effort. The later, successful actions of the 1950s referred to as "the civil rights movement" were in large measure a resultant effect of the demonstrated excellence (as well as organizing skills) of the "War Generation" of Americans of African descent, such as the mechanical engineers and pilots that comprised the "Tuskegee Airmen."


Paving The Way For Women Engineers

Above are shown members of the first women's class in engineering fundamentals at Hampton Institute, who will complete their 10-week course on May 8. Under the supervision of Dr. B. A. Turner, the course qualifies students for civil service appointments as junior engineers, at $2,000 annually. In the photo are, left to right, front row, Miss Madelon Glenn of Hartford, Conn.; Mrs. Lucille Hibbler, Newport News; Miss Minnie McGraw, Columbia, S. C.; Miss Mary Cherry, Windsor, N. C.; Mrs. Miriam Mann, Hampton; second row, Misses Jean Sampson, Hampton; Mabel Stickle, Hampton; Pearl Bassette, Phoebus; Mrs. Thelma Stiles, Hampton; Miss L. Lucille Leath, Burlington, N. C.; and Mrs. Opehlia Taylor, Hampton. Applications will soon be available for qualified women college graduates to enroll in the second series of courses in this work which will begin at Hampton on June 15, Dr. Turner said this week.

*A newspaper story on the first eleven African-American women enrolled in 1943, in a war training class in engineering fundamentals.*

## 'Most Successful Civil Rights March'

This was not unknown or lost on FDR. For example, Eleanor Roosevelt championed them, going out of her way to ride in an airplane piloted by a Tuskegee Airman, at a time when it was asserted that African-Americans were not intelligent enough to fly planes, especially in combat over the European theater.

Those later, still-famous 1950s actions were preceded by the 1940s work of people such as activist Asa Phillip Randolph, including his threatened March on Washington, which he issued the call for in May of 1941:

> With faith and confidence of the Negro people in their own power for self-liberation, Negroes can break down that barrier of discrimination against employment in National Defense. Negroes can kill the deadly serpent of race hatred in the Army, Navy, Air, and Marine Corps, and smash through and blast the Government, business, and labor-union red tape to win the right to equal opportunity in vocational training and re-training in defense employment.
>
> Most important and vital of all, Negroes, by the mobilization and coordination of their mass power, can cause *President Roosevelt to issue an Executive Order abolishing discriminations in all Government Departments, Army, Navy, Air Corps, and National Defense jobs.*

FDR issued Executive Order 8802 on June 25, 1941, creating the Fair Employment Practices Committee. Randolph, NAACP head Walter White, and others had not given a date for their march, which never occurred. Thus, the 1941 March On Washington is often referred to as "the most successful civil rights march that never happened." African-American federal employment increased from 60,000 in 1941 to 200,000 in 1945. The war, which was declared five months after the FEPC was created, was the forcing medium, despite the continuation of segregation in the armed forces and other areas.

*Hidden Figures* uses various dramatic devices to demonstrate that the fact that they were accepted as employees at Langley Research Center did not mean that African-American employees did not have to fight daily for their dignity. This, however, did not begin in the 1950s, as the movie might seem to suggest, but from the very beginning in 1943. *Hidden Figures* omits the story of Miriam Mann, a member of the West Computers group (the euphemism used for the segregated African-American women computers at NACA) who would

daily, in the early 1943, steal the *colored computers* sign in the cafeteria, risking being fired in the legally segregated state of Virginia. The sign would reappear each day, and she would steal the sign again, to the consternation of her fellow computers. Day after day, month after month, this continued. One day, it was not replaced, and therefore no longer needed to be stolen.

*Hidden Figures* has become an unexpected national sensation. It is a rare combination: an intelligent film that also makes money. Nominated for three Academy Awards, it has grossed about $127 million dollars in the United States and Canada. Its cast was honored at the 23rd Annual Screen Actors Guild Awards.

Katherine Goebel Johnson, prominently featured in the film as portrayed by actress Taraji Henson, received the Presidential Medal of Freedom in 2015, and had a NASA building named after her—the Katherine G. Johnson Computational Research Facility—in May 2016. The building will open this year, which is also the 100th anniversary of the establishment of the Langley Research Center of the NACA.

## Scientists Were 'Normal People'

At the Screen Actors Guild Awards, in the acceptance speech for "best cast in a motion picture," Henson said:

> This film is about unity. We stand here as proud actors… but the shoulders of the women that we stand on, are three American heroes—Katherine Johnson, Dorothy Vaughn, Mary Jackson. Without them, we would not know how to reach the stars. These women did not complain about the problems, their circumstances, the issues. We know what was goin' on in that era. They didn't complain. They focused on solutions. Therefore, these brave women helped put men into space. We cannot forget the brave men that also worked with us. God rest his soul in peace, John Glenn!! This story is of unity. This story is about what happens when we put our differences aside, and we come together as a human race. We win, Love wins, every time. Thank you so much for appreciating the work we've done. Thank you so much for appreciating these women. They are hidden figures no more.

TV interviewer Femi Oke asked Margot Shetterly, author of the book *Hidden Figures: The American Dream and the Untold Story of the Black Women Mathematicians Who Helped Win the Space Race,* the question, "Did you feel special when you were growing up?" She replied:

> I didn't, and I think that was the best part about it. It was middle America. My parents got up, they went to work every day. My dad happened to work at NASA. Everybody worked at NASA. I knew some of the ladies that I write about in the book. And they happened to be very good at their jobs—mathematicians, scientists, engineers. They were also just normal people. So for me, I got an up-close look that science could be done by anyone—by normal people, by people that I knew. It was something that was literally living in my neighborhood.

Of course, Shetterly's world is far different than the world of the 1940s or 1950s about the which she writes. She was born in 1969, after the assassinations of JFK, Malcolm X, Martin Luther King, and Robert Kennedy. Her father was born in 1944, and was told by his father that his highest higher educational aspiration should be to become a physical education teacher. Instead, he studied electrical engineering at Norfolk State College. This was the era of John F. Kennedy and his idea of "sending a man to the moon and returning him to earth safely within the decade." It is difficult to explain to those born after 1980 what the slain President Kennedy and his Apollo Project actually meant to the country, and to people like her father.

This is in no way, however, to cast aspersions on the movie, which should be seen, and the book, which should be read. At particularly this moment in America, such a shared cultural experience can prove essential to the tasks before us. A new space program, returning to the Moon and exploring its far side, jointly conducted with China, Russia, India, South Africa and many other nations, would be the first step, and a great step to be taken by our nation at this time. The creation of a World Land-Bridge for global economic development, and the investigation of the world's atmosphere for purposes of deploying the "rivers in the sky" for use on earth, are only a few of the areas to be investigated, utilizing the yet to be discovered and cultivated capabilities of young women and men of all backgrounds.

*Hidden Figures* makes it clear that the scientific and technological optimism that has always been at the heart of the success of the American experiment is the only basis for durable change in our country, now as then.