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Breaking Gender Stereotypes in STEM Through Beauty Advertising: A Semiotic Analysis

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ABSTRACT

The OLAY advertisement shows the challenges that women still face in STEM fields, such as discrimination and negative stereotypes about their competencies. This study aims to explore how the advertisement uses communication strategies to support women's empowerment and change how people see gender issues. It also examines how brands can influence shifts in public views on gender roles. This research uses a qualitative content analysis method, with data taken from OLAY India's 2022 YouTube advertisement. The data were collected by observing scenes that show gender inequality, taking screenshots, and analyzing them using Roland Barthes' semiotic theory: denotation, connotation, and myth. Semiotic signs are found in OLAY advertisements, both visually through the scenes in the video and verbally through the narrative and text displayed. This study shows that OLAY advertisements contain visual and verbal signs that represent the challenges faced by women in STEM fields and how they strive to fight gender stereotypes and inequalities. The findings of this study suggest that advertising can be an effective medium for promoting gender equality and changing society's perception of women's traditional roles.

Keyword: Advertisement, Feminism, Roland Barthes, Semiotics, Women in **STEM**

1. Introduction

In recent years, the conversation around gender equality has gained momentum, especially in traditionally male-dominated fields such as Science, Technology, Engineering, and Mathematics (STEM). Despite progress in encouraging female participation in STEM, the fact remains that women still often experience discrimination. Etzkowitz et al., (2000) states that the social structure of science creates conditions that hinder women's full participation in scientific careers. The underrepresentation of women in STEM fields is due to gender-science stereotypes, social identity threats, the perception that STEM careers are incompatible with communal goals, and pressures related to work/life balance (Moss-Racusin et al., 2021). Women also consistently experience discrimination in STEM fields due to persistent gender bias (Robnett, 2016). Gender bias is often internalized in society, resulting in the perception that men are better suited to STEM careers (Cheryan et al., 2009). Another experience that women face is sexual harassment and assault occur during scientific field work (Clancy et al., 2014).

This issue is of concern to feminists who fight for women's rights for the sake of achieving gender justice and equality, especially in the STEM field. One of feminists' main goals is to build a society that provides equal rights and opportunities for all people regardless of gender, including fair access to education, employment and resources. Feminist movements can use various media to spread their messages and fight for women's empowerment (Åkestam et al., 2017). Feminist advertising appears in print, television, and especially new media, leveraging its ability to spark online discussions and attract social media followers for brands, thereby increasing their mindshare (Drake, 2017). The role of advertisement is to increase people's knowledge and change people's attitudes, and it is presumed that the selling message must be unmistakable (Jones, 1990).

One of the advertisements that campaign for gender equality is the OLAY advertisement. OLAY is a well-known brand that specializes in skincare and beauty products. The campaign was uploaded by OLAY India on their official YouTube channel in 2022. In Indian society, the problems faced by women in STEM have become even more difficult because of the complex structure that shapes daily life. Women often face many overlapping social divisions, such as caste, class, religion, gender, rural-urban, and language, which together make their experiences even more unequal (Amirtham S & Kumar, 2023). In addition, research conducted by the Indian National Science Academy in 2004 showed that women are also often prevented from choosing fields of study such as science and technology, especially physics and mathematics due to traditional mindsets that have been deeply rooted and passed down from generation to generation (Amirtham S & Kumar, 2021). Therefore, this advertisement emphasizes the persistence of gender stereotypes in STEM fields and shows how women can challenge and break through these barriers.

To understand how the advertisement plays a role in breaking down gender stereotypes, semiotic analysis will be used to examine the meanings of the message conveyed. According to (Barthes, 1968), semiology encompasses the analysis of all types of sign systems, such as images, gestures, sounds, and physical objects, regardless of their substance or scope. Supporting this, Sobur (2001) defines semiotics as a study that examines various objects, phenomena, and cultures as signs. Barthes' semiotic analysis focuses on three essential elements: denotative meaning, connotative meaning, and myth (Perangin-Angin et al., 2023). Barthes explains the meaning of denotation evolves into connotative meaning, and the third layer of meaning that emerges from the expansion of connotation is myth (Bintariana, 2019). Within Roland Barthes' semiotic theory, denotation represents the initial stage of signification, serving as a system of primary meaning. Connotation forms the second stage that delves into the realms of social contexts, cultural influences, and personal connection. Barthes (1972) also conveys that myth is a communication system for conveying messages, so it is not an object, concept, or idea, but a mode or form of signification.

Various researchers with different focuses have conducted research on the representation of feminism using semiotic theory. Sinuraya et al. (2022) conducted a semiotic analysis of the 2020 *Mulan* film using Barthes' theory, revealing feminist representations through visual signs and meanings tha't reflect female strength and agency. Ginting et al. (2022) analyzed the videogame *The Last of Us Part II* using Barthes'

semiotic theory to explore how visual and verbal signs in the characters Ellie and Abby represent categories of female masculinity based on Judith Halberstam's framework. Similar research was also conducted by Rosyidah & Rifa'i (2022) analyzed *Perempuan Tanah Jahanam* movie using Barthes' semiotic theory and radical-postmodern feminism, revealing how the film portrays women as independent figures who resist oppression and reject traditional gender roles. Furthermore, Sinaga & Perangin-angin (2025) examined the representation of women in the film *Mars* using Barthes' semiotic theory, highlighting a mother's resilience and sacrifice without explicitly framing it within a feminist paradigm. While previous studies mostly used films and other literary works as source data, this study focuses on the OLAY advertisement from YouTube, filling a gap in semiotic research on advertisements. Using Barthes' semiotic theory, this study examines how the ad challenges gender stereotypes and supports women's empowerment in STEM fields.

This study therefore aims to analyze how OLAY India's 2022 advertisement represents women in STEM through semiotic signs at the levels of denotation, connotation, and myth. By making advertisements a platform to voice feminist issues, this study aims to demonstrate that the media can be a powerful tool in promoting women's representation and advocating for their rights, particularly in the STEM field, which remains predominantly male-dominated. To understand the hidden meaning in advertisements, this study uses Roland Barthes' semiotic theory by analyzing meaning at three levels: denotative (direct meaning), connotative (symbolic meaning), and mythological (ideological meaning). This approach helps to see how visual and textual elements in advertisements work together to challenge stereotypes, encourage resilience, and inspire women to overcome obstacles.

2. Method

The research method in this study was conducted using qualitative descriptive method. According to Creswell (2013), the qualitative research method is descriptive when the process, meaning, and comprehension are achieved through words or images. More specifically, this research method used content analysis method. As explained by Krippendorff, 2018), content analysis is a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use.

The data source is taken from OLAY advertisements uploaded by the OLAY India YouTube channel in 2022. Data collection was carried out by watching OLAY advertisement available on YouTube to observe the content and themes presented in the ad carefully. The advertisement was chosen due to its explicit focus on STEM representation, its high visibility in South Asia, and its alignment with global femvertising trends.

During this process, screenshots were taken of specific scenes that explicitly or implicitly displayed elements of gender inequality, such as depictions of stereotypes, biases, or power imbalances between genders. Selected data are then analyzed in depth to reveal the meanings hidden within them, including both literal and symbolic messages, as well as the cultural values or social views they depict or question. The data will be analyzed using Roland Barthes' orders of signification, namely denotation (the literal meaning or primary meaning of a sign), connotation (the meaning associated with the sign), and myth (the ideological narratives formed from connotations that shape societal beliefs) to reveal the message of OLAY's advertisements about gender equality and women's representation in STEM fields.

To ensure reliability, interpretations were cross-checked by two researchers, and disagreements were resolved through discussion. Because the material is publicly available advertising, no ethical concerns arise beyond maintaining accuracy in representation.

3. Result and Discussion

The OLAY advertisement highlights the perception of women in the STEM field and the stereotypes they continue to face. Some scenes show that women often deal with unfair treatment and social barriers in jobs mostly dominated by men. The video not only shows these stereotypes but also presents stories of strength and empowerment, showing how women overcome these challenges. The following is an analysis of 12 scenes from the OLAY advertisement that illustrate how women are represented and what kinds of stereotypes they experience in the STEM field.

3.1 Scene 1



Figure 1. A woman riding a train

Denotation:

The scene shows a woman in traditional clothes carrying a pile of books as she steps onto a train.

Connotation:

The woman carrying a pile of books while riding the train shows that she is starting an important journey in her life. The book represents her love for learning and her desire to grow, while the train symbolizes her movement toward change. Even though she wears traditional clothes, the scene shows that culture does not stop women from pursuing an education.

Myth:

In some cultures, women are expected to stay at home and focus on their families instead of pursuing education or a career. There is a common belief that tradition and progress cannot go together. This scene shows a woman wearing traditional clothes, carrying a book, and riding a train, which is a symbol of moving forward. It shows that women can respect their culture while still learning and improving themselves. The idea that tradition stops women from growing is challenged, showing that women can have both tradition and personal growth.



Figure 2. A man speaking to the woman

A middle-aged man stands in front of a colonial building, wearing traditional yellow and white Indian clothing and a large turban. He appears to be speaking with a serious or negative expression. Behind him, several people are seated in colonial-era clothing. Subtitles show the man saying: "Why would a woman want to subject herself to such a burden?"

Connotation:

The man's remarks convey a condescending view of women who want to pursue education or take on greater responsibilities. His facial expressions and choice of words suggest that he does not believe women are capable or should take on important roles in society. The colonial dress and setting reinforce the impression that these views stem from strong patriarchal structures and past conservative values. The remarks reflect the stereotype that women should avoid "heavy" burdens, such as education or careers, and stick to domestic roles.

Myth:

This scene reflects a long-standing belief that persists in many patriarchal societies that women are considered unworthy or incapable of taking on major responsibilities such as education or leadership. This view reinforces the social myth that women should obey gender constraints and play only domestic roles.



Figure 3. A girl who is going to get married

Denotation:

In this scene, a girl wearing a traditional wedding dress is seen peering through the window of a palanquin. Her expression is serious, and the setting suggests that she is on her way to a wedding. She is looking at a woman carrying a pile of books and a middle-aged man who is talking to her.

Connotation:

This scene shows that the girl feels limited by social expectations. The wedding dress represents the traditional view that a woman's primary role is to marry and often sacrifice her personal dreams. As she observes the woman carrying the book, she begins to realize that there are other life options, namely pursuing

education and becoming independent, rather than simply following the role dictated by tradition. The palanquin that carries her also suggests that she is being led into a life that is dictated by others.

Myth:

This scene reflects the social myth that women should live their lives according to traditional roles, namely getting married and serving as wives. This view is born from a patriarchal culture that places women in the domestic sphere and limits their access to education or freedom to choose their life path. However, when the girl in the palanquin notices another woman carrying a book, it appears that this belief is beginning to shift views on women's roles and freedoms.



Figure 4. A woman replying to the man

Denotation:

The scene depicts a woman in traditional clothes standing at the door of a train, holding a stack of books. She answered the man, "The weight of knowledge is lighter than the burden of ignorance."

Connotation:

In this scene, symbolic meaning emerges from the woman's statement, "The weight of knowledge is lighter than the burden of ignorance." The sentence implies that education is not something that burdens but rather provides space for women to develop themself. The way she says it calmly shows her belief that knowledge can open the way to a more independent life.

Myth:

This scene forms a new myth that knowledge is a tool of liberation for women. In patriarchal societies, women are often assumed not to need higher education, just to follow existing norms. However, this scene challenges this belief by showing women who choose education as a path to freedom of thought and a better future.

3.2 Scene 2



Figure 5. A woman standing with her male colleagues

A woman is standing in a workplace with several male coworkers. She wears formal clothes, and the room has science tools, plants, and sunlight from the windows. It appears to be a location related to science or technology. The men around her seem to ignore her presence.

Connotation:

This scene shows a woman standing alone in a male-dominated workspace such as the STEM field. The men are busy with each other and working, while the woman's presence is ignored. This situation reflects the reality that women are often present in professional spaces but not fully recognized or included. The work environment with scientific equipment reinforces the meaning that even though women are in a space full of knowledge and innovation, their access and recognition are still not easy.

Myth:

The myth reflected in this scene is that society often believes that the fields of science and technology are more suitable for men. This belief makes women who enter the world have to work harder to be accepted and recognized.



Figure 6. A woman working in a laboratory

Denotation:

In this scene, a woman stands in a laboratory or workplace surrounded by male coworkers who ignore her. She looks quiet and gloomy and says in a monologue, "It wasn't always easy to not be bitter..."

Connotation:

The sentence "It wasn't always easy to not be bitter..." shows that the woman feels sad and frustrated, possibly because of unfair treatment at work. She stands alone while the men around her ignore her, which shows that she feels distant and left out. This scene gives a gloomy feeling and shows how hard it is for women to stay strong and be seen in places where they face discrimination.

Myth:

This scene reflects the belief that women must suppress their emotions and work twice as hard to be accepted in the male-dominated professional world. Society often perceives women who show emotion as weak or unprofessional, so they are forced to hide feelings of disappointment or hurt in order to maintain their place in the workplace.



Figure 7. A woman observing through a microscope

The scene shows Dr. Janaki Ammal, a female scientist who was ignored earlier, observing a sample through a microscope in a laboratory. She is wearing a light blue work outfit and looks focused and serious. At the bottom of the screen, a quote appears that follows up on her previous statement, "But then I bioengineered the sweetest sugarcane in the world."

Connotation:

This scene shows a woman who is skilled and highly dedicated in the field of science, especially botany. Her focus and seriousness in research emphasize her intellectual ability and great contribution to the world of science. The sentence in the picture reinforces the meaning that women are capable of creating important innovations, even though they may have previously been considered incapable or looked down upon.

Myth:

This scene builds the belief that women deserve a place in the world of science and are fully capable of creating important discoveries. It challenges the long-standing assumption that scientific success is reserved only for men, and reminds the society that ability and intelligence are not limited by gender.



Figure 8. A woman having conversation with her male colleagues

Denotation:

The scene shows a woman (Dr. Janaki Ammal) standing with three male colleagues in a lab. They are smiling and talking, which makes the place feel friendly and welcoming. The room is bright with sunlight and has many science tools.

Connotation:

This scene shows that the woman is accepted and respected in a place that used to be for men only. Her smile and the way people act around her show that she is now part of the team. It shows a change from being ignored to being valued for what she can do and what she brings to the team.

Myth:

This scene forms the belief that women are capable of breaking through male dominance in the professional world, especially in STEM fields. Despite initially facing discrimination or neglect, recognition of competence is proof that women deserve an equal position. This breaks the old myth that expertise and success in science are only for men.

3.3 Scene 3



Figure 9. A woman as an astronaut

Denotation:

The scene shows a woman in an astronaut suit lying on the ground in a dimly lit setting. The background looks industrial or futuristic, with shadows and bright lights creating a dramatic atmosphere. She monologues, "The horizon was closing in,".

Connotation:

The woman in the astronaut suit, who appears to be floating, represents an extraordinary achievement in science and technology. The astronaut costume shows that she has broken through the boundaries of space that are usually difficult to reach, especially for women. The sentence "The horizon was closing in" gives the impression that she is in a critical or stressful situation but still survives. This scene symbolizes the strength, resilience, and determination of women to keep moving forward, even in extreme conditions and environments that have been dominated by men.

Myth:

Society often assumes that great achievements in science and technology, such as becoming an astronaut, are the domain of men. However, modern beliefs are beginning to emphasize that success depends not on gender but on ability, effort, and equal opportunity for each individual.



Figure 10. A woman reaching out toward a space station window

Denotation:

The scene shows a woman wearing an orange astronaut suit inside a spaceship. She reaches out to the window, and her reflection is seen there. There is also a text that introduces her as Kalpana Chawla, an

astronaut. In addition, a narration subtitle reads, "I reached for the sky and expanded it," emphasizing her ambition.

Connotation:

The astronaut suit signifies that this woman has reached the highest position in the world of science and technology, which men have historically dominated. Her floating movements and serious facial expression show a calm and inner strength as if she has not only succeeded in reaching space but also in overcoming the social barriers that have held women back. The phrase "I reached for the sky and expanded it" has a strong symbolic meaning: she not only aspired high (reach for the sky) but also opened a wider path (expanded it) for other women.

Myth:

The success of women in space has created a new belief that traditional gender roles no longer determine the limits of achievement. The figure of a woman like Kalpana Chawla, who succeeded in becoming an astronaut, reflects the belief that big dreams and extraordinary achievements can be achieved by anyone, including women, even though the world of science and technology is still often considered not their space. This situation confirms that women are not only able to follow in the footsteps of men but also create their own path.



Figure 11. A woman looking at her reflection in a window

Denotation:

The scene shows a woman wearing an astronaut suit inside a spaceship. She smiles as she looks out the window, where her reflection is clearly visible. On the screen is written her name, "Kalpana Chawla, an Astronaut," and there is a monologue text: "Just for you, the future."

Connotation:

Kalpana Chawla's smile and her reflection in the window create a reflective and hopeful atmosphere. The line "Just for you, the future" conveys that her success is not just her own but a symbol of hope for other women in the future. The astronaut suit shows that she has transcended the gender and social boundaries that have limited women. This scene conveys a strong message that women can not only dream big but also achieve it with pride and confidence.

Myth:

There is a common belief in society that prestigious fields such as science and space exploration are male domains. This scene forms a new belief that women are also capable of becoming pioneers in these fields. This situation reflects a shifting perspective that ability, knowledge, and leadership are not determined by gender but rather by determination and equal opportunity.



Figure 12. A screen displaying a virtual mentor named AI-SHU

The scene features AI-SHU, a virtual mentor created by OLAY, appearing on a digital screen. She smiles and says, "Now, the sky belongs to you as much as everyone else," which is aimed directly at women and girls.

Connotation:

AI-SHU's appearance, with a smile and calm voice, conveys a positive spirit and message. The statement "Now, the sky belongs to you as much as everyone else" implies that women now have the same opportunity to dream big and achieve as men do. AI-SHU's figure as a digital representation reflects the advancement of technology that can serve as a means to promote equality and the representation of women in various fields, especially in STEM.

Myth:

Traditionally, fields such as science, technology, and exploration have often been associated with men, and great achievements in these fields have been considered a space not for women. The sentence "Now, the sky belongs to you as much as everyone else" in this scene uses "sky" as a symbol of dreams, ambitions, and achievements. Thus, this scene establishes a new belief that women also deserve to have big dreams and equal opportunities to achieve extraordinary things.

4. Conclusion

The analysis shows that the OLAY advertisement portrays women's roles and challenges in STEM through both visual and verbal signs. These signs reveal ongoing stereotypes and social obstacles, such as assumptions that women are less capable, being overlooked in the workplace, or being expected to follow traditional roles. Across 12 scenes, the ad builds a message of empowerment by showing women overcoming these barriers and succeeding in science and technology. By applying Roland Barthes' semiotic theory, focusing on denotation, connotation, and myth, each scene reveals deeper meanings about how society views women and how these views are evolving. The advertisement not only reveals the stereotypes faced by women but also forms new beliefs that elevate women's abilities, resilience, and rights to have big dreams. Therefore, this study shows that the OLAY advertisement represents both the challenges and empowerment of women in STEM fields, as well as encouraging society to rethink gender roles and inspire women to pursue their dreams with confidence and freedom.

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