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Comparative Multimodal Discourse Analysis of Functional Roles of Technology in Barbie 2023

Given Contexts of Feminism and Hegemonic Masculinity

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ABSTRACT

This paper conducts a comparative multimodal discourse analysis of technology in Barbie (2023) by examining its roles in the feminist Barbieland and patriarchal Kenland to uncover the functional relationship between technology and gender ideologies. Guided by Critical Discourse Analysis (CDA) and Feminist CDA, the study employs Iedema's (2001) film genre analysis for layering technological representations across scenes for data collection and Van Leeuwen's (2008) Toy Social Actor Network for data analysis to assess how technologies signify gendered power structures. Through visual discourse coding, the research reveals three key findings. First, Barbieland's technologies—used for careers, daily routines, and humanitarian purposes—promote inclusivity, collaboration, and feminist empowerment, reinforcing social equality. In contrast, Kenland's technologies serve masculine exclusivity, domination, and competition, perpetuating hegemonic patriarchy. Second, while Barbies employ technology carefully for communal benefit, Kens weaponize it violently to assert sovereignty, masking underlying male insecurity. This distinction reflects how technology mediates gendered power: feminist collectivity versus patriarchal aggression. Third, aesthetic differences reinforce ideological divides. Barbieland's pink, plastic, and smooth-textured technologies signify fantasy and benevolence, aligning with matriarchal ideals, whereas Kenland's darker, concrete, and functional designs embody realism, rejecting Barbie's utopianism. Additionally, naming practices reveal deeper ideological contrasts. Barbies' generically labeled "dream houses" and vehicles signify inclusivity, while Kens' specifically named "Mojo Dojo Casa House" and race car enforce exclusion. The renaming of vehicles to "K.B" signals feminist reconfiguration toward coexistence rather than reversed oppression. The study concludes that technology in Barbie operates as a semiotic tool to both reinforce and challenge gendered hierarchies.

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1. Introduction

Barbie, a movie released in July 2023 which has received international acclaim, features Margot Robbie whose character, Stereotypical Barbie, is the main focus of the movie in celebration of feminism by having an established Barbieland where feminism thrives as a solid foundation for matriarchy, by overcoming patriarchy incited by Kens as male characters and finally by assisting masculinity in dealing with its own inauthentic patriarchal spirits. This movie reaches a positive ending of laying down barriers of masculinity to assist both sexes in seeking their own authentic selves. This displays the power of feminism and matriarchy in the movie. Not long after the release of the movie, it has received film critical reviews on various aspects to argue for and against the quality of the overall performance through the evaluation of the parts including but not limited to the texture, clothing of the characters, scenic settings, and plots.

At the time of writing this paper, among various items that have already been discussed on the Internet, technology is the one that is mostly ignored by reviewers and critics. At the first glance, theatregoers may somehow discover that technological equipment is used differently for different purposes by those in Barbieland and those in Kenland where patriarchy reigns. For instance, in a scene where Barbie returns from the real world of humans to discover the unexpected transformation from Barbieland to Kenland, Ken introduces gymnastic equipment, televisions, and an advanced vehicle to the residential area, which do not exist before, and demonstrates them to Barbie in violent and rebellious fashion. In view of this, this paper would like to take the initiative to conduct comparative multimodal discourse analysis of roles of technology in Barbieland and Kenland in order to investigate the functional relation between hegemonic masculinity/feminism and technology by using Van Leeuwen (2008)'s Toy Social Actor Network in the Critical Discourse Analysis. The following is the research question:

Under Van Leeuwen (2008)'s Toy Social Actor Network, what are the social meanings of the use of technologies by Kens and Barbies in different contexts?

2. Literature Review

2.1 Technology in the Movie

The first question to be addressed is what counts as technologies. According to Brey (2009), although it is difficult to develop a definition for technology, people can still discern between things that are human-made and those that occur naturally. According to Kumar et. al (1999), technology consists of two primary components to be seen that (1) the physical component which comprises of items such as products, tooling, equipment, blueprints, techniques, and processes; and (2) the informational component which consists of know-how in management, marketing, production, quality control, reliability, skilled labor, and so on. Furthermore, the above-mentioned two components are to be incorporated in practical applications in daily lives — "doing things" as the third component such washing, exercising, entertainment, and so on, suggested by (Bozeman, 2000; Lovell, 1998, Wahab, 2012). These three components contribute to what technology is, which can be divided into electronic technologies and non-electronic technologies, the latter of which are "used to store information in objects (e.g. writing with a pen on paper) and [are] mobile (e.g. pen) or non-mobile (e.g. full-size desktop typewriter)" and can be "online or offline" (Angkananon et al., 2013). Scholars like Brey (2009) note that any object designed for a specific purpose can be considered technology. This includes a wider range of items like sports gear for physical activities and training. As long as equipment, online or offline, electronic (e.g., TV) or not (e.g., gym equipment), which is not natural but handmade, is used by Barbies and Kens with certain knowledge of respective technologies in daily practices, a broader spectrum of technological items can be analyzed.

2.2 Why Technologies and Gender as Discourses and Texts?

Technology and gender themselves effectively form a coherent discourse to be analyzed. Historically, technological change is strongly related to the making and remaking of men ('s features) (Cockburn 1983). By monopolizing the use, knowledge and invention of (new) technologies, men prove and reinforce their masculinity by being superior not only to women but also to other men. Wajcman (1991) suggests that the technological culture expresses and consolidates relations between men, especially in the domains of science and engineering (Cockburn 1983; Hacker 1990). Although some may argue that the connections between masculinity and technology may not mean that technology directly reflects some qualities of masculinity, technical objects may be objects that men can wear and use to demonstrate masculine capacities as they arouse associations of masculinity in others (Lie, 1995). Generally speaking, technology is a paradigmatic "masculine ideology in which women are represented as non-technological, as incompatible with machinery" (Cockburn, 1985, p. 197). However, with the feminist progression over the decades, it has been found that technology inspires feminism, but not just patriarchy. For instance, fast digitalization and artificial intelligence solutions may effectively contribute to growing female labor engagement in formal economic activities as well as to overall social, economic, and political women's empowerment (Leachman & Paradowski, 2021). Specifically, technology has been crucial in freeing women from drudgery of work that has occupied most of their lives, and the birth control pill was one of the most important technological developments of the 20th century to free women from childbearing responsibilities to actualize their pursuits (Spar, 2020). Based on the above, it is plausible to suggest that the use of technology in the visual form can be discursively related to both women (Barbies) and men (Kens) to represent feminist and patriarchal ideologies.

Why is technology explored in the current discourse analysis? It is because of the rapid evolution of technology and the rise of AI in the digital world. The rise of AI introduces new gendered dimensions, such as the gender biases in AI algorithms (Nadeem et al., 2020). Recent studies display how AI-driven technologies perpetuate stereotypes, such as voice assistants as default females, which reinforces servility (West et al., 2019). However, gender studies and technology studies often exist in separate academic realms (Ernst & Horwath, 2014). Doney et al. (2022) also mentioned how technology is implemented without understanding the power dynamics at the root of social and gender inequality and this may undermines the emancipatory potential of technology; this echoes the critiques of Barbie (2023)'s portrayal of AI and automation — in the Mattel executives' dystopian boardroom scene —, which satirizes corporate tech culture's gender blindness. Therefore, there is a need to call into question the socio-technical systems when it comes to minorities (e.g., women) and technology. Therefore, the novelty and necessity of studying technology in this discourse study are based on the current modern trends, as well as cultural and academic implications.

2.3 Synopsis of Barbie 2023

Barbies live happily in the matriarchal society of Barbie-land, satisfied about her role in the world in the various iterations of Barbies over the years in the way that they can be whatever and whoever they want. On the contrary, Kens, who also live in Barbie-land, often go unnoticed except in relation to Barbies. One day, Stereotypical Barbie (the main character played by Margot Robbie) begins to have feelings which she has never experienced, which leads her world to strangely fall apart. Weird Barbie (another Barbie) determines that in the human world, someone unhappy has been playing with the Barbie toy (the toy-body of Stereotypical Barbie), which leads Stereotypical Barbie to reluctantly head to the human world to rectify what is happening with that human person. To the Barbie's surprise, one Ken (played by Ryan

Gosling), follows her to the human world. When carrying out the mission to find the person, both Barbie and Ken will find the human world, a male-dominated society, totally different from Barbie-land. While Barbie is finding out what's going on with the human person which is unhappy with her toy-body, Ken is inspired with a newfound patriarchal ideology which he wants to bring back to Barbieland.

If he does this, the feminist role of Barbie in Barbie-land may be forever changed. After the Stereotypical Barbie settles the affair with the human person, all of them head back to Barbie-land, which unfortunately has been changed into patriarchal Ken-land by the Ken, who has led his fellow Kens in overthrowing the system, enslaving the Barbies as compliant girlfriends. They also plan to enshrine their new patriarchy in the Barbie-land constitution the next day. Barbie tries to persuade Ken to change it back, but he refuses as he finally feels worthy for the first time. Barbie sinks into a depression before Gloria gives a speech on being a woman, inspiring Barbie to save Barbie-land. After the inspirational speech, a group of Barbies put in place the plan to free other Barbies of their subjugation before turning the Kens against each other to distract them from changing the constitution. As the Kens fight on the beach, the Barbies restore Barbie-land's matriarchy. A distraught Ken expresses disappointment with being only an accessory to Stereotypical Barbie, so she encourages him to be his own person. Stereotypical Barbie, still unsure of who she is, meets with the spirit of Ruth Handler (Rhea Perlman), Mattel's co-founder and her creator. Ruth states that Barbie doesn't have a specific purpose, as her evolution will always exceed her roots. She shows Barbie visions of motherhood, encouraging her to choose her own path. She finally decides to live in the real world as a human.

2.4 Previous Studies Concerning Barbie 2023, and Barbies and Technology

The above portion of the literature review has put forward the link between both genders and (the use of) technologies as coherent discourses and texts to be analyzed. Then, it is time to correspond to a question — why is Barbie 2023 the source of data to be elicited for the suggested research? There are two reasons for this. Firstly, Barbie 2023 has been a heated movie in recent years with critical review and reception that has appealed to wider audiences and moviegoers, and this constitutes a part of the popular culture and thus originality without many research papers published so far, which makes the research much more scholarly interesting. Secondly, this is a movie that has widely been acclaimed for its feminist theme, which thus is targeted for the current research.

The existing literature regarding Barbie 2023 is relatively limited compared to that concerning Barbie in the early days due in part to the newness of the movie that scholars may have not been prepared for the publications of papers on Barbie 2023, and in part to the fact that feminism has been a central theme of Barbie 2023 at the general level. Thus, the movie has become the talk of the town based on Barbies' activities, occupations and lifestyles in Barbie-land and based on their transformation from a toy to a human being. One academic research paper can be found from Alviyanti & Siraj (2023) that use the descriptive approach to analyze gender equality is a recent paper on Barbie 2023. Another presented work on Barbie 2023 (Lau, 2024) also concerns gender equality, focuses on the dancing movement, involvement, and attachment/detachment on the dancing scene, to reflect the feminist spirits on the Barbies' side, by similarly conducting a feminist multimodal analysis involving both visual and audio-linguistic texts within the framework of Critical Discourse Analysis. The paper examines the audio aspect, the song *Dance the Night*, and the visual aspect i.e., the relation between characters and the audience, and the interaction among characters in dancing. With van Leeuwen's (2008) Visual Representation of Social Actors, Lau (2024) leverages grounded theory to initiate the content coding processing for the multimodal text forms.

Nevertheless, none of the above concerns technology. Therefore, the concern over technology and Barbie is original and also novel in the current research. Other than technology and Barbie, gender issues and Barbie are another concern to be addressed here. Compared to Barbie 2023, Barbie in general as a cultural site has received some research inputs on, on the one hand, their diversity in races (Gerber, 2009; Lord, 1995) and career accomplishments (Inness 1999), and on the other hand, criticism of Barbies' reinforcement of stereotypical ideals of feminine beauty (Douglas, 1995; Goodhand, 2023) that may exacerbate sooner sexualization girls (Bess, 1969). Even with such the ambivalent representations of Barbies - both feminist and feminine at the same time, their feminist potential - threatening and transformative potential against patriarchal institutions cannot be denied and can carry out negotiations of the acceptability of the feminist and feminine Discourse of Barbies (Tulinski, 2017). Historically, such a link between feminist potential and Barbies can be traced back to second-wave feminism (SWF) of the 1960s which was the decade when Barbies were introduced to the world by Mattel, Inc. (Lord, 1995). SWF, culturally and discursively, should have laid a solid foundation for the discourse of Barbies, with its strengths in economic individualism with more job options for women in the decade (Davis, 1991; Evans, 1994).

Such a link between Barbies and SWF or feminism in general, is unquestionable, while patriarchy on the side of Kens had not been documented in previous cultural studies until the arrival of the movie, Barbie 2023, where viewers can clearly and undoubtedly see the patriarchal transformation of Kens from being compliant in Barbie-land to being patriarchal and dominant in Ken-land. Therefore, the current proposed study not only re-investigates the feminist potential transformation of Barbies — albeit not in a full-fledged feminist way —, which the established literature and current Internet popular resources have discussed widely (Liu, 2023; McCready, 2023; Seltzer, 2023), but also strives to newly establish a new knowledge bank regarding the patriarchal side of Kens. Such an investigation operates in a relative manner by comparing the feminist Discourse and patriarchal Discourse among Barbies and Kens in the given contexts by investigating technology as a discourse in reflection of the afore-mentioned wider and broader gender contexts. Nevertheless, previous studies on the relation between Barbies/Kens and technology have been scant, and precisely speaking, there have not been studies particularly focusing on the use of technology among Barbies/Kens, but there is no denying that technology has been mentioned in the discussion of Barbie, albeit in the peripheral manner. For instance, when it comes to technology in utilization, assistive devices such as "wheelchairs, hearing aids, and prosthetic legs" have been invented for diverse Barbies (Deen, 2023). Besides, technology as the site of women emancipation and transformation in society can be seen among Computer Engineer Barbie introduced by Mattel in 2010, which resembles women of STEM (Johanns, 2023). Barbies with technology also serve as a site of inspirational transformation of women by Xbox's video (Cassel, 2023). Apart from these, Barbies as toys that carry technology to initiate technological communication are another case in point. For instance, HELLO Barbie has been programmed with 8000 possible dialogues to have conversations with children to enrich the interactive experiences (Consumer technology association, 2020).

As far as (re)design of Barbies' outfits is concerned, Barbie is said to have kept pace with technological advancements that in the digital age, designers can utilize technology such as LED lights and smartphones to create virtual fashion designs on Barbies (Sloane, 2023), for instance, in the Metaverse where such educational programming aims to inspire tech enthusiasm and tech-savvy parties to form brand affinity with and for Barbie (Maxwell, 2023). Crime and data privacy has also been a concern over the use of technology in and with Barbies that, for instance, FBI issued an alert on Barbie that had a built-in video camera that may lead to child pornography (Maundrill, 2023). What can be concluded so far based on the above

instances on technology and Barbies is that much research has been on both technology and Barbies as instruments and utilities to be used by humans as social actors to fulfil their own needs and purposes. These are what Van Leeuwen (2008)'s suggests as "Interactive" — Humans use another social actor (technology/Barbies) to have things done. However, the possibility that Barbies themselves act as — "Active" (Van Leeuwen, 2008) — actors instead of instruments and utilities, has seldom/not been discussed that Barbies can be social actors with greater and full agency to take certain actions onto technologies as complete instruments to fulfil Barbies' own purposes dynamically. This is why this proposed study would like investigate the dynamic relations between genders (Kens and Barbies) and the use of technologies from the multimodal discursive perspective by treating Barbies and Kens as humanized autonomous characters in the movie as the technological users.

3. Theoretical Framework

Before discussing Critical Discourse Analysis as the theoretical framework for the research, it is suggested expounding on basic features and characteristics of a discourse. A discourse is historical and contextual (Fairclough & Wodak, 1997), and it pre-exists and precedes discourse participants, including Barbie characters, and is shaped by material and social structures (Sunderland, 2004). Hence, how discourse texts i.e. the visual use of technology are produced by discourse members i.e., Kens and Barbies, with a common ground and shared knowledge of the acknowledged and recognized discourse structures (van Dijk, 2008), and what a text produces largely depends on the existing social and cultural context. On the other hand, the above-mentioned three discourse texts contribute to where and how social realities and identities — as feminists or as patriarchists — emerge (Sunderland, 2004); that is, a text contributes to the construction and formation of certain world views and reality, society and culture, and ways of thinking (Fairclough & Wodak, 1997). For a long period of time, discourse members i.e. Kens and Barbies perform discursive practices to enact their social identities — "whether they are patriarchal or feminist" — as part of realities (Sunderland, 2004). Therefore, according to the view of social construction, gender is "the product of social practice" (Ekert & McConnell-Ginet, 2003, p. 5) instead of a person's biological sex (Cameron, 2005).

Critical Discourse Analysis (CDA) is a critical theory approach to discourse studies that critically views texts as a form of social practice. CDA critiques discourses and provides explanations of how the frequent production and reproduction of discourses, linguistic or non-linguistic, contribute to existing social realities e.g., patriarchal hegemony or hegemonic masculinity[1] as in Ken-land led by Kens with its male-dominated, male-identified, and male-centered characters (Johnson, 2005). This relates to the perpetuation and acceptance of the abuse of women (Smith, 1990) and male dominance and oppression of women (Pease, 2000) in the public spheres where power is shared by men and in private spheres where senior men exercises power over anyone else in domestic areas including wives, girls, and younger men and (Haj-Yahia & Schiff, 2007). Gender inequality can be realized in the two spheres which publicly concern equal pay, glass ceiling, division of labour, and so on, and privately reproductive rights, domesticity, and childrearing and so on (Zamfirache, 2010). Figuring such a social problem as gender inequality by investigating discourse textual patterns forms a basis of action to rectify the existing social reality of gender inequality and power asymmetries.

Hence, it is quite plausibly clear to see the need of the current proposal to treat the text form — visual representations of the use of technologies — at its root and find out the patterns that

[1] Hegemonic masculinity refers to a male-centric social practice that legitimizes men's dominant positions in society and justifies the subordination of the common male population and women, and other marginalized — unacceptable — ways of being men in patriarchal society (Connell, 2005).

possibly discursively and implicitly contribute to social practices of gender inequality as social problems with "social power abuse, dominance, and inequality" (Van Dijk, 2001, pp. 358-359). In CDA, one of the main projects is gender (in)equality since "feminist work has become paradigmatic for much discourse analysis" (Van Dijk, 2001, pp. 358-359). To deal with gender inequality, CDA is responsible for treating a gender discourse at its root by analyzing texts (Fairclough, 2001) which are responsible for constituting social realities of gender inequality through daily production and reproduction among discourse communities (Kens and Barbies), and thus CDA is in hopes of resisting them eventually (Van Dijk, 2001). Therefore, based on the macro-level of CDA which are patriarchy and feminism as the social and cultural contexts, CDA delves into recurrent textual patterns which are possibly "familiar and instantly recognizable" (Sunderland, 2004, p. 7) to uncover underlying social ideologies (Fairclough, 1995) that constitute gender inequality, and demystify power relations (Wodak & Meyer, 2009) so that the disadvantaged can finally be empowered.

On top of CDA, feminist principles are an important element to be taken into consideration since it endorses the analysis of a divisive social order that divides people into two extreme groups in the us-them conflicts, namely the privileged male group and excluded female group, which are to be critiqued of the power asymmetries between the two groups, for the sake of radical emancipation and social change (Lazar, 2018). Feminist Critical Discourse Analysis (FCDA) is itself not different from CDA since FCDA, on top of CDA, furthermore endorses the and encourages critical reflexivity and the deconstructionist approach, which emphasizes the need to analyze text forms by revealing not only what is there to be explicitly seen, but also what is hidden, implicit or missing (Irigaray, 1995; Leavy, 2007). In this way, by revealing what may be missing from the vulnerable side (e.g., women), FCDA asks for active production of social identities and relationships which open up "possibilities for both women and men as human beings" (Lazar, 2008, p. 90). For the analysis of an film as a visual text as "multiple fields" (Rose, 2000), FCDA brings in "a feminist lens and feminist concerns such as women's status, equality, and social justice to the study of material culture (products) and symbolic culture (multimedium images and representations)" in the content analysis of "movie screens" (Leavy, 2007) with the visual representations of technology and users, and audio representations of users' utterances being distinct but interrelated (Rose, 2000).

4. Methodology - Analytical Framework

4.1 Iedema's Level of Analysis in Film Genres for Data Collection

Upon relating the genre and multimodality framework to film genres that this paper concerns, this part would like to specify fine-grained analytical perspective levels in film genres under the multimodality framework. According to the Table 1 , Iedema (2001, p. 189)'s levels of analysis of film genres consist of frame (as a salient still of a shot), shot (as a camera movement unedited but whose positions can change due to panning, tracking or zooming), scene (as a one-time space which is made up of more than one shot), sequence (with the camera that moves with characters across time-spaces), genre stage (which consists of beginnings, middles and endings, or of an orientation, a complication, a resolution and a coda), and a whole work. These perspectives from which to view various levels of time-spaces of a film assist in providing analysts with focus and contextualization of a move of a film, which conveys messages about roles of technology, in the later data analysis. For instance, the meaning of a frame may be obscure due to the lack of clear contextual background which can be obtained by referring to a wider perspective such as a sequence or even a generic stage. Therefore, the judge on the roles of technology in any parts of a movie is seldom a one-time process, but a circular and recursive one that requires analysts to repeatedly view the film contents from various levels and

perspectives in order to contextualize the content of a frame, a shot or a scene in multimodal aspects, audio and visual.

Table 1. Iedema's Level of Analysis in Film Genres

	Level	Description
1	Frame	A frame is a salient or representative still of a shot
2	Shot	In a shot the camera movement is unedited (uncut); if the camera's position changes this may be due to panning, tracking, zooming, and so on, but not editing cuts
3	Scene	In a scene the camera remains in one time–space, but is at the same time made up of more than one shot (otherwise it would be a shot)
4	Sequence	In a sequence the camera moves with specific character(s) or sub-topic across time–spaces; when it is hard to decide whether you're dealing with a scene (1 time–space) or a sequence (multiple time–spaces), this is because editors may render time–space breaks as either more obvious (-> sequence boundary) or less obvious (-> scene boundary)
5	Generic stage	Roughly, stages are beginnings, middles and endings; each genre has a specific set of stages: narratives tend to have an orientation, a complication, a resolution and maybe a coda; factual or expository genres may have an introduction, a set of arguments or facts and a conclusion, or an introduction and a series of facts or procedures
6	Work as a whole	Depending on the lower levels, the work will be more or less classifiable as a particular genre; the primary distinction is between 'narrative' (fictional, dramatic genres) and 'factual' (expository, thematic, issue-oriented genres); genres are predictable relations between social–cultural, industrial–economic and symbolic–mythic orders

The levels of film analysis lead to better understanding of what counts as a unitary frame and shot inside each time-space scene along the time sequence of the movie based on the contents. This understanding leads to better captures of frames and shots of visual data to be coded.

4.2 Van Leeuwen (2008)'s Toy Social Actor Network & Grounded Theory

For the practical analytical framework (discussed below) to be leveraged in the data analysis, content coding will be conducted with adherence to grounded theory for the coding processing as the inductive approach (Strauss & Corbin, 1990) in favour of unveiling what is possibly missing, silenced and absent from the women's side of using technology. In this way, possible patterns, themes and categories concerning the use of technology naturally come and emerge from the data, without (many) presuppositions (Patton, 1980). This inductive approach corresponds to the deconstructionist approach to the theory of FCDA that researchers should care about not only what is there to be explicitly seen, but also what is hidden, implicit or missing, in the coding processing on the discourse text forms. The following coding procedures to be observed throughout the analytical process, which will be discussed below after the introduction of Van Leeuwen (2008)'s Toy Social Actor Network as the analytical framework (Figure 1), will adhere to the deconstructionist and inductive approaches.

Symbolic representations of the use of technologies will be explored by using Van Leeuwen (2008)'s Toy Social Actor Network that treats technologies as a semiotic resource that signifies social meanings by its internal social rules that regulates semiotic production and interpretation (Van Leeuwen, 2008, p. 150). Below is the Figure 2 showing the Network that consists of Activity and Identity. The former comprise Active i.e., Actions of a technological item does itself with its flexible parts such as limbs, and Interactive i.e., Interaction between an item and the technological user in, for instance, cuddling and striking acts onto the technological item. In this large categorical groups of Activity, this paper can explore what is done with technology, and what purposes it carries in the acts.

Nomination with the naming system (named/ nameless) for a technological item is another category to reflect Specification and Genericization of such and such. Specification concerns the given status of technology while the other one renders technological general and nameless. Individualization and Collectivization of a thing reflects how distinctive or collective a piece of technology can be, which signals the significance and importance. It is important to note that Van Leeuwen analyzed Barbie in terms of its names, types and categories and activity, with his approach (Caldas-Coulthard & Van Leeuwen, 2002), but his analysis treats Barbie at the toy level, while the current proposed study sees Barbie as a human(-like) social actor to instrumentalize technologies at the thing-level. This paper will also explore the Category-level by analyzing the cultural and physical features of technological items, such as colours, textures, materials and so on, which may, for instance, signal violence, aggressiveness, or dreamy fantasy. All these categories can reflect gender ideologies.

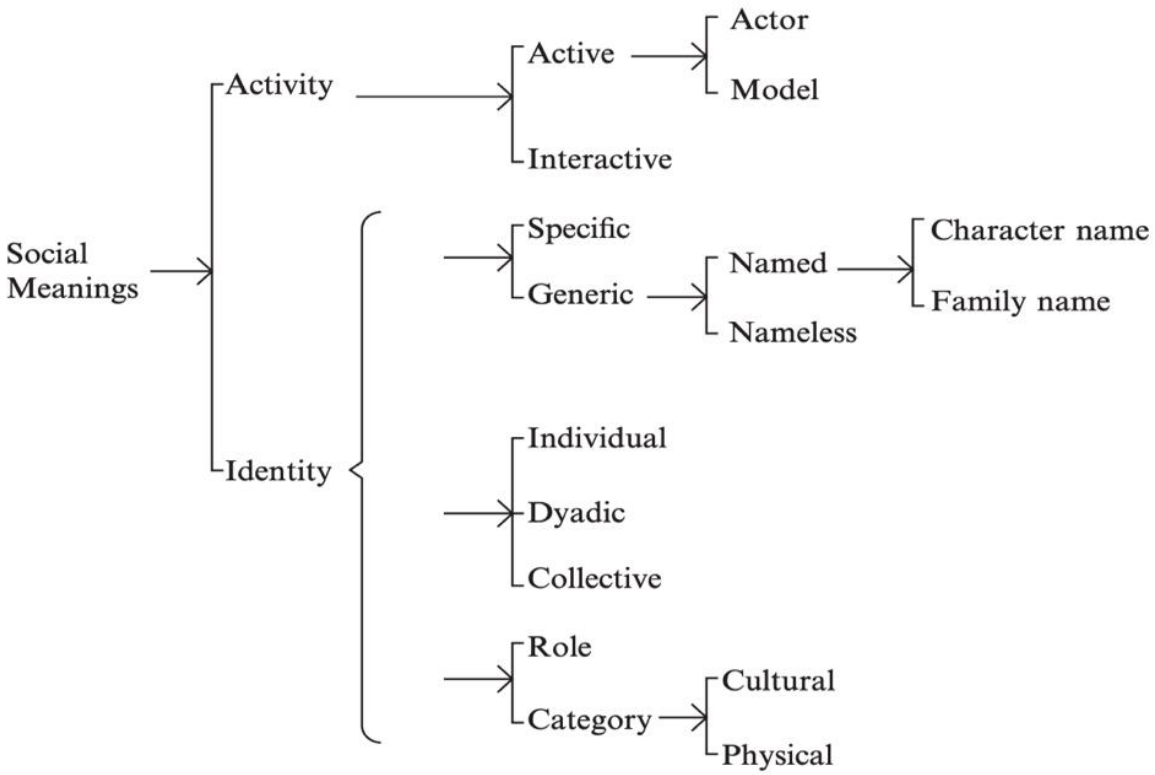

Figure 1. Toy Social Actor Network

4.3 Coding Procedures for the Visual Text by Use of Toy Social Actor Network

According to Creswell & Creswell (2018, pp. 197-198), coding visuals is similar to coding linguistic texts. The whole coding procedures commences with manual labour on initial coding to generate basic codes for better manipulation and edition before having coded items moved to Nvivo[2] to proceed with subsequent coding. The very first step is to transcribe the whole film into visual texts. For the visual data concerning Toy Social Actor Network, screen frames and shots (pictures) of each scene concerning Barbies and Kens' use of technology, which demonstrates Activity and Identity, will be taken. The gathered screen frames/shots will be initially and preliminarily classified into two different focused contents, i.e., focus on Barbies

[2] NVivo is a qualitative data management, coding and markup tool. It is designed to organize, analyze and create a better understanding of unstructured or qualitative data such as interviews, survey responses, articles, social media or other types of online material.

and the focus on Kens for later multimodal discourse comparison. After that, the coding steps for both types of texts are as follows according to Creswell & Creswell (2018, pp. 197-198).

1. Code the text by tagging the visual area with technology and assigning code labels based on the categories from the Toy Social Actor Network Network (Van Leeuwen, 2008).
2. Compile all of the codes on separate sheets for the different contexts of Barbieland and Kenland.
3. Review the codes to eliminate redundancy and overlap.
4. Group codes into (sub)categories before themes based on common ideas and properties (Saldana, 2009, pp. 11-13). Subgroups (subthemes) exist underneath the umbrella of themes until the final theme is highlighted (Erlingsson & Brysiewicz, 2017; Saldana, 2009, pp. 11-13).
5. Conduct similarity cross-checking of the categorization of codes between two coders to ensure rigorousness.
6. Write the narrative for each generated theme that will proceed to the finding section.
7. Conduct comparative analysis of the generated themes from the sides of Barbies' and Kens' use of technology.

5. Findings and Discussion

5.1 Activity and Purposes

5.1.1. Common Purposes of Using Interactive Technologies in Barbieland and Kenland

In terms of Activities, which can be divided into Interactive and Active technologies, characters in Barbieland and Kenland use them for both similar and different purposes, which are likely to depict the gender ideologies. For interactive technologies, similarly those in the two contexts use a wide range of technologies for the purposes of career development, daily routines and living habits, as well as entertainment and relaxation. The current nuanced perspective commences with career development (CD) commonly held in both contexts. In Barbieland, Barbies utilize a much more diverse range of technological items e.g., microphones and cameras for journalism and political participation, cooking utensils as chefs, hair dryers as hairdressers, airplanes, spacesuits, and DJ control panels for music development, than those in Kenland (Figures 2-4). On the contrary, in Kenland, Kens use relatively few technological items for career developmental purposes but mostly microphones and cameras for political demonstrations and participation to resist and overthrow the feminist institutions and establish their patriarchal regime (Figure 5).

Figure 2. CD in Barbieland
WARNER BROS. PICTURES

Figure 3. CD in Barbieland
WARNER BROS. PICTURES

Figure 4. CD in Barbieland
WARNER BROS. PICTURES

Figure 5. CD in Kenland
WARNER BROS. PICTURES

It is essential to note that this is the same way that Barbies adopt technology for re-constitutionalization by taking over Kenland to restore Barbieland through not only microphones and cameras for political dissemination but also telescopes, tablets and 3D Maps for internal communication and strategic planning to observe men's violence, unite women and combat patriarchy (Figures 6-8). Besides technology for political and institutional issues, other items for occupational purposes are rarely or never seen in Kenland. Apart from the purposes, the patriarchal setting of Kenland renders women and men deviant from the traditionally defined masculine beings to take up male-assigned jobs which put them in an inferior position. For instance, Alan, portrayed as feminine, oversees using baking machines to serve food at the same level of women's work assigned to serve drinks by use of trays (Figure 9). This highlights how important work is for feminism and how work is less important compared with resistance against women and non-masculine men in the form of backgrounding (exclusion) from the patriarchal perspective.

Figure 6. CD in transitional period from Kenland to Barbieland

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Figure 7.CD in transitional period from Kenland to Barbieland

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Figure 8. CD in transitional period from Kenland to Barbieland

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Figure 9. CD in Kenland

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Another type of interactive technology comes down to daily routines (DR). Barbieland brings diverse types of technological items for such purposes including but not limited to vehicles for commutes, as well as household appliances (e.g., lamps, fridges, toasters, showers, etc.) for daily routines and facilitation of interpersonal relationships through using hair dryers to help with other women's hair (Figures 10-12). However, such exposure is rarely seen in Kenland scenes, except for cars for commute and for the gates at Kens' houses for security reasons (Figures 13-14). The gates bar women from getting into Kens' houses, and this signals exclusion of women. Nevertheless, the nuanced portrayal of Barbies' living habits seems to show that detail-orientation maps onto Barbieland, which features femininity while masculinity emphasizes broader concepts (Deaux & Lewis, 1984). Therefore, a certain degree of ambivalent representations of women among Barbies can still be witnessed; that is, on the one hand, the detailed portrayal of Barbies' use of domestic appliances may reinforce the domestication while on the other hand, women's unity and intersubjectivity is well witnessed. In stark contrast, these features cannot be seen in Kenland where exclusion against women abounds.

Figure 10. DR in Barbieland

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Figure 11. DR in Barbieland

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Figure 12. DR in Barbieland

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Figure 13. DR in Kenland

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Figure 14. CD in Kenland

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Another purpose of interactive technology common in both contexts is entertainment and relaxation (ER). Barbieland experiences the use of music equipment (e.g., DJ control panels and instruments) and sports equipment (e.g., surfing plates), all of which involve high inclusivity that welcomes both sexes (Figures 15-16). On the contrary, in Kenland, music and sports equipment (boxing training equipment e.g., punching bags, weighted gloves, etc.), as well as game stations (e.g., Arcade Game Machine), are exclusive to males as users, excluding females as audiences (Figures 17-20). Such a role duality can be justified by referring to the scene of Kens using music instruments for actively wooing women. Based on the above, the inclusivity on the feminist side and exclusivity on the patriarchal side can be witnessed

Figure 15. ER in Barbieland
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Figure 16. ER in Barbieland
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Figure 17. DR in Kenland
WARNER BROS. PICTURES

Figure 18. ER in Kenland
WARNER BROS. PICTURES

Figure 19. ER in Kenland
WARNER BROS. PICTURES

Figure 20. ER in Kenland
WARNER BROS. PICTURES

5.1.2. Exclusive Purposes for Using Interactive Technologies in Barbieland and Kenland

Apart from the above-mentioned use of interactive technology commonly possessed in the two contexts, the current part concerns the exclusive use of interactive technology. Education and enlightenment are the purpose of interactive technology that is exclusive to Barbieland. This involves the use of teaching sticks and crystal balls as reflection tools to facilitate teaching and learning experiences for the sake of assisting Barbie in getting over her existential crisis (Figures 21-22). This once again attests to women's unity and intersubjectivity. On the contrary, displaying sovereignty and competition is what technologies are used for exclusively in Kenland. For instance, actively, Kens use golf clubs to break things in front of Barbies, stand on top of the cars to display their higher status, and deploy various weapons including but not limited to arrows, pointy sticks and boats to compete with other Kens (Figures 23-26). This demonstrates involvement of violence and exclusion, which are not seen in Barbieland. Passively, Kens use eyeglasses to cover their sorrow and pain on their faces that they feel for Barbies' loss of home. This prevents sentimentality from being known to females (Figure 25).

Figure 21. ER in Barbieland
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Figure 22. ER in Barbieland
WARNER BROS. PICTURES

Figure 23. DR in Kenland
WARNER BROS. PICTURES

Figure 24. ER in Kenland
WARNER BROS. PICTURES

Figure 25. ER in Kenland
WARNER BROS. PICTURES

Figure 26. ER in Kenland
WARNER BROS. PICTURES

5.1.3. Exclusive Purposes for Using Active Technologies in Barbieland and Kenland

Types of active technologies differ greatly in both contexts. In Barbieland, active technological items mostly concern humanitarian contexts and companionship (HC). For instance, ambulances alongside their advanced medical equipment to run health tests can be seen in Barbieland where Barbies save the other sex, Kens. Electronic pets are witnessed to foster familial companionship (Figures 27-28). However, Kenland is a context where active technological items are mostly used for declaring sovereignty and competition. They are Televisions playing "The Godfather" as a movie disseminating patriarchal messages, and music players to add up to the masculine vibes for men's internal fights and competition (Figures 29-30).

Figure 27. HC in Barbieland
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Figure 28. HC in Barbieland
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Figure 29. HC in Kenland
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Figure 30. HC in Kenland
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5.1.4. Discussion — Gender Implications

In Barbieland, the diverse range of technologies utilized for career development and political engagement signifies empowerment and agency. From journalism to political engagement, these technologies foster a sense of community and collaboration, which underscore feminist ideals coupled with unity and support. The emphasis on interpersonal connection illustrates how feminism is constructed through interpersonal network and communication to promote overall women's collective well-being and to resist patriarchal regimes. For instance, in second-wave feminism, the late 1960s experienced radical feminism proposing "all women in male chauvinist society" (Roth, 2003, p. 68); RF had sufficient resources from its previous organizing experiences in other movements (Mellor & Miller, 1970), particularly civil rights movements, which facilitated the development of communications networks allowing emerging feminists to conduct communications with one another about their political lives and ideas (Echols, 1989; Freeman, 1973).

Conversely, Kenland's technological engagement strongly ties to masculinity involving competition and dominance. Kens primarily use it for asserting power displays of violence and exclusion. This binary not only reinforces gender roles but also relegates certain males, namely Alan, to inferior positions. This illustrates how patriarchy can marginalize people those who do not conform to its rigid standards. Furthermore, the exclusion of women from certain technological domains in Kenland implies both the exclusivity privilege of men and benefits for men. Apart from technology kept out of reach of women, Kens use technology to impress and pursue women rather than fostering genuine connections to fulfil their satisfaction and inner instinct. Ultimately, Barbieland promotes a vision of technology as a tool for

enlightenment and education for disillusionment to "wake" women up to the social reality. Nevertheless, it is necessary to be aware of the detail-orientation that overwhelms the domesticity of Barbies using technology. This may reinforce the social expectation of women staying at home.

5.2 Identity

5.2.1 Specificity & Genericity

Most technological items, be they electronic or non-electronic, major or minor, do not possess their own names, but there are a few subtle details which provide insights into how the naming of technologies reveals gender ideologies. Named technologies include Barbies and Kens' vehicles and houses. Comparatively, in Barbieland, Barbies' houses are designated as relatively generic as they are named as "dream houses", which welcome both sexes there to achieve inclusivity (Figure 31). On the contrary, Kens' houses, built upon Barbies' "dream houses", are specifically named as "The Mojo Dojo Casa House", with "Mojo" meaning confidence and charisma and "Dojo" traditionally signaling a place for martial arts training, adding a sense of violence. Following the houses, the gate of "The Mojo Dojo Casa House" is specifically named as "Kendom Salon", which signifies the kingdom to manifest their patriarchal identity, and the "Salon" refers to a place for social gatherings, which however are exclusive to Kens only (Figure 32).

Figure 31. House name in Barbieland

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Figure 32. House name in Kenland

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Other than the houses, the number plates of vehicles deserve attention. Similarly, in both contexts, the plates of both their vehicles are named specifically "Barbie" and "Ken" in the singular form, which signals specificity in the ownership of the vehicles (Figures 33-34). However, after Barbies overthrow Kens' patriarchal kingdom and restore the constitution, they change not only the vehicle but also its name on the plate into "K . B". This paper does not argue about the order of the two letters, which may possibly signify the priority of Kens over Barbies, but this paper would like to discuss the motive of keeping both letters instead of deleting "K" from it in the restored Barbieland. It demonstrates that Barbieland, a context said to nurture feminism, thrives to involve both sexes at the level of gender equality.

Figure 33. Vehicle plate in Barbieland

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Figure 34. Vehicle name in Kenland

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5.2.2 Individuality, Collectivity & Dyadicity alongside Cultural and Physical Categories

The distinction between individuality and collectivity in technologies is blurred. As Van Leeuwen (2008: 152) suggests, items may not always simply be individual and collective, but can be dyadic "including just two dolls, e.g., 'a couple such as Barbie and Ken'. This is again realized by shared and complementary physical and/or cultural attributes". Here, in the two contexts, the dyadic features of their technologies can also be investigated. As a matter of fact, minor technological items such as the above-mentioned fridges, barbecue and baking machines, toasters, showers, sports and music equipment, and so on, do not occur frequently, but once or a few times across the scenes. These items can be said as individual since they appear by themselves in no relation to other technological items. However, what can be said as collective may come down to, once again, their vehicles and houses, which occur frequently.

Collectivity is testified here. Barbies' "dream houses" and vehicles are the same, physically with the exaggerate shapes and playful designs in bright pink (and light blue; but mostly pink) colors plus a sense of spaciousness. The texture is smooth, and glossy finishes dominate. The materials are lightweight, including plastic and synthetic composites, providing a toy-like sensation which is collectively witnessed from general Barbies' houses. Therefore, with these features held in common, houses are collective among not only Barbies but also in Barbieland, which welcomes men in Barbies' dream houses (Figures 35 and 11 above). The same housing feature goes to Kenland since Kens sneak and use the same "dream houses" of Barbies without changing the structure, colors, materials and texture, but move in, bringing patriarchal items such as television, and sports equipment to declare sovereignty and domination (as mentioned above in the Activity part). It can be observed that houses in Kenland exclude women and are individually enjoyed by Kens (Figures 29 & 32 above). Culturally, despite the same external structure with the identical texture, materials and colors, the internal (patriarchal) items such as televisions are operating to disseminate patriarchal messages (under the table) through, for instance, "The Godfather". It can be concluded here that Barbies' ones are more inclusive and collective due to the sameness and in the sense of including both genders, while Kens' ones are relatively individualized due to the exclusion and exclusivity in the 'sneaky' way of disseminating patriarchal messages under the same roof of the same house as Barbies' "dream houses".

Figure 35. "Dream houses" in Barbieland

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As for vehicles, Barbies' typical one is based on the C1 Corvette, the first generation of the iconic sports car, with styling cues from the 1956 and 1957 models, while Kens' one is a GMC Hummer EV (race car) (Chevrolet, 2023) to symbolize his struggle with patriarchal ideals and masculinity. Different from the above-mentioned physical features in terms of the structure, color, texture and materials applicable to Barbies' fancy cars, those for Kens' car are more realistic, robust, bulky in size, functional (Figures 14 & 23). Quantitatively, there are a number of Barbies' toy-like cars for their collective group which allows men to have a seat, while there is only one race car for Kens in Kenland, which is used to declare sovereignty to exclude women. Thus, this paper tends to see Barbies' ones as inclusive and collective and Kens' one as exclusive and individual since the latter's features should be brought from the human world, which is highly incompatible with Barbies' cartoon world.

Following the above, this paper tends to suggest dyadic features between Kens' houses and vehicles and Barbies' ones. The dyadic feature that highlights the "pair-up" between the two genders can be seen in two ways (Figure 36). Firstly, after Kens take over, transforming Barbieland into Kenland, Kens possess Barbies' dream houses without reconfiguring the external housing structure but adding patriarchal elements in it internally. Secondly, after Barbies take over the constitution and the place, they change not only the place, but also the race car of Kens by transforming it into their own version, which is equally bulky, realistic and robust but in black and pink. Culturally, the race car signifies realization and realism of gender ideologies. Patriarchy is realistic as the blue race car emerges initially in Kenland, followed by feminism by using the same material to negotiate and transform it into their own version to achieve realism in the feminist ideology. This "pair-up" transformation constitutes the dyadic features between the two contexts as reflected by how they use houses and vehicles.

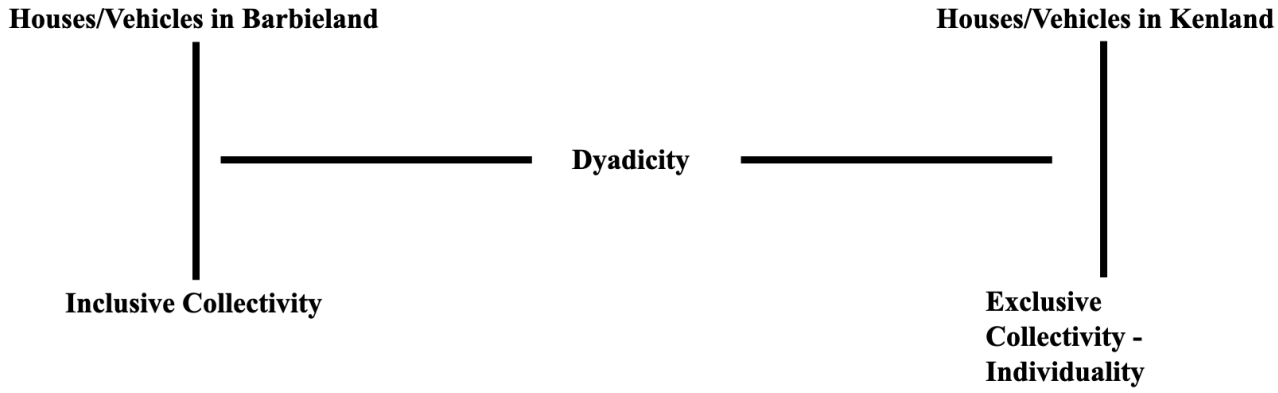

Figure 36. Relation between Collectivity, Individuality and Dyadicity

5.2.3 Discussion and Gender Implications

The naming practice reflects cultural narratives about gender roles. The specific, exclusionary labeling of Kens' houses contrasts with the more fluid, generic, and inclusive naming of Barbies' ones; this is likely to reinforce the notion that masculinity and patriarchy highlights demarcation and dominance, whereas feminism is compatible with openness due to its sufficient genericity, which is a key to gender inclusivity and equality. Meanwhile, the evolution of the vehicle-plate naming after Barbies retake over the land demonstrates a stride toward cooperative and inclusive gender dynamics rather than the reversal of oppression, as testified by the "K. B" in the plural form on the plate. This analysis echoes with feminist critiques of language (Butler, 1990; de Beauvoir, 1949) that a discourse involves possibilities of resisting, unlearning and relearning to existing patriarchal social orders that insist on a either-men-or-women dichotomy and female-genericity-or-male-specificity demarcation — "something which is gendered can thus also be gendering" (Sunderland & Sunderland, 2004, pp.14, 22) to challenge the hegemonic status quo. Therefore, "K.B" is an inclusive text that transcends merely genericity and specificity and celebrates coexistence, and thus intersubjectivity and mutual recognition in the reformed society of Barbieland.

As for individuality and collectivity, dyadicity is witnessed between Barbies and Kens, between Barbieland and Kenland, and between feminism and patriarchy, as is "a couple such as Barbie and Ken", which are complementary to each other (Van Leeuwen, 2008: 152). The primordial state of Barbieland has houses and vehicles with fancy shapes, textures, colors and materials, whose utility, sensation and atmosphere present collectivity that welcomes both genders. It is not until the arrival of Kenland that embraces individuality and most importantly individualization whose process cannot be trivialized. Individualization, as its name suggests, seems promising and inviting. However, its process involves distantiality which existentially isolates a person from the community by focusing a person's attention on his/her singular "I" view that emphasizes the pre-established role and pre-assigned life missions e.g., as a masculine being or as a feminine being (Stroh, 2005; O' Brien, 2014).

Therefore, individualization whose process pushes Kens' exclusive collectivity into individuality existentially embraces masculine dichotomy, separation and exclusion against women and even other men, e.g., Alan, who do not obey traditionally constructed masculine norms. This is different from Barbies' inclusive collectivity that regards gender as "the product of social practice" (Eckert & McConnell-Ginet, 2003, p. 5) rather than essentially one's biological sex (Cameron, 2005). Such de-essentialization promises a detachment from which sex one belongs to with being tagged with a social label as either masculine or feminine, but a revelation that everyone including Barbies and Kens who are socially constructed is accepted

as such in a collective sense. Finally, such de-essentialization can render the dyadic feature pairing Barbies and Kens inclusively complementary to each other by reckoning both as human beings as such — of the same origin before being derivatively labelled as masculine, feminine, feminist, and so on.

5.3 Practical Implications

The current study aims at not only exploring the gender discourse through Barbie, but also transcending these microscopic observations and landing on macroscopic platform to view the relationship between gender and the use of technology, and even the use of things. Things people use subconsciously on a daily basis reflect who they are and enact their social identities, which often goes unnoticed. Firstly, Barbie (2023) illustrates how technology can entrench or disrupt gender hierarchies. Its practical lessons urge people to rethink technology design, education, and policies to align with Barbieland's emancipatory vision. Practically, designing inclusive technologies is encouraged. Policymakers, educators and engineers should prioritize participatory and inclusive design involving marginalized groups (Broussard, 2023) — non-binary individuals — to avoid reinforcing patriarchal structures and ideologies. This aligns with initiatives, one example of which is UNESCO's "Cracking the Code", to ameliorate gendered tech gaps (UNESCO, 2019).

6. Conclusion

This study employed Van Leeuwen (2008)'s *Toy Social Actor Network* within the framework of Critical Discourse Analysis (CDA) and Feminist Critical Discourse Analysis (FCDA) to examine the social meanings of technology use in *Barbie* (2023), comparing its representations in Barbieland and Kenland. The findings reveal distinct patterns in how technologies function as semiotic resources to construct gender ideologies, reinforcing feminist inclusivity and patriarchal exclusivity.

In terms of **Activity**, Barbies utilize a diverse range of interactive and active technologies for career development, daily routines, and entertainment, emphasizing inclusivity, collaboration, and enlightenment. The analysis also highlights how domestic technologies in Barbieland, while fostering unity among women, may risk reinforcing traditional gender roles by associating women with domesticity. In contrast, Kens predominantly deploy technology for asserting dominance, competition, and exclusion, reinforcing hegemonic masculinity. Kenland's technologies perpetuate male exclusivity, marginalizing those who do not conform to patriarchal norms. Regarding **Identity**, naming practices and the physical attributes of technologies further stress gendered ideologies. Barbies' technologies are generically named (e.g., "dream houses") and collectively designed to promote inclusivity, whereas Kens' technologies are specifically labeled (e.g., "The Mojo Dojo Casa House") to assert individuality and exclusivity. The dyadic relationship between Barbies' and Kens' technologies reflects a negotiation between feminist and patriarchal ideologies; this may ultimately move toward coexistence between two genders.

This study contributes to discourse analysis by demonstrating how visual representations of technology in film mediate gender ideologies. The findings align with feminist critiques of language and social practice, illustrating how technology can either reinforce or challenge existing power structures. While Barbieland's technological use promotes collective empowerment and intersubjectivity, Kenland's reflects exclusive individualization and distantiation from women. Future studies could expand this framework to analyze technology in other feminist or patriarchal narratives, further exploring its role in shaping social identities and power relations.

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