

**Corporate Social Responsibility in The Hair Care, Beauty, And Medical Industries: A
Deontological and Virtue Ethics Analysis of Hair Care Companies**

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Aparna Kola

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

Advisor

Bryn E. Seabrook, Department of Engineering and Society

The Evolution of Hair Care

Before 1450, there was little separation between hair in beauty and hair in medicine—the job of a surgeon could be performed by a barber. While the hairdressers and barbers of the current day are known for their expertise in hair-styling, barbers before 1450 also performed minor surgery, administered herbs, performed bloodletting, and even pulled people's teeth (Wood, 2012). Although the medical and pharmaceutical industries may be separate from the cosmetics industry, medicine is a crucial part of advancing cosmetic technology and more importantly, monitoring the safety of cosmetic products. Moreover, cosmetics have developed over time to use active pharmaceutical ingredients while pharmaceuticals have evolved to inform human wellness and beauty ideologies (Trüeb et al., 2001).

One of the products commonly used at this intersection of beauty and medical treatment is shampoo. Shampoo is the most frequent type of cosmetic hair treatment, used by 307.84 million Americans, and is used to cleanse the hair and scalp, enhance the beauty, aesthetic, and hygiene of hair, and even treat medical conditions like eborrheic dermatitis, or dandruff, and alopecia, or hair loss (Statista Research Department, 2020). Companies that produce these shampoo products must take into account the health hazards associated with the ingredients in shampoo (Zviak, 1986). For example, formaldehydes are commonly used preservatives in shampoos, but also a human carcinogen when absorbed into the scalp (Trüeb et al., 2001; Whipple). Consequentially, regulatory bodies must account for the medical effects of chemicals in cosmetics (Pathak et al., 2019) and companies have a corporate social responsibility to convey their compliance with said regulations to consumers. As a subset of this responsibility, hair care product companies must be knowledgeable regarding the users they influence, and the cultural and demographic makeup of this user population (Gavazzoni, 2015). A recent lawsuit

exemplifies this in which Johnson & Johnson Consumer Inc.'s OGX Shampoo and Conditioner line is contested to have harmful levels of a carcinogenic compound with a lack of appropriate contingency measures taken by the company (Whipple). This lawsuit will be further explored in deconstructing the relationship between hair care consumers and companies.

Paradigm Shift Theory, a theory explaining fundamental changes in human ideology and behavior, is used as the primary framework to analyze how the public perception of hair care and hair beauty standards have evolved in American culture. This is particularly applied to the trends of the Natural Hair Movement (NHM), a movement started by the Black community which encourages Black men and women to embrace their natural hair. Deontological ethics is used as a secondary framework to evaluate whether large personal care product and beauty companies are responsible for the health of their consumers' hair and to what extent. Ultimately users must consider the role that large companies play in this system. Finally, virtue ethics is used as a framework to understand what role consumers themselves play in their own health and safety based on the consumer choices they make. To educate shampoo and hair care users on this issue and urge them to formulate a stance on the matter, the research herein seeks to answer the following research question: To what extent have historical paradigm shifts in the hair care industry propagated texturism and set the precedent for poor hair care safety and access to Black communities?

Discourse and Documentary Analysis of Hair Care Companies and Consumers

Discourse analysis methodology is used to make sense of background information and evidence to support the aforementioned research question. 'Hair care', 'cosmetics', 'hair loss', 'history of hair', and the 'biology of hair' are examples of keywords that are used to collect background knowledge for the thesis (Gavazzoni, 2015; Trüeb, 2001; Wood, 2012, Zviak, 1986).

Keywords describing the NHM such as ‘curly hair,’ ‘Black hair,’ and ‘curl butter’ are used specifically to gather insights regarding historically marginalized and minority groups in hair care (Camacho-Bragado et al., 2015; Simeon, 2021; Westgate et al., 2017). The documentary analysis methodology, a thematic analysis of sources, is used to identify and synthesize primary sources as the key evidence for the research. The Whipple v. Johnson & Johnson Consumer Inc. case is used as the primary source of evidence while surrounding lawsuits, case studies, and regulations from the Food and Drug Administration (FDA) are examined as supportive evidence (Cornell et al., 2019; Pathak and Akhtar, 2019; Whipple, 2021). Sources include FDA guidelines on labeling requirements for cosmetics, datasheets and product monographs published by drug product shampoo companies, and testimonies from people about hair damage on shampoo review pages and social media, specifically TikTok and Twitter (Food and Drug Administration 2013, Johnson and Johnson, 2010). This evidence is analyzed using the frameworks of paradigm shift and deontological and virtue ethics to hypothesize that Black communities are disproportionately affected by poor cosmetic formulation.

Background of Shampoo and the Hair Care Industry

Following the history of hair care, the development of cosmeceuticals, and the rise and fall of hair care movements in different communities, the discourse between hair care technology companies and hair care product users is explored in this science, technology, and society thesis to better understand how one entity influences the other. This research stems from the recent class-action lawsuit surrounding the OGX Shampoo and Conditioner product line by the large family product company, Johnson and Johnson in which Plaintiff Larissa Whipple filed for false claims about the hair growth and maintenance capabilities of their products (Whipple, 2021). Multiple witnesses claimed hair loss experience, and it was found that DMDM hydantoin,

a formaldehyde donor and hair loss agent, was contained in their products. Although this ingredient was listed on the product, the inclusion of the ingredient in the first place is questionable due to its carcinogenic risks. From this crucial event, the research follows to explore the history of hair care safety and what role companies play in influencing its evolution. Moreover, the research explores whether particular minorities are affected by and unknowingly targeted by such influences, such as in the case of the NHM and public acceptance of curly and often Black hair (Simeon, 2021).

In terms of shampoo product classification, the Food and Drug Administration (FDA), the main regulatory body of cosmetics and pharmaceuticals in the United States, clearly delineates cosmetics and drugs. However, international regulatory bodies in some countries like Japan and Hong Kong have product classes which address the full spectrum of products, including 'quasi drugs' and 'cosmetic-type drugs' to address the range of cosmetics which may have physiological, drug-like effects (Trüeb et al., 2001). In the US, drugs are FDA-regulated and must undergo premarket notification which means they have rigorous quality control processes and strict technical documentation required before product release. Cosmetics, however, are not FDA regulated. Applying this structure to shampoos, medicinal or drug product shampoos, like anti-dandruff shampoos are medically designed to cure dandruff and include an active pharmaceutical ingredient in the formulation. A commonly prescribed example includes the Nizoral brand shampoo. The FDA requires such products to undergo quality control and even publish a product monograph, a factual datasheet which describes the contents, properties, claims, and conditions of use for a product. However, cosmetic shampoos such as the OGX shampoos require no such validation processes or means of trusting their claims. OGX includes a publicly available safety & care commitment under its parent company Johnson and Johnson,

and is said to be “evaluated against internationally recognized standards,” but is not strictly regulated by any organization other than consumers who may choose to file a lawsuit against false claims of a company (OGX Beauty, 2021). This raises questions of how much non-medicinal shampoos can be trusted based on the current regulations in place. On another note, it is curious to explore whether some people can trust the current regulations, or lack thereof, more than others.

In the history of the American cosmetic industry, there has existed a discourse between those that create hair-cleansing products and their users including women and men of all hair types, hair conditions, and hair cultures. This discourse has been plagued by texturism, a public beauty standard endorsing smooth and straighter hair over coarse and kinkier rooted in Eurocentrism. This is seen in social pressures and trends of the past, where Black women were encouraged to use heat combs, chemical straighteners, and wear wigs to be accepted in American society (Griffin, 2019). More recently, the NHM has gained momentum, particularly in the Black community, and has been influencing the supply and demand for products that optimize the experience of natural, and particularly curly hair according to current beauty standards. Products such as leave-in conditioners and curl butters have gained popularity along with this movement (Camacho-Bragado et al, 2015; Simeon, 2021; Westgate et al., 2019). This raises questions about whether shampoos are made well for some populations and hair types, and not for others. There exists a potential for biased research in hair care formulation which may disadvantage some groups more than others. Alternatively, there is a more critical perspective offered on the marketing that cosmeceutical shampoo companies do in terms of utilizing the latest hair trends to write satisfying claims such as "strong, luscious, voluminous, and shiny" hair.

The Importance of the Paradigm Shift Theory and Deontological Ethics

In terms of science, technology, and society (STS), this research explores how society informs the production of hair care products by companies, how companies respond to societal trends and norms of hair care, beauty, and hygiene, and how companies are held responsible. Two key frameworks are used to develop the research process. Paradigm Shift Theory, a concept developed by Thomas Kuhn, is defined as a fundamental change in the principal concepts of a scientific discipline. For the purposes of this discussion on the history and evolution of hair, Paradigm Shift is defined as a profound change in a population's perception of trends from a sociological science perspective (Kuhn, 2012). Paradigm Shift is used as the primary framework to analyze how the public perception of hair care and hair beauty standards have evolved. The history of hair in the United States is analyzed over the timeline of immigration and fashion trends. Paradigm Shift Theory helps uncover the evolution of curly hair standards and the more recently developed NHM (Sadick et al., 2017).

Paradigm Shift theory has been criticized by philosopher Martin Cohen and philosopher of science Paul Feyerabend for suggesting that science is more subjective to change rather than objective, and less factual than humanity allows itself to believe (Cohen, 2015). This criticism is countered, however, by the definition of science itself and what is considered to follow the scientific method including testable predictions, controlled experiments, and measurable results. Biology, one of the core, natural sciences, and the social sciences have been criticized for being more subjective and less quantitative than physics and chemistry (Smith et al., 2000). Still, they are considered scientific disciplines. Paradigm Shift is grounded in the idea that even the commonly held notions about the core sciences are challenged by the development of human knowledge over time. An example of this is seen in wicked problem framing, where even the

simple definition of a molecule can fundamentally differ between a physicist and a chemist (Seager, Selinger, & Wiek, 8 2012). Furthermore, epistemology presents a perspective against this criticism questioning what knowledge is truly held by humanity, and addressing that this knowledge is always subject to be discovered in new ways.

Further observing Paradigm Shift theory, Robert Jackson, a British educator in religious studies and intercultural education, interprets Kuhn's paradigm shift as 'when a current view of reality is dominant for a significant time' and "once a new paradigm is accepted, the inadequacy of the earlier paradigm becomes clear" and "both theories cannot be embraced at the same time" (Jackson, 2018). Jackson breaks down the meaning of a paradigm shift to better understand changes in religious education and does so in a very detail-oriented manner. He specifically asks, "when is a paradigm not a paradigm?" Taking inspiration from this application of the Paradigm Shift Theory, it is clear that curly hair research has long been undervalued, and popularity in both curly and straight hair types cannot take the stage at the same time if resources are to be allocated toward increasing awareness for curly hair care. This sets the stage for how the curly hair movement acts as a paradigm shift, highlights the importance of a long-dismissed population of people, and transfers weight to the ethical discussion of company responsibility in curly hair care.

As a supporting framework, Deontology is used in the evaluative component of the research. Deontology is one of the three major approaches to normative ethics which highlights that people and entities must act ethically by a clear set of rules as dictated by their duty (Britannica, 2020). Through the lens of Deontology, it is evaluated whether large personal care product and beauty companies are responsible for the health of their consumers' hair and to what extent. Moreover, this framework helps to evaluate what role these companies play as

influencers in the hair technology space, and suggests corporate social responsibility as a profitable approach for these companies to reposition their perception in the consumer eye. Overall, it is important to study the sociotechnical discourse that occurs in the health and beauty industry between large corporations and the consumer population to monitor constructive and destructive feedback between the two entities, especially when that discourse leads to implications as significant as health, safety, and even racial discrimination

Paradigm Shift in Western Beauty Standards

The interaction between hair care companies and consumers has recently experienced a paradigm shift with the resurgence of the Natural Hair Movement (NHM). The Black community has attempted to reclaim confidence in wearing natural hair, but more privileged communities have co-opted this movement. Upon deconstructing this paradigm shift, it is questioned whether an appropriate response has followed from society, including regulatory bodies and companies. Ultimately, it is found that Black communities may be disproportionately affected in by poor cosmetic formulation and lawsuits due to systemic racism, but a direct causation cannot be drawn due to a lack of data availability, which is further due to systemic racism and bias in research. Based on these findings, it is suggested that more research on cosmetic applications should push Eurocentric beauty standards, and the power of data-driven decision-making should be put back in the hands of the customer, by requiring all companies to release product monographs along with their hair care products.

The NHM is a social movement which originated in the 1960s, concurrently with the civil rights movement, challenging Eurocentric beauty standards and the public eye by encouraging men and women of African descent to wear their natural afro-textured hair and to feel beautiful in their natural type 4 or kinky hair type (Necessary Behavior). Eurocentrism and

the white male gaze have defined western beauty standards, which favor Eurocentric traits such as straight hair. These beauty standards have implications even beyond a person's perception of their own beauty and identity, but even lead to oppression and inequality in the workplace (Griffin, 2019). Laws and regulations have also played a role in regulating discrimination based on hair style as in the case of the Crown Act by California (Donahoo, 2021)

A paradigm shift is best illustrated by the Kuhn Cycle, which shows that a paradigm shift follows a cycle with distinct events; first, there is 'normal science' which is the standard of information at a given time, after which a 'model drift' starts to occur when new and contradictory information and experiences arise that do not conform to the current normal science. Similar to Kuhn's description of a crisis, "A crisis in science arises when confidence is lost in the ability of the paradigm to solve particularly worrying puzzles called 'anomalies.' (Bird, 2004)" Subsequently, a 'model crisis' occurs when the model drift starts to have notable change and cause problems in society, which then leads to a 'model revolution' where new agents for change develop new norms, including technologies to establish and support these new norms, to try and fill the void caused by 'model drift.' Finally, a 'paradigm change' occurs where the model revolution is accepted by communities in the general public and the new information is slowly established again as 'normal science,' after which the cycle repeats itself. Paradigm shift is a framework to analyze how fundamental changes in science ensue. Just as Kuhn applies paradigms as a critical part of progress in science, the same patterns are seen in the progress of social change and civil rights as we strive to achieve equity through social engineering by managing the development of society.

Here, it is proposed that the hair care and beauty industry underwent a paradigm shift with the NHM that can be better understood through the Kuhn Cycle (Figure 1). Before the

NHM, ‘normal science’ consisted of information on how to maintain silky, smooth hair for mostly Eurocentric, straight and wavy hair types. A ‘model drift’ occurred when many women and men with naturally curly, type 4 hair, the most curly, coiled hair type, found that information on natural hair care for their particularly curly hair was not available, and even encountered a lot of misinformation on the matter (Necessary Behavior; Better Not Younger, 2022). Model drift is supported by multiple testimonies from the Black community and allies on social media platform, both Twitter and TikTok. @_AfroAmi, a member of the Black community with type 4 hair on Twitter, states that ‘the natural hair movement only belongs to people with type 4 hair, anything other than that is invalid’ (Ami, 2021). @the.fit.curls, an ally of the Black community, says “PSA [public service announcement] for my fellow white curly girls, the natural hair movement is not ours to take over (The Fit Curls, 2021). Black people’s natural hair has been a source of their discrimination and oppression for centuries. White people set the western beauty standard and basically ensured that Black people would always fall short of them.” Here, she alludes to how the NHM is an important ‘cultural revolution’ for Black community that has been taken over. Moreover, @thelifeofdeb speaks on the following— “women with lose curls becoming the face of the natural hair movement is the perfect example of a movement being hijacked from the very people it was meant to uplift” (Deb, 2021).

Model drift progressed into a ‘model crisis’ as a lack of adequate knowledge meant a lack of adequate products and accessibility of type 4 hair care. This information gap created a need for an entire population of people, who responded with a ‘model revolution’ of new information championed by influencers on social media which further led to a surge in curly hair products on the market, culminating in the NHM to support folks with afro-textured hair, marking an important change in hair care and beauty standards in the United States.

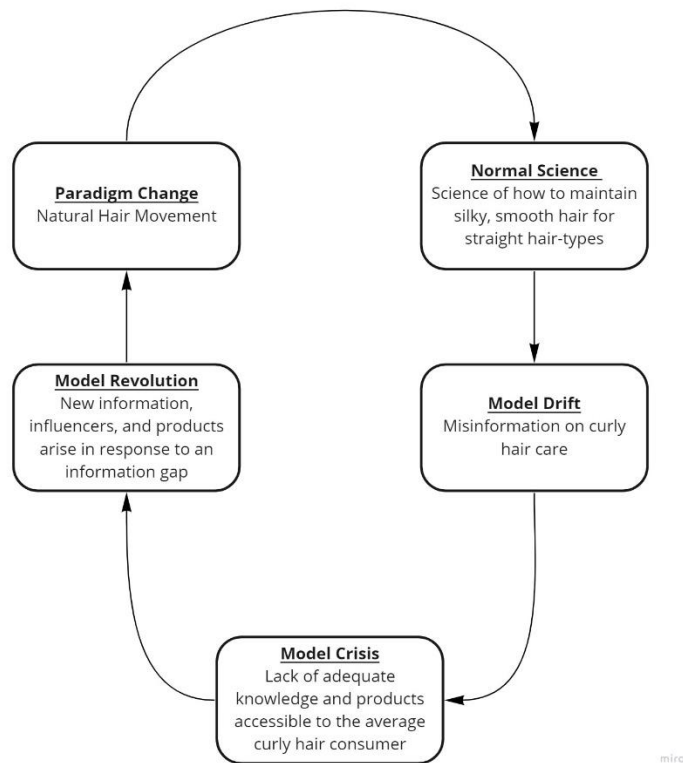


Figure 1: Natural Hair Movement (NHM) as a paradigm shift in the development of the hair care and beauty industry (Kola, 2022)

Now, understanding the NHM as a paradigm shift in the development of hair care and beauty standards, the movement can be analyzed for the ethical rules which must follow in response.

There has been a lack of appropriate response to the NHM from society and regulatory bodies. The NHM has recently regained popularity, largely carried through social media platforms, however the face of the NHM has been co-opted by lighter skinned people with looser curls, essentially overriding the purpose of empowering Black folks with type 4 hair recently in the first place (G. Winnie, 2019). The recent iteration of the NHM has carried the story of embracing natural curls, but a majority of these curls are looser, bouncy curls, as advertised by shampoo companies, worn by lighter skinned folks, and even white folks as explained on TikTok by @brianna.oats (BB, 2021).

Are People of Color Disproportionately Affected by Poorly Formulated Products?

As the focus of the NHM has been taken away from the original Black creators and their cause, the appropriate response from companies and regulatory bodies has not followed. In addition to this concern, systemic racism has led to disproportionate access to resources for Black communities in all areas, including healthcare, education, and housing (Assari, 2017). Disproportionate access further increases the wealth gap between Black and white communities, and propagates the cycle of low access to quality resources for Black communities. This phenomenon applies to everything, from serious assets like housing, to everyday products like shampoo, and is further supported by previously referenced TikTok influencer, @thelifofdeb, who further highlights the issue and demands change by stating that “affordable natural hair products need to be way more accessible” (Deb, 2021).

The Johnson and Johnson OGX case is an example of a product that has capitalized on the NHM to sell a subset of shampoos and conditioners for Luscious, curly hair and even some curl butters and oils. OGX shampoo is a drug store product that gained popularity around the resurgence of the NHM, and recently underwent a class-action lawsuit for containing the toxic, and potentially cancerous chemical, DMDM hydantoin. A very similar lawsuit occurred in 2020 with a curly-hair-specific product called Devacurl (Robert, 2020). In such situations, it is appropriate to question who is being harmed, and whether some populations are disproportionately vulnerable over others. Is there an implicit marketing of products toward people of color with curly hair? Is there a higher accessibility of less regulated products to lower socioeconomic groups, creating a higher health risk for these populations? These questions must be traced back to the NHM to see if the model crisis created by ethnocentric beauty standards is hurting the Black community at the consumer-level, and whether adequate change has been

made in company policy and regulatory bodies in response. The problem with tracing back consumer data to potential targeting of Black communities, is that there is a disproportionality in the data availability and research itself. Time and resources are not put toward researching the struggles that society imposes on the Black community, which makes it more difficult to make novel claims and propose change. As an effort to change the stated negligence, this paper sets forth a hypothesis, and calls for action more research of beauty in Black culture and access to high quality hair care products

Who ia Responsible?

After questioning whether such a disproportionality exists, it follows to question which agents are responsible to address the issue. Looking to deontological ethics as a framework of analysis, there must be a set of rules to guide what is right and wrong in providing equal access or resources in hair care for Black communities. On this basis, regulatory bodies are the main rule-making and enforcing organizations guiding ethical practice. In this case, the Food and Drug Administration (FDA) Is primarily responsible for updating regulations in response to social change to ensure progress toward equal access. Moreover, cosmetic companies are responsible for following FDA regulations, but also for having a company code of ethics that serves their customers. Companies must refrain from false marketing, and take responsibility for misleading customers such as in the case of the Johnson & Johnson OGX case. From a virtue ethics perspective, companies cannot claim to have corporate social responsibility if they do not act within the customer's best interest, and show a dedication to do so through policy, research, and programs used to better understand consumer needs. Consumers are also responsible themselves for the products they consume. Where the FDA cannot act, it is the consumers job to make

informed decisions on products which suit them on an individual basis, especially where individual allergies and unique consumer profiles may apply.

The Concluding Predicament

It is difficult for large bodies like the FDA to be agile and keep up with rapidly changing societal needs. One method of addressing this is to put a balanced responsibility for safety on both the consumer and the manufacturer. Here, it is proposed to empower the consumer with transparency and knowledge to mitigate for potential harms such as the mentioned lawsuits. As discussed in the evolution of cosmetics, cosmeceuticals have been an upcoming industry, where products are becoming more and more targeting toward chemical change in hair care. Pharmaceutical products, including medical shampoos, are released with a product monograph, “a factual, scientific document on a drug product that, devoid of promotional material, describes the properties, claims, indications and conditions of use of the drug and contains any other information that may be required for optimal, safe and effective use of the drug” (Canada, 2020). However, cosmeceutical shampoo companies are not required by the FDA to publish such data. According to the FDA regulations, “cosmetic ingredient suppliers often have safety data on their products and [this data] may be published in scientific journals. (Center for Food Safety and Applied Nutrition, 2022).” However, is proposed here to make product monographs a necessary regulation for all cosmetic companies, so that information is more accessible to the consumer and they are empowered with knowledge on how to make a safe consumer decision for their needs beyond marketing strategies. Increasing data availability is especially helpful to people of lower socioeconomic communities who often do not have the time and resources to research whether a product is fit for them by making this information much more accessible.

A key limitation of this thesis is that novel claims are being made—adequate research is not available beyond the individual experiences of those on social media and lawsuits that represent consumer populations to tie back demographics to shampoo usage and marketing. It is important to give a voice to the vulnerable, but it is difficult to prove their vulnerability when data and research to do so is unavailable. This lack of research creates a predicament between the cause of disproportionality and its effects, making it hard to link the two. For this very reason, another important solution is to dedicate more capital and time to researching the effect of shampoo products on diverse populations, and also recruiting diverse teams in the first place to create hair care products. At the very least, a diversity of people should be consulted from the target population, say curly hair, to ensure that the product is safe and accessible. Ultimately, this is a call to action to researchers in the cosmetics industry and the FDA to consider whether they are propagating systemic racism, and actively participate in anti-racist practices by diversifying research.

Works Cited

- Ami, Afro. “The Natural Hair Movement Only Belongs to People with Type 4 Hair, Anything Other than That Is Invalid.” Tweet. @_AfroAmi (blog), April 17, 2021. https://twitter.com/_AfroAmi/status/1383228434835333124.
- Assari, Shervin. “Unequal Gain of Equal Resources across Racial Groups.” *International Journal of Health Policy and Management* 7, no. 1 (August 5, 2017): 1–9. <https://doi.org/10.15171/ijhpm.2017.90>.
- BB. [@biranna.oats]. (2021, February 20). *Unpopular opinions: Natural hair edition*. [Video]. TikTok. <https://vm.tiktok.com/ZTdPVhnsj/>
- Bird, Alexander. “Thomas Kuhn,” August 13, 2004. <https://seop.illc.uva.nl/entries/thomas-kuhn/>.
- Britannica, T. Editors of Encyclopaedia (2020, May 21). *deontological ethics*. *Encyclopedia Britannica*. <https://www.britannica.com/topic/deontological-ethics>
- Camacho-Bragado, G.a., G. Balooch, F. Dixon-Parks, C. Porter, and H. Bryant. (2015). Understanding Breakage in Curly Hair. *British Journal of Dermatology* 173, no. S2: 10–16. <https://doi.org/10.1111/bjd.13241>
- Canada, Health. “Product Monographs: Frequently Asked Questions.” Notices, January 31, 2008. <https://www.canada.ca/en/health-canada/services/drugs-health-products/drug-products/applications-submissions/guidance-documents/product-monograph/frequently-asked-questions-product-monographs-posted-health-canada-website.html>.
- Cohen, M. (2015). Paradigm shift: How expert opinions keep changing on life, the universe, and everything. *Andrews UK Limited*.

Deb. [@thelifeofdeb]. (2021, November 21). *Natural hair movement rant*. [Video]. TikTok.

<https://vm.tiktok.com/TTPdP4ohVj/>

Donahoo, Saran. "Why We Need a National CROWN Act." *Laws* 10, no. 2 (June 2021): 26.

<https://doi.org/10.3390/laws10020026>.

Food and Drug Administration (2013). "FDA Authority Over Cosmetics: How Cosmetics are Not FDA-Approved but Are FDA-Regulated." <https://www.fda.gov/cosmetics/cosmetics-laws-regulations/fda-authority-over-cosmetics-how-cosmetics-are-not-fda-approved-are-fda-regulated>

Gavazzoni Dias M. F. (2015). Hair cosmetics: an overview. *International journal of trichology*, 7(1), 2–15. <https://doi.org/10.4103/0974-7753.153450>

Griffin, Chanté. "How Natural Black Hair at Work Became a Civil Rights Issue." JSTOR Daily, July 3, 2019. <https://daily.jstor.org/how-natural-Black-hair-at-work-became-a-civil-rights-issue/>.

Jackson, Robert. "Paradigm Shift in Religious Education? A Reply to Gearon, or When Is a Paradigm Not a Paradigm?" *Journal of Beliefs & Values* 39, no. 3 (July 3, 2018): 379–95. <https://doi.org/10.1080/13617672.2018.1469327>.

Johnson and Johnson (2010). Nizoral Product Monograph.

https://pdf.hres.ca/dpd_pm/00011679.PDF

Kuhn, T. (2012). *The Priority of Paradigms. The Structure of Scientific Revolutions*. Fourth Edition. (pp. 43-52). *Chicago, Illinois. The University of Chicago Press*.

Kola, A. (2022) *Khun cycle of Natural Hair Movement*

Necessary Behavior. “The Natural Hair Movement: History, Stigma, and Successes.” Accessed March 19, 2022. <https://www.necessarybehavior.com/blogs/news/the-natural-hair-movement-history-stigma-and-successes>.

Nutrition, Center for Food Safety and Applied. “Product Testing of Cosmetics.” FDA. FDA, March 4, 2022. <https://www.fda.gov/cosmetics/cosmetics-science-research/product-testing-cosmetics>.

OGX Beauty. (2021). FAQs. <https://www.ogxbeauty.com/faqs/>

Pathak, Kamla, and Nida Akhtar. (2019). Hair Care Cosmetics Regulation in Different Countries – A Comparative Study. *Applied Clinical Research. Clinical Trials and Regulatory Affairs* 6, no. 1: 34–45. <https://doi.org/10.2174/2213476X06666190128150054>.

Published by Statista Research Department, & 2, J. (2021, July 2). *U.S.: Usage of shampoo 2020*. Statista. Retrieved December 9, 2021, from <https://www.statista.com/statistics/276924/us-households-usage-of-shampoo/>.

Robert, Yola. “DevaCurl Is Under Fire From Their Loyal Customers For Alleged Hair Loss And Damage -Here’s What We Know.” Forbes. Accessed March 20, 2022. <https://www.forbes.com/sites/yolarobert1/2020/02/14/devacurl-is-under-fire-from-their-loyal-customers-for-alleged-hair-loss-and-damageheres-what-we-know/>.

Sadick, N. S., Callender, V. D., Kircik, L. H., & Kogan, S. (2017). New insight into the pathophysiology of hair loss trigger a paradigm shift in the treatment approach. *J Drugs Dermatol*, 16(11), s135-s140.

Seager, T., Selinger, E., & Wiek, A. (2012). Sustainable Engineering Science for Resolving Wicked Problems. *Journal of Agricultural and Environmental Ethics*, 25(4), 467–484.

<https://doi.org/10.1007/s10806-011-9342-2>

Simeon, Aimee. (2021). How Natural Hair Has Influenced A Generation.

<https://www.refinery29.com/en-us/natural-hair-industry-history-evolution>.

Smith, L. D., Best, L. A., Stubbs, D. A., Johnston, J., & Archibald, A. B. (2000). Scientific Graphs and the Hierarchy of the Sciences: A Latourian Survey of Inscription Practices.

Social Studies of Science, 30(1), 73–94. <https://doi.org/10.1177/030631200030001003>

The Fit Curls. [@the.fit.curls]. (2021, May 11). [Video]. TikTok.

<https://vm.tiktok.com/ZTdPV2RQE/>

Trüeb, R. M., & Swiss Trichology Study Group (2001). The value of hair cosmetics and pharmaceuticals. *Dermatology (Basel, Switzerland)*, 202(4), 275–282.

<https://doi.org/10.1159/000051658>

Westgate, Gillian E., Rebecca S. Ginger, and Martin R. Green. (2017). *The Biology and Genetics of Curly Hair*. *Experimental Dermatology* 26, no. 6: 483–90.

<https://doi.org/10.1111/exd.13347>.

Whipple, Larissa. IN THE UNITED STATES DISTRICT COURT NORTHERN DISTRICT OF ILLINOIS. n.d., 48.

Winnie. “What Are 4A, 4B and 4C Hair Types? Answers & Picture Examples Inside.” *That*

Sister (blog), April 19, 2019. <https://www.thatssister.com/what-are-4a-4b-and-4c-hair-types-answers-and-picture-examples-inside/>.

Wood, Hollee. (2012). The Evolution of Hairstyling: A History Timeline. *HolleewoodHair / Hair Blog + Beauty Blog*. <https://www.holleewoodhair.com/evolution-of-hairstyling/>.

Younger, Better Not, and <https://better-notyounger.com>. “Curly Hair Facts, Myths and Physics.” Better Not Younger. Accessed March 19, 2022. <https://better-notyounger.com/blogs/the-better-blog/curly-hair-facts-myths-and-physics>.

Zviak, C. (1986). The science of hair care. *CRC Press*.