

## The Change in the Reflection of Gender Roles from Proto-Science Fiction to Science Fiction with the Rise of Feminism: Margaret Cavendish's *The Blazing World* and Mary Robinette Kowal's *The Calculating Stars*

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### ARTICLE INFO

#### Article history

Received: August 04, 2021

Accepted: October 17, 2021

Published: November 30, 2021

Volume: 10 Issue: 6

Advance access: November 2021

Conflicts of interest: None

Funding: None

### ABSTRACT

Before the rise of feminism, women were oppressed in the field of literature, particularly in science fiction. Despite this prejudice, Margaret Cavendish played a very important role in producing proto-science fiction with her utopian fiction, *A Description of a New World Called the Blazing World*, though gender problem can still be observed in the work. After the rise of feminism, with Mary Robinette Kowal's science fiction, *The Calculating Stars: A Lady Astronaut Novel*, female characters, who are more active in science and technology, are depicted, even if these women still struggle with patriarchal values in a different context. Therefore, the aim of this article is to compare and contrast *The Blazing World* and *The Calculating Stars* by discussing the ways these two female writers try to achieve destroying the gender-based stereotypical roles in the field of science and technology. Consequently, what will be stressed is the change in the portrayal of gender roles within the transition period from proto-science fiction to science fiction, therefore it will be emphasized that proto-science fiction written before the feminist movement cannot overcome gender inequality in science and technology, whereas science fiction produced after feminism can break the gender-based barriers in these fields.

**Key words:** Science Fiction, Gender Roles, Patriarchal Values, Male-Dominated Society, Feminism, Women's Rights

### INTRODUCTION

Considering the position of women in science and technology for many centuries, it has been observed that females were not supposed to be a part of these fields due to their gender and they could not prove their skills in the scientific and technological arena until the rise of feminist movement. Particularly, analyzing their repressed positions before the appearance of feminism, it is not surprising to see that they were not allowed to demonstrate their talents in the outside world, since they were regarded as beings who were created for dealing with household matters and domestic issues without participating in social life and without having the opportunity to dwell on literature or to explore the innovations in science and technology.

With the first wave feminism, which began in the late 19<sup>th</sup> century and continued in the early 20<sup>th</sup> century, women gained the right to receive basic education skills and broaden their minds. Moreover, the second wave feminism, which started in the early 1960s and lasted through the late 1980s, allowed women to get more education, particularly the education of science, leading them to improve themselves in scientific and technological fields. Furthermore, the third wave feminism, which emerged in 1990s and affected the present

day, has contributed to the rights of the marginalized and the minority groups of women in the global context (Roth, 2009: 177-178). The waves of feminism show that women have suffered from gender problem and social, economic, political inequality for many centuries and without these movements they could not have demonstrated their talents and competed with the males.

In this regard, before the feminist movement, in the 17<sup>th</sup> century England, Margaret Cavendish, the Duchess of Newcastle (1623-1673) came to the fore as an unconventional female writer, who had the determination and confidence to produce literary works in the male-dominated 17<sup>th</sup> century English society, which was governed by patriarchal values, preventing women from producing literary works and dealing with scientific and technological fields. Her work, *A Description of a New World Called the Blazing World (The Blazing World)* (1666), can be defined as a significant work of literature of its period in which women were not expected to prove themselves in the literary field, introduce new forms and to criticize the secondary position of females, because in this work one can observe the author's efforts to create a new style, which reflects the characteristics of science fiction and utopia, in which the writer allots a significant position to a

woman, therefore Cavendish is considered to be one of the precursors of science fiction by some critics. Nevertheless although she is accepted as the first English woman writer in the field of utopian genre, according to Trubowitz, "even its special distinction as the first Utopia written by a woman in England has not encouraged historians of Utopian thought to give *Blazing World* sustained, serious scrutiny" (1992: 229), because "*Blazing World* is a Utopia; it is, however, a Utopia that in many ways fails to conform to prevailing assumptions about the form" (1992: 230), the work is not regarded as a good example of utopia due to its weak structure as a science fiction. As the critic underlines, "the fluid, fantastical, and fairy-tale qualities of *Blazing World* have perhaps made the text especially susceptible to scholarly scorn" (1992: 229). Nonetheless, despite the fairy tale characteristics of the work, it should be taken into consideration as a remarkable work, which was produced by a woman writer when women were not allowed to write freely without following the norms of their periods. Cavendish's courage to create a new genre and introduce an innovative technique should be appreciated, since in that period most of the women were supposed to stay inside and not to interfere with the masculinized literary field. However, the reflection of the female in the work should still be questioned.

When the progress in the field of science fiction is taken into consideration, it is clear that until the rise of feminism, the field was generally attributed to the male writers. With the rise of feminism, female writers began to appear in science fiction and wanted to change the stereotypical gender roles by eliminating the patriarchal norms in their works. In this sense, Mary Robinette Kowal (1969-...) appeared in the second half of the 20<sup>th</sup> century when the feminist movement reached its peak, so she tried to break the gender-based taboos in her work, titled *The Calculating Stars: A Lady Astronaut Novel* (2018). Comparing and contrasting the proto-science fiction of Cavendish and Kowal in terms of the discussions related to gender roles and the position of women in the field of science fiction, it is obvious that from the 17<sup>th</sup> century to the 21<sup>st</sup> century, though women's sufferings could still be seen in the patriarchal society, there is a change in the reflection of gender roles in science fiction owing to the changing perspectives towards the capabilities of women in science and technology.

### THE BLAZING WORLD: GENDER INEQUALITY IN PROTO-SCIENCE FICTION

Analyzing the reflection of women in the utopian kingdom of *The Blazing World*, it is seen that even if the work contributes to the rise of science fiction and seems to give women a primary position in a utopian world, in fact again the so-called privileged status of women should be questioned in the work. First of all, as a female author, although Cavendish is said to be the first woman in the utopian genre, the way she creates her utopia is problematic; instead of foregrounding science in her work, she prefers focusing on the supernatural; so one can observe "Cavendish's efforts to write in the imaginative rather than the scientific mode" (Prakas, 2016: 124). In the 17<sup>th</sup> century England, it was hard-

ly possible for a female to write in this field, even producing literature was something uncommon, therefore Cavendish should not be misevaluated as she did not focus so much on science in her work. Since she could not escape from the prejudice of her society, she employed the stereotypical roles attributed to women and gender-based approach in *The Blazing World* in order to be appreciated as a woman writer, as a consequence in her work the utopian world is not based on the scientific innovations leading to advancement, but it dwells on the female character's, the Lady's being transferred to an imaginary world, which is ruled by an Emperor, who marries the Lady and gives her the privilege to govern that utopian society consisting of extraordinary species. Owing to her physical perfection, the Lady is regarded as a heavenly figure, like a Goddess, deserving love and respect and due to her beauty, she receives a marriage proposal from the Emperor, so she is still an object not an individual as recognized in the work as follows:

[...] he conceived her to be some Goddess, and offered to worship her; which she refused, telling him [...], that although she came out of another world, yet was she but a mortal. At which the Emperor rejoicing, made her his Wife, and gave her an absolute power to rule and govern all that World as she pleased. (Cavendish, 1666: 9)

In this utopian world, for the Lady, it is a pleasure to become a part of this society and to receive the respect and love of the Emperor, together with the other beings' appreciation. She is described as an angelic creature like a Goddess as if she were not a mortal individual, and thanks to her beauty, the Emperor makes her his wife and gives her the absolute power to govern that world. In the light of the quotation, what was impossible in the 17<sup>th</sup> century England has become possible and a female attains the right to dominate the world, which was an extreme situation for a woman in that era, as a consequence such a kind of world was like a utopia for the 17<sup>th</sup> century women. Nevertheless, taking a look at the reason why she is bestowed with such a kind of privilege is not related to the lady's intelligence, knowledge or skill, but it is associated with her physical perfection, which gives her the honor of receiving a marriage proposal from an Emperor, who grants her the freedom of ruling that world as an Empress. The portrayal of the Empress is merely based on her beauty; the Empress is portrayed as very beautiful and attractive, which contributes to people's submissiveness to her. Since she is both physically and spiritually perfect, she is defined as a miraculous being with her extraordinary characteristics as seen along these lines:

[.] it caused a great admiration in all that were present, who believed her to be some Celestial Creature, or rather an uncreated Goddess, and they all had a desire to worship her; for surely, said they, no mortal creature can have such a splendid and transcendent beauty. (1666: 85)

The quotation proves that owing to her beauty and her natural power, she is described not as an ordinary individual but as a heavenly figure like a Goddess. One cannot be certain about the reason of her power upon the others: does that power come from her beauty or her skills to govern? Adapting this situation into the 17<sup>th</sup> century England and

analyzing the perspective of the patriarchal society towards women, what could be observed was women's fear of losing their beauty, which meant losing the chance of marriage and respect, so it is evident that beauty was an important element for a woman's gaining admiration and forming her personal identity (Reinke-Williams, 2018: 469-470); instead of paying respect to a woman's identity, people preferred to appreciate her physical appearance in that period, consequently even in this work, which is considered to be a proto-science fiction, stereotypical gender roles determined by men for women, cannot be eliminated. In this sense, Cavendish wanted to be consistent with the conventional gender roles of her period.

What should also be questioned in this utopia is that women need to marry to achieve a higher position and their physical appearance helps them attain such goals. On the other hand, Leslie in "Gender, Genre and the Utopian Body in Margaret Cavendish's *Blazing World*," highlights that there is nothing to be doubtful about the reflection of a strong female figure in the work and she also adds that "Cavendish presents the powerful woman as a natural wonder of the world" (1996: 6) so the work "posits [...] an affirmative feminist utopia" (1996: 10). According to Leslie's perspective, the female figure has the power to get the power of the Emperor and to rule the country, thus the work is seen as an example of feminist utopia in which there is a place for the female to hold the power in her own hands. But when her power is taken into consideration, unlike the critic's remarks, it is clear that as a single woman she cannot stand on her own feet and merely with marriage she becomes stronger. Furthermore, according to Ahearn, what should be taken into consideration in the work should be "the implications of the self/other, man/woman and human/nature binaries that are deeply embedded in Western epistemologies" (2007: 217). Commenting on the ultimate truth determined by the Western epistemology, it is obvious that until the rise of feminist movement and postmodernism, the female was not the self but the 'other,' representing nature. In the work, although the Empress seems to represent the self, which should be at the centre, in fact she cannot be associated with the 'self,' because without the power of the Emperor she cannot be appreciated by the society; similarly the same understanding can also be observed in the 17<sup>th</sup> century England, thus Cavendish, without losing the support of the patriarchal society, wants to give her female character a significant role reflecting the power of a woman, which is determined by a man.

### Insufficient Governing Skills of a Female Ruler

When the strategy employed by the Lady in the beginning while governing that utopian community is taken into account, what comes into view is that she does not want to abuse her power and repress the beings under her control, so she prefers establishing control with peace without any force by her gentle manners as a woman; as a female ruler, without misusing her authority, she aims not to oppress people and cause them to experience contradictions among themselves so in the beginning she is determined not to convert them to her own religion "for she knew well, that belief was a thing not to be forced or pressed upon the people, but to be

instilled into their minds by gentle persuasions" (1666: 38-39). The decision of the Empress is not to force her people to change their religious views, as a result she keeps them in a constant belief without any force or warning. This approach demonstrates that unlike the male rulers, her tactic is not to lead to blood-shedding or any other kind of torture but to encourage these beings for their religious perspectives and their other tasks, with gentle persuasion. As a female sovereign, she does not frighten or threaten her society with strict rules, continuous control or punishment, consequently instead of imposing tyranny and oppression, she prefers ruling her people in a gentle way owing to her sex.

Moreover, her taking the power from a male was also unconventional for the 17<sup>th</sup> century readers, most of whom believed that women did not have the talent to govern a country or to have a significant role in politics, as a consequence Leslie, in «Mind the Map: Fancy, Matter, and World Construction in Margaret Cavendish's *Blazing World*, also argues that: "Cavendish is not entirely reassuring to those who regarded learning in a woman to be a dangerous thing, and her portrayals of women as natural philosophers in *The Blazing World* do not restrict their learning or their efficacy to a separate feminine sphere" (2012: 107). For the readers of the period, a woman was not supposed to have enough knowledge and skill to dominate the male-dominated society and what was worse if they acquired such a comprehension and ability, they could abuse their power leading to destruction. Nevertheless, according to Khanna, "[c]onstrained by ideologies about women's nature and proper function, women writing utopia in the seventeenth and eighteenth centuries negotiated varied paths to greater personal pleasure and social equity" (1996: 2). Of course, these female writers of utopia not only enjoyed themselves by going into the fantastic worlds they created, but they also felt that they achieved social justice by breaking the taboos about women's ability to prove their endowments in the field of utopia, nonetheless it is not certain whether Cavendish really accomplished social integrity for women or not, since she could not be regarded as an independent writer who did not have any hesitations or fears while writing, because she belonged to the 17<sup>th</sup> century male-dominated English society.

In *The Blazing World*, the discussions related to gender issue in the utopian world, which is governed by a woman, continue, when the Empress wants to invite some significant philosophers, like Aristotle, Pythagoras, Plato, Epicurus, for making one of them her scribe; this proves that she needs the opinions and the advice of the males so as to rule her kingdom better. She is not sufficient enough by herself as a female, so she looks for male philosophers, whose guidance will enlighten her. According to The Spirits, "those famous Men were very learned, subtle, and ingenious Writers; but they were so wedded to their own opinions, that they would never have the patience to be Scribes" (1666: 53). Since these creative, intelligent and well-educated philosophers are considered to be superior to the Empress, it is impossible for her to invite one of them as a scribe; even in a utopian world, the female is created as the inferior one and her image is weak. Moreover, when the Empress wants to invite some

remarkable scientists and writers like Galileo, Gassendus, Des Cartes, Helmont, Hobbes, H. More, she is again rejected by The Spirits since “they were fine ingenious Writers, but yet so self-conceited, that they would scorn to be Scribes to a Woman” (1666: 53). Similarly, these well-known and outstanding writers will condemn being the scribe of a woman due to their superior positions in terms of their great knowledge in science. The person who is suitable for being the scribe of the Empress, according to The Spirits, is a “Lady, the Duchess of Newcastle; which although she is not one of the most learned, eloquent, witty and ingenious, yet she is a plain and rational Writer; for the principle of her Writings, is Sense and Reason, and she will without question, be ready to do you all the service she can” (1666: 53). Why the Duchess of Newcastle, in other words, Margaret Cavendish, the writer herself, is regarded as suitable, is related to her being a rational female author.

Furthermore, although the power seems to be in the hands of a woman, she is depicted as an unsuccessful ruler who lacks the skills of leadership, accordingly Hintz suggests that “[i]n her portrayal of the strife caused by the Empress’s intervention, Cavendish may be concluding that female participation in the political life of the interregnum had been destructive, despite being a tempting advance in the status of women” (1996: 27). Analyzing the position of the Empress in the work, in fact it cannot be emphasized that Cavendish did not believe in the power of women, but due to the gender taboos and the stereotypical gender roles attributed to women in her period, it must have been so hard for her to introduce a new genre and produce her work in which a female character has a chance of showing herself in politics. In other words, the aim of Cavendish must be to please the readers in the patriarchal society by implying that even if power is allotted to a woman in politics, she will fail due to her insufficiency in this field because of the isolation of women from the political life, in accordance with the gender-based rules in the patriarchal English society, and it will lead to the destruction of the status quo.

The reason why the Empress fails while governing her kingdom is related to her inexperienced position as a woman in leadership. However, according to Holmesland, even a female character’s having the permission to govern and making the Emperor submissive can be defined as a success as he points out: “she [Cavendish] also reveals an anti-traditionalist aspiration: to emulate men, as a philosopher and writer; to have a society in which women may achieve success and power” (1999: 457), but when the Empress comes to the fore as the active figure in politics she fails to establish order in the beginning, so she needs advice, knowledge and experience; it means that she is not a powerful leader who achieves success and asks for the advice of the Duchess. In return, the advice of the Duchess to the Empress for achieving order and peace is establishing a government, which has “one sovereign, one Religion, one Law, and one Language, so that all the World might be but as one united Family, without divisions; nay, like God, and his Blessed Saints and Angels” (1666: 71). In this regard, even if such a kind of world in which citizens are not allowed to determine their own political viewpoints, religious views, or languages, is reflected

as a utopia, in fact it cannot be regarded as a promising atmosphere, which can give its people the freedom of choice. According to Iyengar, “[e]njoying absolute power over her subjects, scientists, and soldiers, and their absolute devotion, the Empress rules by controlling knowledge and its production (2002: 661), but such a controlling mechanism, giving shape to people’s knowledge and hindering the production of new knowledge, cannot be accepted in a utopian world, which should be associated with freedom, peace and happiness. Nonetheless, ironically, the beings under the control of the Empress, who does not accept freedom of ideas or beliefs, are said to be peaceful. Although she does not want to force her people when she first becomes the governor, then after taking advice she puts restrictive rules into practice.

The contradictory advice is put forward by a female and it is put into practice by another female, therefore the female characters are not depicted as individuals respecting the others’ choices, as a result the portrayal of female characters can be asserted to be problematic. When the Empress relies on the suggestion of the Duchess, she makes her world, “the Absolute Monarchy of all that World” (1666: 84). It is so ironic to see that the Empress has the power to carry out a new strategy and she employs her power to create a monarchy because of the advice coming from the Duchess. Although the author tries to reflect a powerful female figure in her work, the characteristics of the Empress illustrate that she cannot be defined as a democratic ruler, who pays attention to the individualities of her citizens. In this regard, “Cavendish’s distinctive view of irregularity should be traced not to a desire to reject hierarchy but rather to her place in a feminist tradition that sought to redefine authority by associating it with women’s inconstant dispositions” (Fletcher, 2007: 125), thus after the Empress establishes a monarchic system, she becomes the ultimate power, whose authority cannot be questioned, so Cavendish is not against hierarchy but she condemns men’s being at the top of hierarchy, however the character’s supporting hierarchy provided that she will be at the top, cannot be described as a sign of women’s irregular temperaments, but as a sign of their suffocation and metaphorical confinement in the 17<sup>th</sup> century England when they were supposed to be inferior to males. Though there is no direct reference to Cavendish’s period in her work, it can be suggested that the negative attitude towards women in her era can be associated with the discouraging description of the female ruler in her work.

Analyzing the condition of women in the 17<sup>th</sup> century England, it is apparent that women did not have such a kind of power even if they were married; the dominance of the husband over wife in marriage was common (Kahn, 2009: 174), in other words, women were supposed to fulfil their husbands’ wishes and commands, they did not have the right to be dominant even at home, therefore in the 17<sup>th</sup> century, seeing a woman while ruling the government or having a political role in the country, could hardly be imagined. In this perspective, Cavendish appears as if she were appreciating women’s potential to have a part in politics but even though the Empress is admired by people for her skill to rule the country with absolute monarchy, she cannot be accepted as a promising leader figure since she cannot offer the freedom

of choice to her people. In fact, for the 17<sup>th</sup> century readers, such a kind of female role that acquires the power to dominate and govern was so astonishing, because that period in England male-dominated structure was prevailing and the intellectual education was forbidden for women, who struggled to attain scientific knowledge by themselves like Margaret Cavendish (Watts, 2005: 85-87). Therefore, even such a power attributed to a female character, was appreciated by the 17<sup>th</sup> century English readers, who did not question the ills in the monarchic system, because it was the first time they observed a woman's having the opportunity to be superior to a man, so they were pleased with the changing role of women and did not complain about the wrongs of monarchy. Although science fiction is a genre in which the author is free to create anything extraordinary or fantastic, Cavendish hesitated to portray a stronger woman who does not need the support of her husband to become a governor and a more democratic female ruler who does not support monarchy. In terms of strength of mind, self-assurance and courage, she needs the advice of the others. Therefore, the author, herself, did not have enough power to reflect a female who can stand on her own feet, exercise democratic rules and whose beauty is not the topic of discussion. For this reason, she put emphasis not on her mental power or effective leadership but on her need of support and guidance to govern her society.

### **THE CALCULATING STARS: THE ATTEMPTS TO OVERCOME GENDER INEQUALITY IN SCIENCE FICTION**

The portrayal of women in science fiction before the second half of the 20<sup>th</sup> century was not so much promising, because the literary works produced in this field before the rise of postmodernism, were generally dominated by the male characters, who contribute to the progress in the field of science and technology; there was no place for female characters as main characters, since women were excluded from the fields of science and technology due to their so-called pure, innocent, vulnerable and submissive nature, according to the male-dominated society. Thus, Bartter states: "[...] for some reason, technology, unlike science, has remained virtually a male preserve" (1992: 408). Although the critic indicates that it is not science but it is technology from which women have been excluded for many years, science and technology, actually, cannot be separated from each other; as a result when a woman is forbidden to prove herself in technology then it means she cannot contribute to science either. Since Kowal can be regarded as an author, who paves the way for the females in the field of science fiction and also as "[s]he advocates for feminism" ("The Calculating Stars", 2018: 1), it can be claimed that she has considerably achieved her goal in the novel, because the protagonist, despite her struggles with the male characters, accomplishes becoming an astronaut in the masculinized field of astronauts.

With the rise of postmodernism, particularly with the emergence of the second wave feminism, such binary oppositions about the gender roles and the stereotypical roles attributed to women and men, were destroyed to some

extent and some taboos about the capabilities of women were eliminated (Andréolle, 2011: xi); but the ultimate truth of the male-dominated society about the superiority of man and inferiority of woman cannot completely be shattered, therefore in science fiction one can witness the efforts of female writers like Kowal, to create the new promising female, who can compete with the power of patriarchal society, with her efforts to destroy the conventional female image in science and technology.

Taking a look at Kowal's *The Calculating Stars*, the 2019 Hugo and Nebula Awards Winner for best novel (Strahan, 2020: xxxi), in the light of the characteristics of science fiction, it can be stated that the setting of the novel, the second half of the 20<sup>th</sup> century America, still includes the traces of the patriarchal values in terms of women's position in science and technology. It is obvious that the aim of the novelist is to eliminate the gender inequality in science and technology when the female protagonist's achievement to become an astronaut is considered, but her sufferings through her metaphorical journey explain the difficulty for women to achieve equality in science and technology even after the feminist movement. However, a woman's yearning for being an astronaut and the success she attains at the end of the novel, show that feminist movement has contributed to the progress in terms of gender equality. Undeniably, a woman's becoming an astronaut could not even be imagined before the rise of feminism, but the agonies of a female scientist to attain that position demonstrate that women have struggled so much for their goals in these fields. While discussing the restrictions the female astronauts are faced with in the utopian world of the novel, one can compare and contrast the boundaries experienced by women in the 17<sup>th</sup> century proto-science fiction, *The Blazing World*, with this 21<sup>st</sup> century science fiction, *The Calculating Stars*, which depicts the condition in the 20<sup>th</sup> century America.

The reflection of the protagonist in *The Calculating Stars*, in this perspective, is encouraging owing to the primary position that Dr. Elma York attains as an astronaut at the end of the work. Nonetheless, throughout the work, she struggles with the understanding of the patriarchal society, but thanks to her educational background, she has enough knowledge, skills and experience to prove herself in the field of science and technology. In this regard, science fiction also supports the necessity of gender equality in the educational areas related to science and technology. Particularly, "[i]n an era when increasing opportunities for women in education and the professions competed with patriarchal assumptions about the proper sphere of women's work and the masculinization of science, SF provided women with opportunities to engage science in both critical and creative ways" (Yaszek, 2016: xxi). Obviously, especially in the 20<sup>th</sup> and 21<sup>st</sup> century, women have played an important role in scientific and technological studies while still struggling with the patriarchal understanding. In *The Calculating Stars*, when the setting is taken into consideration, it is the second half of the 20<sup>th</sup> century American society, which gives women scientific education in spite of the prejudice in that society towards women who want to be astronauts.

### THE STRUGGLES OF A FEMALE MATHEMATICIAN AND PILOT WITH THE PATRIARCHAL UNDERSTANDING

In the novel, when a meteorite falls to the earth and destroys the east coast of the United States, human beings begin to start a mission to colonize space, at this stage Dr. Elma York appears as a mathematician and a pilot, who is supposed to help the male scientists and astronauts for the colonization of space. Her challenging nature against the privilege allotted to men for the journey to the moon, leads to the encouragement of other female pilots and their collaboration with one another. When the preparations are carried out about the program, what surprises Dr. Elma York and the other female pilots is the committee's decision not to send women to space as she points out: "The head of the IAC, Director Norman Clemons - a man I had worked with for years, and someone I had respected - had not selected any women" (Kowal, 2018, 110-11). The typical understanding of men towards women is obvious while the members of the space program are selected; instead of women, men are preferred due to the prejudice towards females. Therefore, misogyny is one of the issues reflected in the novel (Jackson, 2018: 54). In fact, both the misogynistic understanding of the male characters and the pressure of the unquestioned gender-based norms, stress that women are too fragile to go to space, so instead of contributing to science they may get hurt and their lives may be under threat. Considering the perspective of the male characters in the novel, they believe that women are created as sentimental and vulnerable beings, who need to be protected, as a consequence they may fail alone in space without the support of men.

Taking the reactions of the female scientists into consideration in the novel about the selection list including merely men, it is no doubt that female characters, despite their willingness, feel disillusioned; encouraged by Dr. Elma York, her friend Betty also gets angry with the decision for the selection list as observed: "All right. Fight Club rules are in effect. Am I right that they want turn the moon into a military base?" (2018: 115). Because of the biased views of the male pilots towards the female ones, they do not want to give a chance to women in the space program since they believe that "women are too emotional to go into space." (2018: 115). According to the patriarchal understanding, women represent emotions and senselessness, while men represent reason and intelligence, consequently the space journey should include men, but Dr. Elma York as a female pilot is determined to break the social norms determined by men in the field of science and technology, therefore she indicates: "We needed to establish colonies on the moon and the other planets while we had the resources to spare. If their excuse was that establishing a colony wasn't safe for women, then we'd need to prove that women were just as capable as men" (2018: 117). Dr. Elma York, as a talented scientist and pilot, feels that she can encourage other female pilots to struggle with the prejudice of the male-dominated society and can compete with the superiority of men in the field of scientific and technological developments including space explorations.

The protagonist's aim throughout the work is to prove that women are as skillful, intelligent, learned and qualified as men and they can also go to space and establish colonies on the moon. The reason why the male scientists think that women are not suitable for that space journey is related to females' so-called fragile physical characteristics and emotional natures, therefore they are not bodily and psychologically powerful enough to cope with the life in space and therefore they cannot overcome their anxiety and fears and finally they may fail. Analyzing Kowal's ideas about the struggles of women to become astronauts, in an interview she states: "The irony is that the actual science parts of that study demonstrated that, in many ways, women are actually better suited than men for space travel. They are smaller and lighter, on average, and consume fewer resources" (Kowal, 2019: 2). In other words, she tries to shatter the belief that women are not strong enough to participate in the space program in terms of their physical and emotional characteristics; indeed as men are heavier and consume more resources, according to Kowal, women can handle the situation better than men during the space journey. Moreover, Kowal also sheds light on the support of NASA to enable women to overcome gender inequality in space studies by emphasizing that there are more female scientists and astronauts working in NASA than before even if the number of woman and man is still not equal; "[c]urrently they have 38 active astronauts and 12 of them are women" (Kowal, 2019: 3). In this respect, Kowal does not think that gender problem in the field of science and technology is completely eliminated, so in her work she still reflects the prejudgment of men towards women in the space program. Referring to this distinction between women and men, she wants to destroy the binary oppositions about gender.

In the novel, the Director of the International Aerospace Coalition, Norman Clemons, also asserts the necessity to prefer men in the colonization of the moon by stressing "it was for safety considerations. And it was much the same as when Columbus discovered the New World. Or Shackleton's trip to the North Pole. No one had been concerned that there were no women on those expeditions" (2018: 118). The character's insistence on the male list is based on his belief that for many centuries nobody has questioned the absence of women in expeditions and discoveries and it was the male who could achieve such tasks and play an important part in international issues. According to his perspective, if a female scientist or explorer has the opportunity to fulfil such a kind of serious mission, safety and peace will be under threat. Even if women are allowed to take part in such missions, if they encounter anything negative and when their lives are under risk, it will result in public's negative reactions. According to the public opinion in the novel, "[if] a man dies—well, that's tragic, but people will accept that. A woman? No. The program would be shut down in its entirety" (2018: 121). When the attitude of the public towards women is taken into account, it is apparent that gender discrimination is exercised by men, who believe that the death of a man can be accepted but the death of a woman cannot even be imagined for the sake of space exploration. In accordance with the public opinion, a female astronaut's death is regard-

ed as a tragedy but the same situation is not valid for a male astronaut.

Despite the gender-based stereotypical roles in the novel, Kowal gives power to her female pilots along these lines: “we also had commitments from Anne Spencer Lindbergh [...]; Sabiha Gökçen, a Turkish fighter pilot in the Second World War; and Princess Shakhovskaya, who had fought in the First World War before having to flee Russia” (2018: 145). The references from real life to female aviators having flight experiences from different nationalities, such as America, Turkey, Russia, show that women from different parts of the world can prove their skills as aviators and stand on their own feet without the support of men. These successful females destroy the gender-based taboos and contribute to the creation of a stronger female image. In the novel, what Dr. Elma York tries to achieve is to get rid of being called Mrs York, the wife of Mr York; instead she should be introduced as Dr. Elma York, which attests her education, success, talent and intelligence. Mr Wizard, an unconventional male character who respects the protagonist unlike the other male characters, asks people to call Elma as Dr. York due to her doctorates in physics and mathematics enabling her to have a position in NACA (The National Advisory Committee for Aeronautics), then she realizes that so far she has been accepted as the wife of Nathaniel York, a well-known, successful engineer working for NACA (166). In spite of her gorgeous career as a member of Women Airforce Service Pilots (WASP), she has a secondary position due to her sex and the primary position is attributed to her husband. It is thought that without the support of her husband, she does not have any significant position in NACA. Even if she is excluded from the space program as an active member, when the press is interested in the idea of a ‘Lady Astronaut,’ she begins to consider the pros and cons of the attempt to be a female astronaut and decides to fight for it:

Those little girls thought I could do anything. They thought that women could go to the moon. And because of that, they thought that they could go to the moon, too. They were why I needed to continue, because when I was their age, I needed someone like me. A woman like me. “I’m going to say yes.” (2018: 215)

Being a role model for the other females and children and encouraging them not to give up but to struggle for their dreams, Dr. Elma York is determined to become a female astronaut in order not to frustrate these excited females when they gain the courage to follow her steps and to have a yearning to become astronauts. When she feels disillusioned due to the preconception against herself, she remembers those who will get motivation from her existence in the space program. For the sake of those children regarding her as a powerful female pilot and astronaut, she takes the responsibility to bear the burden on her shoulders and struggle with those who do not believe that she can achieve her goal. Nevertheless, she questions the interest of the public and the media in her situation and utters that “[i]f I were an actual astronaut, I wouldn’t mind it so much. I think. It’s just that people called me “Lady Astronaut” because I wasn’t allowed to be one. That was the thing that rubbed. The reason I was known at all was because I was agitating for a role I couldn’t have”

(2018: 238). She becomes aware of that the public pays attention to the role that she is yearning for, but it does not mean that people accept her as an astronaut; that title “Lady Astronaut” does not express her superior position, because that title is attributed to her so as to attract the attention of society and get benefit from that interest. On the one hand, the male characters put barriers in front of her, on the other hand the novelist and readers wish to see the elimination of these barriers; according to Hyzy, “[r]eaders will root for Elma as she breaks barriers and calculates lifesaving equations, all while dealing with sometimes crippling anxiety” (2018: 30-31). Considering the critic’s view, one can assert that especially the female readers appreciate a female scientist’s efforts not only to become an astronaut but also to struggle with the misevaluation of the male-dominated society, which makes her suffer from anxiety problems.

As a pilot who is preparing for being an astronaut, when she hears the question by a reporter, “How does it feel to be an Astronette?” (2018: 332), Dr. Elma York is not satisfied with being called as an “Astronette,” because once more her gender is the topic of discussion and her femininity is at the center of the issue, as a result she feels that she is not still considered to be a real candidate of an astronaut. Furthermore, she gets annoyed as well when she hears the question, “What does your husband think about this?” (2018: 332), since again not the space journey but her gender attracts the attention of the reporters; such a kind of question implies that she needs the permission of her husband for that mission otherwise she will not be able to go to space without his consent. In the male-dominated society, it is believed that the female has a secondary position while the male holds the primary position, therefore in marriage institution without the approval of the husband, the wife cannot do anything even if she has the power to achieve it on her own.

Moreover, the traditional understanding about the gender roles can also be observed when Dr. Elma York is faced with this question: “Why do you all want to beat a man to the moon?” (2018: 344), but her answer to the question shows her desire to get rid of the stereotypical roles in the space program: “I don’t want to beat a man to the moon. I want to go to the moon for the same reason men want to go. Women can do a useful job in space. We aren’t in a contest to beat men in anything” (2018: 344). On the one hand, the male-dominated society assumes that the aim of women is to beat men, on the other hand the ambition of women is to prove their capabilities by highlighting that they are as strong as men and can contribute to scientific and technological developments. In addition, it is no doubt that the binary oppositions about gender roles can still be recognized when the reporter asks such a gender-based question: “What are you going to cook in space?” (2018: 344) and her reply is ironic: “Science” [...]. Followed by a nice healthy dinner of kerosene and liquid oxygen” (2018: 344). About the conventional role attributed to Dr. Elma York, it can be stated that “her real struggle is for acceptance in a world where woman = homemaker” (Shippey, 2018: 1-2). In fact, the reporter cannot be regarded as a person who does not accept Dr. York as an astronaut and who sees her merely as a homemaker, but it is obvious that he wonders how she is able to reconcile

her household tasks with her astronaut title. The field which is allotted to females has been the domestic one like cooking for centuries before the rise of feminism, so the reporter's question reflects the difficulty of people, even after feminism, to imagine the success that can be attained by a female both at home and at work in the 20<sup>th</sup> century America. The answer of Dr. Elma York portrays her ambition to eliminate the typical gender roles by proving that she can go to space thanks to her knowledge and accomplishments and can contribute to science as men do.

Besides, in the novel lack of belief in the capabilities of women can also be observed along this expression: "Elma ... did Dr. York help you with this?" and she says, "No. He didn't" (2018: 348). In other words, the male-dominated society does not want to accept that she has achieved, by herself, being selected for the space program owing to her great career in the field of mathematics, physics and aviation, so she has to make them believe that her husband, whose achievements in NACA are more praised and foregrounded, has not taken any part in her success. The reason why it is hard for the public to believe that she has accomplished such a kind of task alone without the support of her husband, is related to the traditional gender roles, according to which women cannot succeed in the field of science and technology, as a consequence the novelist aims at demonstrating that the gender taboos should be destroyed and new alternatives should be offered in an environment where people cannot easily adapt themselves into the change of perspective about the gender roles. As Attebery indicates, "SF encourages us to play with those words, [...] generally treating gender as if it were simply and completely a code. By doing so, it opens up new ways of talking gender: new things to say and new ways to say them" (2002: 16), so it can be asserted that despite the resistance of the patriarchal society towards the change in its gender codes, SF achieves breaking the patriarchal rules and challenging the resistance of the male-dominated society about the gender roles.

The protagonist has enough power and determination to overwhelm the prejudice of her society and she never gives up. Due to her gender, rather than stressing her intelligence in science and technology, the press and the directors of the program are concerned with drawing the attention of the public by foregrounding the female body and beauty, therefore although the protagonist is a pilot and a candidate of astronaut, she is asked to wear a bikini for the training of an underwater escape (2018: 354-55). The aim is to make the public concentrate on Dr. Elma York's femininity instead of her position as an astronaut. When the physical characteristics of women are brought into the forefront, the citizens of the patriarchal society are more interested in the issue, so the goal of the directors and the press is to promote female femininity without appreciating female intelligence. In this regard, after seeing that she is determined to take the responsibility of this space mission without her husband's support, the Base Commander, Colonel Parker thinks that if she is accepted, she should be supported by uttering these words: "York's got the expertise to talk about the computing side, and I trust her as a pilot, but space is a different thing and she hasn't been up there. Besides, I'd like to feel like I'm of

some use." (2018: 400-01). Mr Parker cannot broaden his mind and enlarge his vision about the potential in women in the field of space program whereas the head of the IAC, Director Clemons changes his perspective towards women after witnessing the attempts and the struggles of Dr. Elma York to achieve her target, as a result he utters his changing view towards gender roles: "You weren't there, Parker. I've got no questions about York's fitness, and that's not the topic of discussion" (2018: 403). In this regard, it is clear that Clemons accepts Dr. Elma York's success, skill, intelligence and fitness in space training and this approval makes Dr. York feel stronger and more self-confident as she explains her excitement and joy as follows: "By all that was holy ... I was going to the moon. Parker had tried to ground me and failed. I was going to the goddamned moon" (2018: 403).

At the end of the work, she achieves her ambition and becomes an astronaut in the male-dominated space program, moreover not only she herself but also the other female pilots are accepted for the space journey as she celebrates this triumph along this expression: "And that—that was when I knew that we really had something. We were Lady Astronauts. All of us. And, goddamn it, we were all going to go into space" (2018: 409). The existence of women in the space journey at the end of the novel proves that the protagonist does her best to shatter the conventional understanding about the gender roles in science and technology and to make men recognize that women are as capable as men in these fields, particularly when Lieutenant Colonel Jean-Paul Lebourgeois announces that Dr. Elma York has been officially accepted as an astronaut by stating "Congratulations. You are officially an astronaut" (2018: 421), the cliché about the insufficiency of women in science and technology is destroyed and women are acknowledged as scientists, who can change the world through their contributions to science by going to space.

## CONCLUSION

In the light of the discussions stressed throughout this article, the attempts to eliminate gender-based clichés can be recognized in the field of science fiction from Cavendish to Kowal. Particularly, in Kowal's *The Calculating Stars*, despite the gender problem in science and technology, the female protagonist achieves overcoming gender inequality, proving her independence and then becomes an astronaut. In contrast, in Cavendish's *The Blazing World*, even in the utopian society, one cannot identify an independent female who achieves equality; the Empress takes her power from the authority of the Emperor, without him she cannot come to the fore such a miraculous being who has extraordinary gifts. Furthermore, only in a utopian world, she turns out to be a divine power, not in her own real world. Also, she is described as an extraordinary creature acquiring magical power that one cannot observe in real life, therefore in the 17<sup>th</sup> century English proto-science fiction, the female comes into view not as an independent individual or free subject but as a dependent weird object. When the condition of woman in the 17<sup>th</sup> century England is taken into account, it can be acknowledged that the patriarchal values in that period did

not allow women to get the power in their own hands, to be regarded as self-determining individuals and to be respected without a husband. The Empress, in this sense, is appreciated owing to her husband's power and although she seems to be superior to the other creatures in that utopian community, in fact she cannot be defined as an individual who can contribute to science or improvement; in this utopian world she can only enjoy her title as an Empress and before her marriage in her own world she is not portrayed as a powerful woman. Though the work should be evaluated with appreciation as a first example of proto-science fiction written by a woman in the 17<sup>th</sup> century patriarchal English society, one can still find the hesitation of Cavendish to create a completely independent and strong female without the support of a male even in the fantastic world that she herself created, as a consequence under the dominance of the masculinized English society in her era, what she reflected was an apparently strong female acquiring her power due to her beauty and incredible magical skills, trying to govern her husband's society but who still needs knowledge, experience and guidance to rule that world.

On the other hand, *The Calculating Stars*, which appears as an example of science fiction written in the 21<sup>st</sup> century, demonstrates women's yearning for gaining their rights to show themselves in the field of science and technology. Kowal chooses her setting as the second half of the 20<sup>th</sup> century American society, which is under the danger of a meteor threatening the future of the world. The mission is to save the world, but the traditional understanding about gender roles comes to the forefront: according to the patriarchal society, it is man who is expected to have the power to save the world due to his gender, a woman cannot even be imagined to become a savior despite her education, experience and skills in the necessary fields. In spite of the fact that in the second half of the 20<sup>th</sup> century, owing to the improvements in feminist movement, the stereotypical roles of woman and man were supposed to be destroyed completely and many efforts were put into practice to achieve gender-based equality not only in social life but also in the field of science and technology, women still struggled with the privileged place of men in these fields. In the novel, although Dr. Elma York is a mathematician and a pilot, she tries to compete with the power of men in the space program for the sake of becoming an astronaut. However, at the end of the work she is accepted as an astronaut. It can be suggested that the novelist has contributed to the efforts of feminists to eliminate gender discrimination in science and technology. Thus, in *The Calculating Stars*, though the male characters are not concerned with saving their world but with excluding women from that mission, isolating them from the list of space journey, with the great efforts of the protagonist and her female friends, they achieve becoming astronauts in a masculinized space program, therefore in the 21<sup>st</sup> century science fiction, the rise of women, who can prove their skills in science and technology, appears.

To conclude, from Cavendish to Kowal, in other words, from proto-science fiction to science-fiction, there is considerable progress in the field of gender issue. Cavendish and

Kowal portray the struggles of women in the male-dominated world and mirror their achievements in spite of the obstacles that they face in the patriarchal settings. Both of them should be appreciated due to their effective reflections of their female protagonists' journey while trying to acquire a powerful status in spite of men's superior positions. Nevertheless, on the one hand, Cavendish's Empress gains her respectable rank and becomes a governor in the very beginning of the work owing to her marriage as a result of her perfect beauty, but she cannot be defined as an effective ruler or scientist, on the other hand Kowal's Dr. Elma York does not get the approval of the patriarchal society due to her marriage or physical appearance, but she achieves her privileged position, at the end of the work, owing to her intelligence, education and mental skills, so she claws her way to the top alone and encourages the other female pilots not to give up but to struggle to become astronauts. Therefore, in the 17<sup>th</sup> century English proto-science fiction, the gender problem cannot be overcome and what women can accomplish is limited, but in the 21<sup>st</sup> century American science fiction despite the gender problem in science and technology, gender equality and empowerment of women in these fields can be observed, so what females can attain does not have any limits owing to the positive outcome of feminism.

## REFERENCES

- Ahearn, Kathleen A. (2007). "I'm not a feminist but...": Liberatory approaches to teaching Margaret Cavendish's *The Blazing World*." *Women's Writing* 14 (2), 215-231. <https://doi.org/10.1080/09699080701314659>
- Andréolle, Donna Spalding, and Veronique Molinari, eds. (2011). *Women and science, 17<sup>th</sup> century to present: Pioneers, activists and protagonists*. Newcastle upon Tyne: Cambridge Scholars Publishing.
- Attebery, Brian. (2002). *Decoding gender in science fiction*. Abingdon: Psychology Press.
- Bartter, Martha A. (1992). "Science, science fiction and women: A language of (tacit) exclusion." *ETC: A Review of General Semantics* 49 (4), 407-419.
- Cavendish, Margaret. (2019). *The Description of a New World, Called The Blazing World*. 1666. Global Grey ebooks. [globalgreyebooks.com](http://globalgreyebooks.com)
- Fletcher, Angus. (2007). "The irregular aesthetic of "The Blazing-World"." *Studies in English Literature, 1500-1900*, 123-141. <https://muse.jhu.edu/article/210321>
- Hintz, Carrie. (1996). "'But one opinion': Fear of dissent in Cavendish's new *Blazing World*." *Utopian Studies* 7 (1), 25-37. <https://www.jstor.org/stable/20719471>
- Holmesland, Oddvar. (1999). "Margaret Cavendish's "The Blazing World": Natural art and the body politic." *Studies in Philology* 96 (4), 457-479.
- Hyzy, Biz. (2018). Review of *The Calculating Stars*. *Booklistonline*. [www.booklistreader.com](http://www.booklistreader.com)
- Iyengar, Sujata. (2002). "Royalist, romancist, racialist: Rank, gender, and race in the science and fiction of Margaret Cavendish." *ELH* 69 (3), 649-672. <https://www.jstor.org/stable/30032037>

- Jackson, Jennifer. (2018). Review of *The Calculating Stars: A Lady Astronaut Novel*. *Publishers Weekly*. <https://www.publishersweekly.com/978-0-7653-7838-5>
- Kahn, Victoria. (2009). *Wayward contracts: The crisis of political obligation in England, 1640-1674*. New Jersey: Princeton University Press.
- Khanna, Lee Cullen. (1996). "Utopian texts by early modern women: Introduction." *Utopian Studies* 7 (1), 1-5. <https://www.jstor.org/stable/20719469>
- Kowal, Mary Robinette. (2018). *The Calculating Stars: A Lady Astronaut Novel*. New York: Tor Books.
- . (2019). Interview by Jessica Bennett. "The women who made spacewalk history." *New York Times*, Late Edition (East Coast); New York, N.Y. <https://www.nytimes.com/2019/10/18/science/all-female-spacewalk-nasa.html>
- Leslie, Marina. (1996). "Gender, genre and the utopian body in Margaret Cavendish's *Blazing World*." *Utopian Studies* 7 (1), 6-24 <https://www.jstor.org/stable/20719470>
- . (2012). "Mind the map: Fancy, matter, and world construction in Margaret Cavendish's "Blazing World"." *Renaissance and Reformation/Renaissance et Réforme*, 85-112. <https://www.jstor.org/stable/43446299>
- Prakas, Tessie. (2016). "'A world of her own invention': The realm of fancy in Margaret Cavendish's *The Description of a New World, Called the Blazing World*." *Journal for Early Modern Cultural Studies* 16 (1), 123-145. <https://www.jstor.org/stable/10.2307/jearlm-odcultstud.16.1.123>
- Reinke-Williams, Tim. (2018). "Physical attractiveness and the female life-cycle in seventeenth-century England." *Cultural and Social History*. 15 (4), 469-485.
- Roth, Wolff-Michael, ed. (2009). *Re/structuring science education: Reuniting sociological and psychological perspectives*. Vol. 2. Springer Science & Business Media: London, New York.
- Shippey, Tom. (2018). "Review --- Books -- Science Fiction: When history abruptly takes a detour." *Wall Street Journal, ProQuest*. <https://search.proquest.com/docview/2069312730?accountid=16382>
- Strahan, Jonathan. (2020). "Introduction." *The Year's Best Science Fiction Volume 1: The Saga Anthology of Science Fiction 2020*, edited by Jonathan Strahan. New York: Saga Press.
- "The Calculating Stars." (2018). *Kirkus Reviews*, 86 (10), 1. *EBSCOhost*. <http://search.ebscohost.com/login.aspx?direct=true&db=f6h&AN=129583248&lang=tr&site=e-host-live>
- Trubowitz, Rachel. (1992). "The reenchantment of Utopia and the female monarchical self: Margaret Cavendish's *Blazing World*." *Tulsa Studies in Women's Literature* 11 (2), 229-245 <https://www.jstor.org/stable/464299>
- Watts, Ruth. (2005). "Gender, science and modernity in seventeenth-century England." *Paedagogica Historica* 41 (1-2), 79-93.
- Yaszek, Lisa, and Patrick B. Sharp, eds. (2016). *Sisters of tomorrow: The first women of science fiction*. Middletown: Wesleyan University Press.