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## Exhibition Review: *Beyond Curie* - a Design Project Celebrating Women in STEM

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# Exhibition Review: *Beyond Curie* - a Design Project Celebrating Women in STEM

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**Keywords** Inclusivity; Collaboration; Technology; STEM

**Abstract** In 1989 the Guerrilla Girls posed the question: "Do women have to be naked to get into the Met Museum?" contrasting the statistics of women artist's work on display with nude paintings of women on view and highlighting the underrepresentation of women in art museums. But what about the representation of women in science museums? At the North Carolina Museum of Natural Sciences (NCMNS), a new exhibition entitled *Beyond Curie* broaches the topic of inclusivity in STEM (Science, Technology, Engineering, and Mathematics) in an interactive format design, bringing forward the stories of 40 women scientists. The concept of this ambitious exhibition is innovative in how it brings together traditional museum display with an online exhibition and an AR (augmented reality) app.

This exhibition was developed and created by multidisciplinary artist and design strategist Amanda Phingbodhipakkiya, who is not an employee of the NCMNS which raises the questions: Does it fall to individuals outside the museum field to bring inclusivity to museum spaces? Or are museums responsible for seeking out and highlighting other perspectives in order to create truly inclusive exhibitions? This review will consider these questions and will discuss how the exhibition functions in the space, focusing on its success in emphasizing inclusivity in science as well as in the development of the concept and in the implementation in a natural science museum space.

**About the Author** Helena Arose is a recent graduate of the University of Glasgow MSc in Art History: Collecting and Provenance in an International Context. She holds a BA in Archaeology from Johns Hopkins University, and her research interests include cultural heritage protection, antiquities trafficking, and collections provenance and restitution issues. She is currently a Collections Specialist with the City of Raleigh in North Carolina.

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## Introduction

"We all know Marie Curie." The sentence stands alone, bolded at the top of the main exhibition label for *Beyond Curie*, challenging me, the visitor, to think of another woman scientist on the spot, to name any female engineer, chemist, or mathematician.

When I can't, the text continues, inviting me to explore the stories, achievements, and accomplishments of 40 female scientists across multiple disciplines through an interactive format that features traditional museum display, an online exhibition, and an AR (augmented reality) app, created by artist and design strategist Amanda Phingbodhipakkiya, an independent contractor for the exhibition.<sup>1</sup> The *Beyond Curie* exhibition, currently hosted at



the North Carolina Museum of Natural Sciences (NCNMS) in downtown Raleigh, addresses the topic of inclusivity in STEM (Science, Technology, Engineering, and Mathematics) and the history of science in its content.



Figure 1: *Beyond Curie*, exhibition at the North Carolina Museum of Natural Sciences (NCNMS), 2019. Photo by the author.

Gender inclusivity in STEM remains an issue in 2019, as women continue to be underrepresented in STEM fields in the contemporary United States despite research and policy efforts.<sup>2</sup> Micro-level explanations such as job interest, career expectation, and workplace discrimination, and macro-level themes such as cultural beliefs, societal structures, and gendered employment patterns<sup>3</sup> that affect gender inequality in the STEM field are often “compounded by other forms of minority status, including nonwhite or immigrant identities, and non-hegemonic forms of gender or sexuality.”<sup>4</sup>

Museums such as the Exploratorium in San Francisco have investigated how museum spaces do and can affect female participation in STEM through exhibitions and education, but museums as institutions continue to experience a lack of inclusivity and gender inequality.<sup>5</sup> In their article *Presence and Power: Beyond Feminism in Museums*, Callihan and Feldman note that though white women often make up a majority of museum staff, museums still suffer from discrimination towards women and gender minorities, underrepresentation of women of color, and a lack of intersectionality in both internal structure and external programming and exhibitions.<sup>6</sup> Callihan and Feldman call for a new approach, arguing that “museums and galleries have too often abdicated their responsibility for creating a comprehensive feminist agenda, relying instead on external critics to do this work for them.”<sup>7</sup>

Is this a case of a museum abdicating responsibility and relying on an external party to provide inclusive content for them? Or, is the NCNMS implementing an innovative strategy in hosting an exhibition that highlights a perspective from outside the museum, and by doing so, creating a truly inclusive exhibition? This review of *Beyond Curie* will consider these questions and will discuss how the exhibit functions in the space, focusing on its success in emphasizing inclusivity in STEM as well as in the development of the concept and in the implementation in a natural science museum space.

## The Exhibition

The exhibition *Beyond Curie* sets out to accomplish exactly what its title states: to broaden the conversation about the history of women in science beyond the accomplishments of acclaimed and widely-known scientist Marie Curie, through highlighting 40 significant female scientists across multiple disciplines. The exhibition is comprised of 42 bright and colorful posters that include portraits, relevant graphic designs, and text describing each woman's scientific achievement.

Neuroscientist and multidisciplinary design artist Amanda Phingbodhipakkiya, whose current work “uses design to connect science and society,”<sup>8</sup> organized the exhibition.<sup>9</sup> Phingbodhipakkiya raised \$32,000 on the platform Kickstarter to fund the exhibition, which is displayed online at [www.beyondcurie.com](http://www.beyondcurie.com). The website also offers copies of the posters for sale, as well as free digital downloads of select posters edited for use during the March for Science.<sup>10</sup> The exhibition was displayed at the 3 Second Gallery in Breda, Netherlands, a highway tunnel, from September 5, 2018 – October 22, 2018. It is on display at the NCNMS from March 24, 2018 – December 3, 2020.<sup>11</sup>



Figure 2: Exhibition space at NCNMS, 2019. Photo by the author.

At the NCNMS, the exhibition is situated in the featured exhibition space on the fourth floor of the Nature Exploration Center and is free to all visitors. This is a small space in the museum, tucked behind the café. At the entrance to the exhibition, the introductory text is displayed clearly on a bright blue standalone poster that also features a photograph of Marie Curie surrounded by colorful graphics related to her scientific work. The text explains the exhibition goals and design as well as information about Phingbodhipakkiya, and the example image of Curie gives visitors an introduction to what they will be seeing throughout the exhibition. The

wall behind the introductory poster displays the title exhibition in bold font, more visible and attention-catching to visitors coming from the café, and provides more exhibition text that instructs the visitor on how to download the AR mobile phone app that can be used throughout the gallery space, an aspect of the exhibition unique to the NCNMS iteration of *Beyond Curie*.

The posters spotlighting each female scientist are displayed at different heights across the walls of the gallery space in various sizes and colors. Each poster features the same basic layout of a photograph, historical information, and graphic design elements for each woman. Despite the consistent format, each poster is unique. The colors used throughout are energized and magnetic, drawing the eyes of the visitor to each poster. Some of the graphic design elements, including a butterfly and a double helix, spill off the posters in the form of large wall decals that link the viewer from one poster to another. The text on each poster is succinct and informative, but significant information about each woman is conveyed through the photograph and graphic design chosen for her poster. For example, the right side of the poster on environmental scientist Rachel Carson shows a photograph of her looking through a microscope, the words “DDT” and “Silent Spring” in bold pink font, and an image of insect spray covered with a bright pink “X,” cluing the viewer in to key aspects of her career without having to reference the text to the left side of the poster.<sup>12</sup>



Figure 3: “Rachel Carson” poster, NCNMS, 2019. Photo by the author.

At the NCMNS, the exhibition extended beyond the posters in several ways. First, Phingbodhipakkiya collaborated with the NCMNS Exhibition and Digital Media Team as well as the North Carolina University College of Sciences to create an augmented reality app that can be used with 15 of the displayed posters.<sup>13</sup> When a visitor downloads the app and uses it with the select posters, vivid 3D animations and movement within the posters are revealed. Downloading the app is free and simple, as instructions are present at the entrance to the space. The collaboration also produced 3D models, including one of a Lambda Phage virus,

which is on display in the center of the exhibition space. In addition, the NCMNS exhibition features a touchscreen display that includes information about the female scientists that currently work at the NCMNS, including biographical information, scientific work, and photographs.

## Exhibition Successes

Overall, *Beyond Curie* succeeded in highlighting female scientists creatively and engagingly in the context of the NCNMS. The design elements of the exhibition were dramatic and distinctive without being imposing, and the text on each poster was educational and accessible. As a visitor, I came away with a much greater understanding of the monumental work of female scientists throughout history, as well as the individual work of scientists in my own community at the NCNMS in Raleigh. The addition of female scientists from the science museum into the exhibition felt particularly inclusive and significant, and made this traveling exhibition feel purposeful and curated to the NCNMS space.

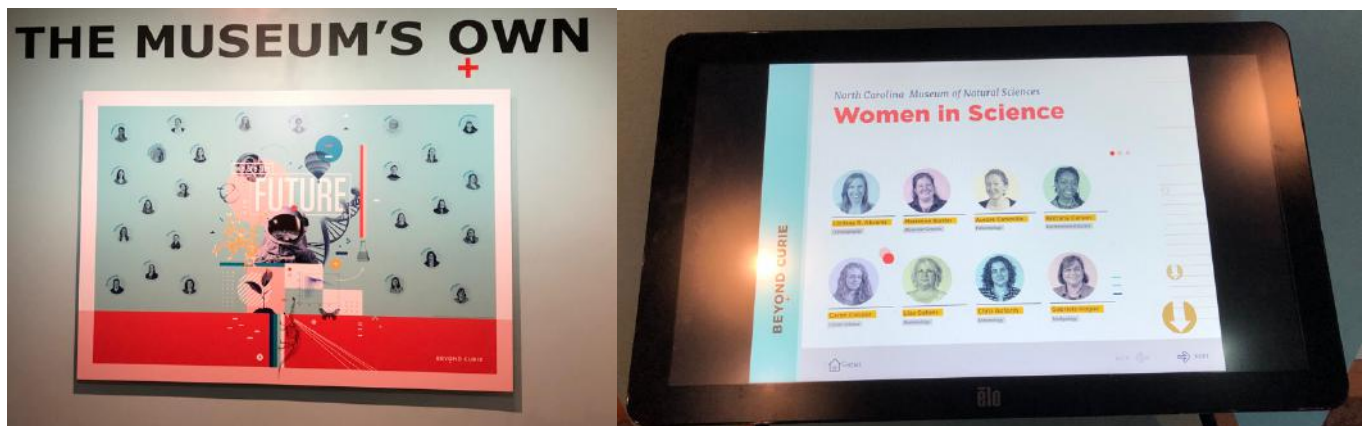


Figure 4 (left): “The Museum’s Own” wall at NCNMS, 2019. Figure 5 (right): Women scientists at the museum, NCNMS, 2019. Photos by the author.

The collaborative elements of the exhibition unique to the installation at the NCNMS including the AR app and the 3-D sculptures were also successful as part of the exhibition. The collaboration between Phingbodhipakkiya, the museum team, and local university students made the exhibition feel more personal, which contributed to the successful delivery of the message.

As museums continue to experiment with mobile technology in exhibition spaces, AR apps on smartphones are an easier option as most visitors bring a phone with them and are already aware of how to complete the functions necessary on their devices to use an AR app.<sup>14</sup> AR apps can add to museum exhibitions in several ways, through layering information, and through engaging and educating visitors.<sup>15</sup> AR apps and their use in museum spaces also carry some risks, such as distracting from the main message of the exhibition, or overshadowing the physical installation.<sup>16</sup> In *Beyond Curie*, the AR features of the particular posters did not feel overwhelming or distracting, but rather added another layer to the engaging graphic designs. Because the graphic design was such an integral part of the exhibition, the AR felt like an added layer of that aspect rather than an unnecessary complication.

The app and 3-D models also helped the exhibition, primarily made up of artistic posters displayed in a gallery installation, function in the context of a science museum. While the exhibition could certainly be displayed in more art-focused spaces, the exhibition content, collaborative nature, and technological aspects allow it to shine in a museum with a science focus. From the success of the overall display, other science museums can take inspiration and be open to welcoming art-based exhibitions into their spaces which can provide effective messaging about topics related to science.

The concept of *Beyond Curie* is exclusively about inclusivity, about providing an engaging platform to tell the stories of women scientists typically excluded from traditional accounts of the history of science. Phingbodhipakkiya delivers on the concept fully and has created an adaptable, exciting, modern exhibition that highlights inclusivity in science.

This success raises the question: does it fall to individual designers and innovators outside of museums to bring inclusive content to museums, or, is it the obligation of museums to welcome inclusive content from outside their walls in order to be truly inclusive?

The success of the exhibition in the space shows it is necessary for both individuals outside the museum and museums themselves to work on creating and featuring inclusive content in exhibitions. Innovators such as Phingbodhipakkiya should feel that museums are spaces where they can bring work, exhibitions, and collaborative ideas. Interdisciplinary partnerships result in successful content as shown by this exhibition and museums provide unique opportunities for creative thinkers to connect with public audiences. In turn, museums should welcome outside content and push beyond their own boundaries to make their spaces serve communities in the best way, to fulfill their missions, and to become truly inclusive institutions.

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Figure 5: Women scientists at the museum, NCNMS, 2019. Photo by the author.

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## Notes

<sup>1</sup> Amanda Phingbodhipakkiya, “About,” *Beyond Curie-a Design Project Celebrating Women in STEM*, Squarespace, 2017.

<sup>2</sup> Sarah Thébaud and Maria Charles, “Segregation, Stereotypes, and Stem,” *Social Sciences*, vol. 7, no. 111 (2018): 1-2. Kathi N Miner, et al. “From ‘Her’ Problem to ‘Our’ Problem: Using an Individual Lens Versus a Social-Structural Lens to Understand Gender Inequity in STEM,” *Industrial and Organizational Psychology*, vol. 11, no. 2 (2018): 267–290.

<sup>3</sup> Thébaud and Charles, 2-6.

<sup>4</sup> Thébaud and Charles, 4.

<sup>5</sup> Toni Dancstep, Née Dancu, and Lisa Sindorf, “Exhibit Designs for Girls Engagement (EDGE),” *Curator: The Museum Journal*, vol. 61, no. 3 (2018): 485–506. Elisabeth Callihan



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and Kaywin Feldman, "Presence and Power: Beyond Feminism in Museums," *Journal of Museum Education*, vol. 43, no. 3 (2018): 179–192.

<sup>6</sup> Callihan and Feldman, 179.

<sup>7</sup> Callihan and Feldman, 180.

<sup>8</sup> Phingbodhipakkiya, "About."

<sup>9</sup> Jon Pishney, "'Beyond Curie' Exhibition Opens at N.C. Museum of Natural Science, March 24," *North Carolina Museum of Natural Sciences*, 8 Mar. 2018.

<sup>10</sup> Phingbodhipakkiya, "About."

<sup>11</sup> Amanda Phingbodhipakkiya, "Exhibits," *Beyond Curie-a Design Project Celebrating Women in STEM*, Squarespace, 2017.

<sup>12</sup> "Silent Spring" is the title of Rachel Carson's book, a book which helped bring about the national ban of pesticide use, including the pesticide DDT. "Rachel Carson," Phingbodhipakkiya, 2017.

<sup>13</sup> Pishney "'Beyond Curie' Exhibition Opens at N.C. Museum of Natural Science, March 24."

<sup>14</sup> Mandy Ding et al, "Augmented Reality in Museums," *Museums & Augmented Reality*, (Carnegie Mellon University: ETC Press, 2017), 1–16.

<sup>15</sup> Ding et al, "Augmented Reality in Museums."

<sup>16</sup> Maria Economou and Meintani, Elpiniki, "Promising beginning? Evaluating museum mobile phone apps," *Rethinking Technology in Museums 2011: Emerging experiences*, University of Limerick, Ireland, 26-27 May 2011.

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