



Consumerism On Popular Literature: A Postmodernism Analysis of Baudrillard in the Film Barbie (2023)

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Abstract. The world of Barbie has long been associated with consumerism. From the vast array of colorful clothing and accessories to the emphasis on physical appearance, the franchise has often mirrored and even shaped societal values around consumption. However, Barbie film 2023 by Greta Gerwig offers a potential opportunity to see a more critical perspective on this consumerist culture. The study aims to analyze the construction consumerist world that reinforces a patriarchal and toxic beauty standard for women in Barbie 2023 by Greta Gerwing. The theory used to analyze the consumerism in Barbie is Baudrillard's theory about consumerism. The result shows that Barbie movie presents a mixed message, it empowers with its strong female lead, defying stereotypes and encouraging girls to dream big. However, it gets tangled in the consumerist web it critiques. The "Barbiecore" trend, fueled by media and social media, creates pressure to conform to unrealistic beauty standards and a materialistic lifestyle. Barbie Land itself is a hyperreal utopia, highlighting the manufactured nature of beauty ideals. Even the Barbie Dreamhouse reflects the commodification of desires, conditioning children to associate happiness with owning things. Ultimately, "Barbie" exposes the complexities of consumerism's influence. True empowerment requires promoting self-acceptance and critical thinking alongside positive role models, a challenge the film leaves us to consider.

Keywords: postmodernism, consumerism, popular literature.

1. Introduction

Consumerism has become integral part of human life nowadays, affecting fundamental part of human life and playing a large role in everyday life. There were parts of social lives that used to be unaffected by buying and selling. Now, even those areas have had to change to fit into a world where what people want to buy and consume is considered most important [1]. Consumerism has changed the way people perceived what is important in their lives. Consumerism finds its most potent expressions in movies and popular literature. These media not only reflect the prevailing economic and social realities but also shape and reinforce consumer behaviours and attitudes. Movies and popular literature serve as mirrors to society, capturing and reflecting the ethos of their times [2]. As a depiction of modern life full of consumerism, movies often portray a world where consumption is central to identity and happiness. Characters in

these narratives frequently pursue and achieve their goals through material acquisition, suggesting that success and fulfilment are intrinsically linked to consumption.

The Barbie movie 2023, directed by Greta Gerwig, emerges as a cultural artifact that deftly intertwines humor with critical social commentary. In an era where consumerism permeates every facet of society, popular media often reflects and perpetuates these consumerist values. However, Gerwig's Barbie goes beyond mere reflection, employing elements of comedy, particularly irony and satire, to offer a nuanced critique of the pervasive consumer culture and its intersection with patriarchal values. Gerwig's strategic use of irony and satire serves as a powerful tool in this critique. Through humorous exaggeration and subversive wit, the film exposes the contradictions and flaws within a society driven by consumerism and patriarchal ideals. For instance, the exaggerated portrayal of Barbie's perfect life and the absurdity of her challenges highlight the unrealistic expectations placed on individuals, particularly women, by both consumerist and patriarchal pressures.

The film "Barbie" is worth to analyze due to its extraordinary commercial success, grossing over \$1 billion at the global box office in just three weeks [3]. This achievement is attributed to its "masterclass" marketing campaign and marks it as a cultural phenomenon. The film's production and direction by Margot Robbie and Greta Gerwig, the first female solo director to cross the billion-dollar box office mark, hold special significance, highlighting gender dynamics in the film industry [4]. The film sparked significant conversation about its themes, including consumerism, feminism, and the representation of femininity in popular culture. The unique visual style and iconic pink aesthetic became highly recognizable [4].

The world of Barbie has long been associated with consumerism. From the vast array of colorful clothing and accessories to the emphasis on physical appearance, the franchise has often mirrored and even shaped societal values around consumption. However, Barbie 2023 film by Greta Gerwig offers a potential opportunity to see a more critical perspective on this consumerist culture. French sociologist Jean Baudrillard's concept of simulacra and simulation provides a valuable framework for analyzing consumerism on Barbie. According to Baudrillard, in our contemporary world, consumer culture can create a hyper-reality – a world of signs and images that have become detached from any genuine meaning or experience. Products and brands become more important than the actual use or functionality of the object itself.

Previous studies have offered valuable insights into the portrayal of consumerism in the context of popular culture and literature across various media within postmodern landscape. The research conducted by Fourie on explores materialist consumerism in Western mainstream cinema shows that there is an opportunity to show revolt against the dominant system of capitalism through films through criticizing the negative aspects of the status quo in order to make people aware of its negative traits [2]. McLean on consumerism in the new novel of manners highlight that literary texts cast consumerism as literal and figurative pornography that transforms the citizen into a consumer [5]. Stanković's study on the consumerism in Thomas Pynchon's works highlight that the novelist tries to show that influence of the new media and consumerism make the society will keep moving towards chaos unless some significant changes are made [6].

Finally, the research conducted by La Porte & Cavusoglu about the topic of feminism on Barbie 2023 movie highlighting the role of the film to challenge the status quo, both the on and off-screen issues surrounding Barbie conversely perpetuate the status quo [4]. These prior investigations provide a foundation for the portrayal of consumerism in different cultural and cinematic contexts, also to understand the movie better in setting the stage for examination of consumerism in Barbie 2023 in this research. Despite its extraordinary global success and its profound commentary on consumer culture, no study to date has applied Jean Baudrillard's influential theory of consumerism to analyze Barbie 2023. By using Baudrillard's concept especially about hyperreality and simulacra, it is possible to deconstruct the layered critique and complicity in consumerism in the movie. Therefore, this study argues that *Barbie* (2023) exemplifies the interplay between consumerism, gender stereotypes, and hyperreality, as conceptualized by Baudrillard. By analyzing the *Barbiecore* trend, the commodification of the Barbie Dreamhouse, and the hyperreal utopia of Barbie Land, this research reveals how the movie critiques yet reinforces consumerist myths, complicating its feminist aspirations and societal impact.

2. Discussion

The release of "Barbie (2023)," starring Margot Robbie and Ryan Gosling and directed by Greta Gerwig, generated significant global anticipation, promising to celebrate female empowerment. The film's visually stunning set and costume design, combined with its unique and charming marketing campaign, sparked a wave of "girl power." At its core, "Barbie" aims to highlight the main character's journey as she challenges gender stereotypes and embarks on a path of self-discovery and empowerment. Margot Robbie's portrayal of Barbie as a strong and intelligent character struck a chord, as she breaks away from traditional notions of femininity, embodying strength and independence. Through Barbie's adventures, the film conveys the powerful message that girls can aspire to be anything they want.

Baudrillard draws his concept of consumerism based on his criticisms of Marxist political economy which did not give enough weight to how consumption shapes society. To understand how the modern society works, for Baudrillard, it is important to place the role of capitalism and consumerism as central, as he further emphasizes that consumption as a system has its own rules and meanings, not just as secondary activity [7]. In postmodern society, the new mythology has emerged, that the stuff we buy is not served as what it functions but acts as an element of prestige, comfort, etc. Humans no longer buy things because of their function but because of the social logic and logic of desire. Baudrillard gives an example in the case of a washing machine. It washes clothes (its function), but people might buy a fancy one not just for cleaning, but because it shows they can afford it, it makes their life easier therefore it brings prestige and comfort, or maybe they just like the way it looks. Baudrillard recognized that contemporary society is bound up with the idea of consumption, that it is increasingly organized around consuming, its social imaginary colonized by an unconscious social

logic of consumption. Therefore, the modern society in this case, the consumer society, has structure and there are also several underlying myths [8].

The structure of consumer society refers to the organized and systemic nature of consumption within modern society. This structure encompasses various elements that together create and sustain a consumer-driven culture. Based on his book, Baudrillard, explain that there are several structures of consumer society which are Systematic Consumption, Role of Advertising and Media, Institutionalization of Consumption, Credit and Economic Discipline and Obsolescence and Waste. The myths behind the consumer society are Myth of Consumer Sovereignty, Consumption as Enjoyment, Affluent Society and Well-being and Equality Through Consumption. There are several things in Barbie 2023 that can be explained with Baudrillard concept about the structure and myths of consumer society. The first is the Barbiecore that created some sense of FOMO. Second, the creation of a women's body image perpetuates the positioning of women as objects of capitalism and boosts the fashion industry. Third, the role of mass media and advertising in increasing women's consumption levels across almost all business sectors.

First, in Barbie 2023 movie promotion, Barbiecore emerge and created some sense of FOMO. The way the society works, triggers systematic consumption in all aspects of daily life including in the Barbie both as the movie and as the doll. Systematic consumption makes people think that they bound with society in terms of materialism. The good relationship between member of society is maintained by the similarities of people in terms of their style, their belonging and everything related to material stuff. Barbie movie created sense of fear of missing out (FOMO) for people around the world especially women, it created the Barbiecore trend.

Even though it is created partly as a criticism to the society and to empower women, the promotion and the release of the movie contribute to the spreading of consumerism trend called Barbiecore. Barbiecore is a fashion trend that took off in 2023, largely due to the hype surrounding the live-action Barbie movie starring Margot Robbie. Barbiecore was the top trend of the past year, which peaked in June 2022, when pictures of Robbie as Barbie clad in an all-hot pink Western outfit were released: her look went viral on TikTok and sparked a 416% increase in searches for pink clothing. It encouraged people to join the trend, to look like Barbie that wear outfits with lots of pink, or pink accents on clothes and accessories. It also encourages people to consume more, to buy more stuff that related to Barbie especially make up, clothes and accessories.

The sense of FOMO makes women want to follow Barbiecore because if they are not following it, they feel that they got left behind, and if they follow the trend, they feel some sense of proud and enjoyment. This is what Baudrillard called as the result of consumerism myth which is about Well-being and Equality Through Consumption. Well-being and happiness in consumerism society, must be equal for everyone. Happiness which in essence is about inner thing and relatively different in each individual, become something external, can be seen, and measurable for everyone. Celebrity, influencer and social media display a good-looking woman with pink fashion that seems happy, it makes other want to follow it because they think that they can be as happy as them.

This study aligns with Fourie's findings, just like Fourie, this study identifies how *Barbie* (2023) critiques materialist consumerism while also becoming complicit in its propagation [2]. Fourie argues that films often provide a binary representation of consumerism, either affirming or revolting against it [2]. In contrast, *Barbie* intertwines critique with complicity. While the *Barbiecore* trend commodifies the film's critique by promoting a materialistic lifestyle, the movie also invites viewers to question the meaning of consumption and identity. This duality reflects Fourie's assertion that revolt against consumerism is complex, requiring self-awareness and critical thinking, yet differs by suggesting that critique and complicity can coexist within the same cultural artifact. However, unlike prior studies that focus on cinema's critique of consumerism Fourie [2] or its chaotic consequences Stanković [6], this research highlights the duality of *Barbie* as both a critique and a complicitor of consumerism. It also brings a unique focus to the interplay between consumerism and gender, demonstrating how feminist aspirations are entangled with materialistic pressures.

Second, *Barbie* movie 2023 is closely related to the creation of a women's body image that internalizes the positioning of women as objects of capitalism and boosts the fashion industry. For Turkel, "Barbie represents obsession with material values and an unachievable, distorted body image." [9] The exceptional popularity of Barbie both the movie 2023 and the doll, influences and are influenced by the fashion industry. It has become the symbol of consumerism since its first creation. The system of consumption in the fashion industry placed women as object of capitalism. Women perceived as more consumptive than men and become the target of various marketing strategies. In the movie, the stereotypical Barbie (the protagonist) is portrayed as the most beautiful women, dazzling, and glamorous women in Barbie land. She has various clothes that fit various occasions, it emphasizes the role of cloth in making women to be prettier.

Clothing is often used to indicate social value or status. People frequently judge others' social value or status based on their attire. Status can stem from various sources, such as position, family background, sex, gender, age, or race [10]. Social value can be either fixed or changeable. Fixed social value is known as ascribed, while changeable social value is known as achieved. All cultures place great importance on clearly symbolizing different statuses. These cultures may even focus more on individuals experiencing changes in status. The differing labels attached to women's bodies highlight a fundamental issue: the labelling game. Women's bodies are subject to staged labelling, starting from their denotative meaning to being discourses representing values from traditional identities. A woman's body is not merely an organic entity of blood and flesh but also a form of discourse. In the modern era, human bodies still carry myths, albeit with different values. Women's bodies are also influenced by symbols produced by capitalism. In this era, the values associated with these bodies are constructed through economic-political language created by producers, including clothing, which creates a reflection of values. In consumer culture, the body is expressed as a vehicle of pleasure.

The clothes and Barbie fashion in the movie may generate some kind of desire and dreams for the audience, especially women. According to Featherstone, clothing has been symbolized to celebrate the "natural" human body, contrasting with the nineteenth

century when clothing was used to cover the body [11]. In consumer culture, advertisements, popular magazines, television, and cinema showcase the development of stylized body images. Popular media continuously emphasize the benefits of body care cosmetics and fashion trends. Fashion and cosmetics are the most evident arenas where consumer desire to purchase products operates, driven by a strong desire to resemble fashion models seen in popular magazines. Pop culture heroes and fashion models have become trendsetters and role models, especially for women and youth [12]. They are icons where the recycling of styles and fashion trends occurs. The image of bodily beauty is sexually open and associated with hedonism, leisure, body display, and the importance of appearance and “view.” The dazzling clothes worn by Barbie in the movie are not just garments but symbols of an aspirational lifestyle. They commodify the dream of being fashionable, beautiful, and glamorous. Baudrillard's idea that consumer society commodifies desires is evident here, as the movie sells not just fashion, but the dream associated with it.

Barbie is so popular, all women want to be pretty, and the definition of pretty is Barbie appearance. Women should be pretty because being pretty bring happiness. Our society pressure women to have certain standard of pretty, if it's not like that, then people will treat women badly. Being pretty therefore, can bring happiness to women since not only people will treat women nicely, but it also makes women proud of themselves and they feel happy. It aligns with the myth of happiness and well-being in consumer society. Baudrillard criticizes this externalization of happiness as a fundamental flaw in the consumer society [8]. He suggests that true happiness and well-being cannot be achieved through material consumption alone. Instead, they require a deeper engagement with internal values, emotional health, and intrinsic satisfaction, which are often neglected in the pursuit of material goods. By emphasizing external sources of happiness, the consumer society creates a superficial and often unsustainable sense of well-being. The concept of why women should be pretty is correlated to historical context when women had very weak social standing and economically dependent. This condition created a market for products that promised to enhance a woman's attractiveness or domestic skills, making her more desirable as a wife. Thus, the concept of the desire to be beautiful persists even into the modern era when women can be financially independent. Despite their financial independence, society still treats and privileges women based on their level of beauty.

This kind of beauty system both empowering and restrictive for women, they feel happy with themselves by being pretty without they know that their perception about their obligation to look pretty is forced by the society upon them. This finding reflects Stanković's finding who noted that consumerism in popular media often drives societies toward chaos [6]. Similarly, *Barbie* presents beauty as both empowering and restrictive, with the hyperreal perfection of Barbie Land mirroring Stanković's critique of consumer culture's capacity to distort societal values [6]. However, different from Stanković's this study focuses more on women as the object of beauty industry while Stanković's study stand his ground on the comparison between the chaos of consumerism in popular media with the principle of thermodynamics as both escalates from from individuality to chaos.

Third, Barbie 2023 is a part of mass media and advertising in increasing women's consumption levels across almost all business sectors. The trend of Barbie core cannot be separated from the role of advertising and mass media. Mass media with the help of advertising helped to habituate people psychologically to conform to consumerism by associating products with perfect looking media icons and celebrities. Thus, mass media shaped identity of the people by creating 'artificial needs' for the consumers by associating a number of consumer goods with perfectly trimmed, flawless bodies of female celebrities [13]. Advertising plays a big role, portraying women's value as connected to their appearance, youth, and sex appeal. Products like makeup, clothes, and anti-aging creams are marketed as a way to achieve these ideals. This creates a cycle where women feel pressured to buy things to meet unrealistic expectations.

When the Barbiecore emerged, it created trend on social media, not only celebrity who join the trend, but also ordinary people. It stimulates the seller and all that in marketing industry to also join the trend. Barbie has spawned an enormous range of accessories including additional toys, games, videos, and home wares; not just a doll but 'a lifestyle' with product lines to completely surround the Barbie consumer. Everything is associated with Barbie and the colour pink; all products are sold in pink hues with Barbie-themed designs. It closely related to Barbie doll that create the impression of what the meaning of being pretty. Barbie is characterized as "beautiful rich girl with lots of friends" and "a dream doll, a bling, bling doll" who lives "a dream life – you want to live like that." When look at Barbie it reminds people of Paris Hilton who is she is rich and has a great life, but Barbie is nice and kind, she would never be rude to anyone [14].

Ever since Barbie doll was created, Barbie become new beauty standard, at first, it is only for Western women but then it is the symbol of universal beauty, all women want to look like Barbie. This indicates that people who really want to look like Barbie has been trapped in the simulacra. Barbie as a part of postmodern culture means it is not only about the doll but also about the image and the effect of the doll in the society especially in how women perceived themselves. Barbie is simulacra, the creation of Barbie is based on other doll, it was based on German sex doll marketed for men, Bild-Lilli. She has thus been shaped and determined by what might be described as a male fantasy: blonde, disproportionally slim and large-breasted [15]. Therefore, Barbie itself is copying a distorted reality of women body desired by men. Simulacra, a concept arising from various facts, signs, images, and codes, are now a product of advancements in science and information technology. Signs and values become crucial, serving as references for individuals to determine their status, relationships, and even identity [8].

Barbie is not merely a doll; she often becomes an integral part of a girl's life. Barbie serves as a friend, stylist, mentor, and even a role model for young children. Many Americans fondly recall amusing stories about growing up with Barbie dolls. For many, Barbie dolls have been a significant part of their lives, shaping their experiences. While some may cherish their memories of the doll, many others have faced negative consequences. Despite being just a plastic toy, the Barbie experience profoundly impacts young girls, leading them to struggle with self-image and mental health issues. According to Miralles et al., Barbie has contributed to numerous girls developing eating

disorders, body image problems, undergoing physical transformations, and suffering from decreased confidence [16].

In this context, people might perceived that the beauty image of Barbie which is thin and pretty face is the real definition of pretty, more real than the real beauty of women. In reality, women's appearances and faces are very diverse, and there should not be any specific standards to determine a woman's beauty, especially if those standards are as narrow as Barbie's beauty. However, the cast of Barbie movie, Margot Robbie can fulfil that unrealistic image of that Barbie beauty. It followed by people with high influence that also shows themselves doing make up and wear clothes like Barbie in the movie, it makes people think that being Barbie is not only a dream, being as pretty as Barbie is not unrealistic, but it is achievable. As a movie that critics society and tried to empower women, Barbie did little to combat the pervasive Eurocentric beauty norms that she has repeatedly been pedestaled upon.

Baudrillard describes simulacra as a counterfeit reality that no longer corresponds to actual reality; instead, the meaning of actual reality transforms into a new reality, creating hyperreality [8]. Hyperreality is an artificial reality that feels real, formed from a blend of delusion and reality, truth and error, and the past and future, making it difficult to distinguish between them. The overall all concept of the film is similar to hyperreality where there is Barbie land, the imaginative land and there is a real world, and the two world do not have a clear border. Barbieland serves as a quintessential example of hyperreality, offering a perfect and controlled version of reality that reflects the aspirations and dreams associated with the Barbie brand. Barbieland is depicted as a utopian society, characterized by its flawless aesthetics and perfect design. Every element of this world, from the landscapes to the houses and characters, is crafted to be visually appealing and devoid of the imperfections found in real life. This idealized environment creates a sense of hyperreality, where the mundane and flawed aspects of the real world are conspicuously absent. The artificial beauty of Barbieland, with its bright, pastel colors and retro-futuristic architecture, further enhances this hyperreal experience, making it seem both familiar and fantastical. Barbie land has a very contrast condition with the real-world life, which is messy and unordered. When Barbie enters the human world, she's so surprised. She encounters a world that's messy, unpredictable, and doesn't conform to the hyperreality of Barbie Land. This encounter forces her to question her own existence and purpose.

One of the most prominent concepts about the Barbie doll, which is also evident in the Barbie movie 2023, is the Barbie Dream House. Barbie is incomplete and inseparable from the Barbie Dream House. Barbie Dream House in the movie is constructed like the Barbie Dream House doll that sell by Mattel. The same with Barbie dream house in real life, the Barbie Dream House in the movie also design like the doll house that has no wall so that Barbie can wave to her friends inside her house. The Dreamhouse provides a whole new environment for kids to play with their Barbies. It allows them to imagine stories and scenarios beyond just posing the doll. The Dreamhouse reflects cultural ideas of what a desirable home looks like. By playing with it, kids can imagine themselves living in a dream home, which can be especially appealing for young girls who are starting to think about their futures. Therefore, it tries to internalize the consumerism structure to children. As a child they learn that they feel

happy when they can play Barbie inside Barbie dream house, it created some sense of imaginary of their own dream house. This reflects Baudrillard's idea that consumer society commodifies desires and dreams, turning them into products that can be bought and sold. Children playing with the Dreamhouse engage in aspirational play, imagining themselves living in such a home. This internalizes early desires for a certain lifestyle and material success, reinforcing the idea that happiness and fulfilment come from owning desirable things.

3. Conclusion

Barbie movie presents a mixed message, it empowers with its strong female lead, defying stereotypes and encouraging girls to dream big. However, it gets tangled in the consumerist web it critiques. The “Barbiecore” trend, fueled by media and social media, creates pressure to conform to unrealistic beauty standards and a materialistic lifestyle. Barbie Land itself is a hyperreal utopia, highlighting the manufactured nature of beauty ideals. Even the Barbie Dreamhouse reflects the commodification of desires, conditioning children to associate happiness with owning things. Ultimately, Barbie exposes the complexities of consumerism's influence. True empowerment requires promoting self-acceptance and critical thinking alongside positive role models, a challenge the film leaves us to consider.

References

1. Miles, S.: *Consumerism as a Way of Life*. London: SAGE Publications (1998)
2. Fourie, E.: *The representation of materialist consumerism in film* (Doctoral dissertation) (2009)
3. Lubis, A. P.: Exploring masculinities in Barbie (2023) directed by Greta Gerwig. *Lililacs Journal: English Literature, Language, and Cultural Studies Journal*, 4(1), 26-39 (2024)
4. La Porte, A., & Cavusoglu, L.: Faux Feminism in a Capitalistic Fever Dream: A Review of Greta Gerwig's Barbie (2023). *Markets, Globalization & Development Review*, 8(2) (2023)
5. McLean, B.: *A Single Man of Good Fortune: Postmodern Identities and Consumerism in the New Novel of Manners* (Doctoral dissertation) (2015)
6. Stanković, M.: Consumerism and Mass Media in the Early Works of Thomas Pynchon. In *Journal of the International Symposium of Students of English, Croatian and Italian Studies* (pp. 98-119). University of Split, Faculty of Humanities and Social Sciences (2018, October).
7. Smart, B.: Introduction. In J. Baudrillard, *The Consumer Society, Myths and Structure* (Revised Ed.) London: Sage Publications (2017)
8. Baudrillard, J.: *The Consumer Society, Myths and Structure* (Revised Ed.) London: Sage Publications (2017)
9. Turkel, A. R.: All about Barbie: Distortions of a transitional object. *Journal of the American Academy of Psychoanalysis* 26, (1): 165-177 (1998)

10. Barnard, M.: Fashion Sebagai Komunikasi: Cara Mengomunikasikan. Identitas Sosial, Seksual, Kelas, dan Gender. Yogyakarta: Jalasutra (2011)
11. Featherstone, M.: Body, image and affect in consumer culture. *Body & society*, 16(1), 193-221 (2010)
12. Hooker, "Ekspresi: Kreatif Biarpun Tertekan" in Donald K. Emerson (ed.), *Indonesia Beyond Soeharto: Negara, Ekonomi, Masyarakat, Transisi*. Jakarta: Gramedia & The Asia Foundation Indonesia (2001)
13. Malik, S.: Women's objectification by consumer culture. *International Journal of Gender and Women's Studies*, 2(4), 87-102 (2014)
14. McGrath, M. A., Sherry Jr, J. F., & Diamond, N.: Discordant retail brand ideology in the House of Barbie. *Qualitative Market Research: An International Journal*, 16(1), 12-37 (2013)
15. Eilers, F. Barbie versus Modulor Ideal Bodies, Buildings, and Typical Users. *Girlhood Studies*, 5(1), 76-97 (2012)
16. Miralles, C., Ragpala, L., Aliwa, M., Parohinog, A., Arciaga, J., Bandral, K., & Galang, R. (2020). Barbie Dolls: People's Body Standards. *Res. J*, 3, 137.

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