

# An Analysis of the Ethics of Data Warehousing in the context of Social Networking Applications and Adolescents

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## Abstract

This paper looks at teenagers aged 13-18 and the privacy issues that surround their use of these social networking sites – specifically issues relating to the ethics of warehousing the information these users post on the sites. Past research indicates that teenagers not only use social networking sites to keep in touch with each other but also to explore their still-forming identities. Past studies also show that it is likely that they give little thought to the modern concept of privacy on the Internet, meaning that they will probably share more information than they would if they were aware that third parties purchase and use this warehoused information. While the information is typically used to design the advertising on the pages that teenagers view, the information is also used to segment and profile users. Data mining for development of specific advertising for specific groups actually de-personalizes the users as it segments them into groups as based on the profiles developed by the mining. Mining social networking sites for data to use in advertising, to specifically target the teens who that use these social networking sites, gives rise to the question not only to whether or not the users' privacy is being invaded but also to the ethics of mining information with intent to profile. This article will focus on the ethics of mining with the intent to profile and segment for economic gain.

**Keywords:** Ethics, Data Warehousing, Data Mining, Social Networking Sites, Teenagers

## 1. INTRODUCTION

The proliferation of social networking sites in the past decade has introduced a new way for people to keep in touch regardless of where they geographically reside. These sites allow both synchronous and asynchronous communication options for their members. Depending on their preferences, members can synchronously chat with each other or post messages on a fellow member's wall for

asynchronous communications. Users can also upload files and pictures to their online pages, making them available to everyone in their online social network. Social networking sites invite users to post pictures of themselves, typically called profile pictures, and to post "status updates," which are statements regarding a user's current situation, mood, thought, or experience.

While users of social networking sites can range in age twelve to ninety, this paper will focus on one specific demographic: the years between ages thirteen and eighteen. Teenagers who join online social networking sites do so for a number of reasons, including keeping in touch with their friends, experimenting with self-expression, and sharing information. When they join these online sites, they are likely to share personal information; e.g. where they live, organizations that they belong to, and the schools that they attend. This information is shared as part of their quest to be part of a particular community. It is face-to-face, interpersonal behavior that translates to the Internet via words.

At the same time that teenagers are developing their online and real time personalities, the companies that own these social networking sites are warehousing everything that they, the teenagers, do while logged onto the site. From the moment the teenagers sign-up, they become members of the site's data warehouse, whether they realize it or not.

While social networking sites do have policies regarding the data they collect, they are self-regulated policies. What the sites opt to do with the information gathered is ultimately up to them, so long as the policies provided to the members contains such information. As social networking sites have free membership, they rent or sell space to advertisers who – to turn a profit – mine the site's data and provide advertising seemingly tailor-made for the site's individual members. While mining for the sake of personalizing advertisements is not a new concept, and is typically thought little of, the fact that the mining results in generalized user profiles can begin to create a degree of discomfort to some in terms of ethics as the profiles result is price discrimination, exclusion from certain marketplaces, and filtered information. Profiles de-personalize and segment users – usually keeping them within their socio-economic sphere and keeping them from the "democratic public sphere" that the Internet is claimed to be (Danna & Gandy, 2002).

Is it ethical to profile for the sake of advertising if the result is economic profiling? And, as these are still-developing teenagers,

both physically and psychologically, is it ethical to mine the data on their social networking site and provide advertisements that reinforce socio-economic beliefs, views, and mores and prohibit a legitimate world view, particularly when the data comes from teenagers?

This paper will explore those two questions via the utilitarian and deontological schools of thought.

## 2. TEENAGERS AND ONLINE PRIVACY

Lenhart and Madden's report on the 2007 Pew Internet & American Life Project revealed that teenagers look at personal information differently when working within various contexts (2007). The review revealed that what teenagers shared online depended upon the context in which they were existing at that time, but that they are generally consistent in what they do and do not share (Lenhart & Madden, 2007). Online contexts are no different from face-to-face contexts in that electronic communities develop online as users develop their online identities. Each time a teenager logs into his or her social networking site, there are asynchronous messages for him or her to review, a list of friends who are online and available for a synchronous chat, and – depending on which social networking site the teenager belongs to – suggestions on who he or she should connect with, send a message to, or suggest a profile picture for.

Communities develop their own cultures, and cultures then develop their own set of symbols (Hofstede & Hofstede, 2005). Online, social networking sites all present the image of a community and all require user profiles. The sense of community is further strengthened in the way that membership requires certain pieces of information from the users –e-mail addresses, birth dates, hobbies, and school affiliations (Guo, 2008). Those who provide the requisite information may join the community. Once accepted, the new user has access to the community and can begin building a social network that reflects his or her personality and preferences. The data provided then allows the site to customize its pages with advertisements or recommendations aimed directly at the user and based on the profile data supplied.

For teenagers within the online social networking culture, words are imbued with meanings, and these meanings have connotations that can differ from traditional, dictionary-provided definitions. The democratization of the Internet, its almost universal accessibility, has altered the original meaning of *private*. Traditionally, *private* means *to keep hidden from view*; however, its definition within the social networking culture has expanded to include *having control over who knows what about you* (Livingstone as cited in Livingstone, 2008, p. 404). *Private* in the online context is not only about what one opts to share but also what one opts not to share. There is also, apparently, a "sliding scale" of sorts when it comes to determining what is and what is not private information, where how it is shared, with whom it is shared, and who has control over sharing (Livingstone, 2008). What is deemed less important, such as the city one lives in, may be shared willingly; while what is deemed important, such as one's cell phone number or home address, may be shared selectively.

Given that re-definition of *privacy*, teenagers typically perceive the Internet in general to be more private than it is. Knowing that there are privacy safeguards in place on these sites, it is likely that they will share more than they would otherwise. The safeguards are settings that users of the sites can set to their liking regarding what information can and cannot be seen and by whom (e.g. full name, birthday, school, hobbies, or photos). These safeguards can create, according to Barnes, an "illusion of privacy" and that can encourage users of social networking sites to post more information than may be prudent in the long run (2006). In terms of what is and is not prudent, teens tend to think in terms of protecting themselves from online predators or bullies (Livingstone, 2008). They do not think about the advertising companies.

These privacy safeguards, however, may be user un-friendly; Livingstone's 2008 study on teenage use of social networks revealed that many users did not know how to change their privacy settings (p. 406).

### 3. DATA MINING AND SORTING

The Internet offers a plethora of ethical dilemmas, one of the most common being a

question of intellectual property and ownership. This paper, however, is most interested in a smaller aspect of ownership – what is found on the teenagers' web pages within social networking sites. *Intellectual property* suggests creations that are professional in nature, not status updates on MySpace, Facebook, or Bebo.

With the fact that data can now be "captured and aggregated... to create useful information" there comes a need for management of that ability (Spinello, 1997, p. 4). One of the largest issues with this data is the question of whether or not the person is aware that the data is being collected. And, if the person is aware of its collection, is the person aware of how it is put to use? Philosophically, privacy is considered a fundamental right and the third-party mining of that data can be argued an invasion of privacy (Spinello, 1997). While collection of data from a social networking site may not constitute an invasion of privacy, the way that the data is employed can.

Social networking sites are free for anyone to join, meaning that they have no direct income from the users themselves. The sites financially maintain themselves by selling advertising space as well as selling information from the data warehouse. So long as these acts are disclosed somewhere on the site itself, either in the privacy policy or the terms of agreement, the company can claim full disclosure. When one joins a social networking site, he or she has to check the terms of agreement before being allowed to join the site. Once that "I read and accept" box is checked, the onus of reading the material is on the user and not the site. If the user fails to read it, then the site can simply point out that the information was provided, that the box was checked, and then deny further responsibility.

Within those agreements are provisions regarding both privacy as well as what the sites are permitted to do with the information the users supply. There are provisions for selling/sharing the information with third parties. There is also information on how to opt out of having ones information shared or sold.

Information purchased by businesses with intent to develop "personalized" advertising for the social network's users is not just put to use

in the sense of "Bill Smith attends the City High School, place an ad for businesses around the school on his page." The information is sifted through using specific analytic software designed to discover patterns within their customer base. Generally, the process utilizes neural networks and decision trees (Danna & Gandy, 2002).

The neural networks sort through the information and find basic patterns and relationships. The end result of these self-teaching programs is the ability to predict behaviors – e.g., credit-scoring criteria and bankruptcy within the financial services industry, benchmarks to measure the potential of a student to graduate or to drop out, or even guidelines for how advertisements should be made available to certain demographics. With the computer at the helm of the decision-making process, the "personalized" advertising now suggests: "Bill Smith attends the City High School which has a low graduation rate, place ads for trade schools on his page." There is nothing personal about the ad for Bill Smith, who may in fact be the class valedictorian. The ad is, in truth, de-personalized and tailored for his socio-economic demographic (van Wel & Royakkers, 2004). Decision trees, which operate by segmenting data based on a pre-determined algorithm, sort customers into groups – and from these groups business decisions are made (Danna & Gandy, 2002).

The attractiveness of data mining and profiling comes in the form of new customers and the money that can be made. There is no ethical argument here save for the question of how one acquires those new customers. When information is gleaned via data mining for personalizing advertising, it can be argued that a person's privacy has been violated. Countering that argument is the fact that once the information is gathered, names are removed and the information is clustered accordingly by the neural network. The personalization is now impersonal – and the data is used to profile other users (van Wel & Royakkers, 2004).

According to van Wel & Royakkers (2004), there are three unethical ways that these profiles are used:

- 1) *Price discrimination*: when users are sorted by what they are perceived to

be able to afford, discrimination is taking place. A socially-acceptable example of this practice would be student discounts at museums. Price discrimination also takes place when consumers are sorted into tiers based on their possible value to the company. These tiers range from "Most Valuable" to "Most Growable" to "Below-Zeros" (Peppers and Rogers as cited in van Wel & Royakkers, 2004). Those deemed "Most Valuable" may receive offers that the "Below-Zeros" will never hear of. Meanwhile, the "Most Growable" may earn perks designed to turn them into "Most Valuable." The "Below-Zeros" may, in fact, merit, for example, higher banking fees while the "most Growable" are directly offered interest-free checking. To return to the earlier example of Bill Smith from the City High School, price discrimination could come in the form of advertisement for student discounts – or in the form of a company opting forgo including an online coupon in conjunction with an advertisement.

- 2) *Marketing Discrimination*: companies can pick and choose where they will advertise. Profiles will help companies decide who to advertise to – and who to ignore. When customers meet certain demographic, psychodemographic, and/or socio-economic profiles, certain goods are either offered or withheld. As with price discrimination, the "Below-Zeros" are likely to find that they never see certain advertisements because the profiles suggest that they will not be profitable customers. Along that line of thought, Bill Smith's web page advertisements might offer J.C. Penney's clothing but not Nordstrom's. Or, depending on the data on file, he may find that his page has advertisements aimed at Caucasians due to the fact that his neighborhood is Caucasian, that his name is Americanized, and that he attends a predominantly Caucasian school. Unless he specified his race or ethnic background, he will be treated as part of the racial majority in his area.
- 3) *Filtering Public Information*: In theory, the Internet will provide a person with every possible detail, every single fact,

and every minute piece of data that he or she desires. However, when filters are applied, the democracy of unlimited information erodes and searchers find only what their profiles think they want to find. On social networking sites that have search engines, they can be filtered based on the profiles. Profiling and segmentation "can result in some content being made extremely difficult" for a user to find (van Wel & Royackers, 2004, p. 383). Were the fictitious Bill Smith of the City High School assigned a research paper on local and state governments, he might find that searching via his social networking site (which can be done depending on which social network site one uses) afforded him completely different answers than if he went through Google or Bing. Interestingly, those search engines profile as well, meaning that his results will match the de-personalized personalization of Bill Smith.

#### 4. ETHICAL ANALYSIS

Data mining helps companies gain new customers and keep current ones. The violation of privacy, and the questions of ethics, come in the form of the process of managing that information. There exists a question of stewardship. Once the data is warehoused, those who own the site become – in essence – its guardians, and a moral responsibility is implied. Utilitarian ethics, interestingly, do not touch so much on the moral aspect. That is better found in a deontological approach. Utilitarian ethics looks at the consequences themselves.

What are the consequences of sharing data with third parties? Positive consequences include:

- 1) Advertising aimed at certain groups with the intent to boost sales.
- 2) An increase in income for the social networking site.
- 3) An increase in income for the companies that advertise on the site.
- 4) Users are treated to advertisements that are more likely to be of interest than if the advertisements were placed on the pages randomly.

- 5) Ease of access for users who do desire the products and services offered by the advertisers.

On the other hand, negative consequences exist:

- 1) Data may be shared not because the user wanted it shared but because the user was unable to correctly set privacy preferences.
- 2) The advertisements are not aimed at the user but rather the group the user is believed to represent. This can influence the teenager user's still-developing self-image.
- 3) Profiling determines how the users are advertised to, denying the users an opportunity to legitimately and freely make choices about their purchases and sense of self.
- 4) The ease of access to the companies and their offers may result in the user satisficing rather than choosing the best alternative.

Utilitarian ethics advocates causing the least amount of harm to the least amount of people. Or, according to theory put forth by the British philosophers who developed utilitarianism, Jeremy Bentham and John Stuart Mill, the "greatest happiness for the greatest number" (as cited in Spinello, 1997). In this philosophy, actions are "right" based on their ability to bring about happiness, and "wrong" based on their ability to bring about pain. The happiness and the pain are not relative to the person committing the act; however, they are relative to the act's stakeholders.

Achieving those consequences is another story. It can be argued that data is mined for the purpose of helping companies make money. Companies that are viable bring a degree of happiness in that they are able to employ people, can contribute to their local economies, and will provide products that people desire. Shopping is, on one level, an act of free will. If an advertisement or a product does not appeal to a person, he or she does not have to click on it or purchase it.

However, as research has shown, consumers are influenced by a number of factors. Shopping is not always as free will as it seems as consumers are manipulated by what they see in advertisements and packaging

(Brumberger, 2003; Doyle & Bottomley, 2008; Shaikh, Chaparro, & Fox, 2006). Businesses are well aware of this, as evidenced by the billions of dollars spent each year in package design and marketing. The increase in competition for the consumers' dollars fuels the search for different ways to reach and to influence them, the consumers. Arguably, neural networks designed for the sake of predicting who will and will not be a customer are the result of this competition. The winner, of course, is the company that makes the most money – resulting in an increase in happiness, as noted in the previous paragraph.

The other side to this argument is that the consumers are not given choices as a result of this quest. When companies engage in price discrimination, marketing discrimination, and filtering, consumers are given an edited version of the available choices. Determining who will be the most to the least profitable via profiling takes away the choice of the individual, reducing the ability for the greatest amount of happiness – and, at the same time, increasing the opportunity for a greater amount of harm. The terms *happiness* and *harm* are not to be taken literally. In a cost-benefit analysis, *happiness* would represent the benefits, while *harm* would represent the costs.

Bill Smith, our fictional student, would find that the site's advertisements cater to what the data warehouse-based, computer-generated profile perceive as his interests. His shopping decisions are, essentially, made for him. If an advertisement catches his fancy, he will click on it and possibly purchase – but he will not have the same advertising options as Ted Jones who lives in a wealthy suburb and attends the exclusive preparatory school just four blocks from the City High School.

By choosing the advertisements for these young men, the companies are not offering these young men choices, they are defining them and confining each to predetermined alternatives. The cost here is high. Returning to the idea that teenagers are still forming their identities, they look to outside sources for ideas. According to James Marcia, teenagers go through a number of stages in their psychosocial development – two of which are *identity diffusion* and *identity foreclosure*. In each, a teenager is unable or not yet willing

to fully commit to a solid sense of self and can be influenced by outside forces (Kalat, 2008).

Neo-Freudian Erik Erikson echoed that notion. We see, wrote Erikson in his article *Youth: Fidelity and Diversity*, this search for a sense of self in pursuits that are "sanctioned by society" (Erikson, 1988, p. 3). Adolescents do not often venture into the unknown, though they do shift from one idea, behavior, or belief to another with lightning speed. According to Erikson, adolescents experience a psychosocial crisis, which is "identity vs. role confusion." Within this stage, they seek resolution to a crisis in regards to his or her role in society: "Can I identify and develop my unique but meaningful role(s), or is my distinction and social role unclear?" (Weber, 1991). Successful resolution means that the adolescent develops the capacity to commit to a particular social role.

If Bill Smith sees nothing but profile-driven advertisements for trade schools when he visits his social network, then his greater good is not being served as he is receiving the message that someone "like him" should attend a school "like that." If he declines to enroll in a trade school, or enrolls and then drops out, because it does not fit his personal decisions, the potential benefit of the advertisement is lost and future education-related image become background noise as Bill navigates his social network. Additional advertisements will tell Bill what he should wear, what games he might play, and the type of people he should connect with. They will mold Bill into what the profiles believe him to be. When he commits, as Erikson suggests he will, the role he will commit to is one that the advertisers shaped for him.

The scenario with Bill Smith would suggest that companies eschew profiling and simply offer up a variety of ads to allow users to make their own choices. Again, however, there are competing forces at work – the balance of what consumers need/want versus the need of the businesses to make money and remain competitive. The question is what is the *net good* between promoting products and permitting opinions?

Utilitarians approach dilemmas such as this by looking at the alternative actions and their benefits to all stakeholders, secondary as well

as primary (Spinello, 1997; Treviño & Nelson, 2004). It is a version of the economic cost-benefit analysis. Without a moral compass, the utilitarian approach seems to answer itself in terms of overall profits.

If the advertisers benefit financially, they have a stake in advertising to those who will purchase their products. If Bill Smith cannot afford high-end, luxury items, it is fiscally logical to *not* advertise to him and to spend those advertising dollars where they will reap the highest benefit. This is similar to the idea of advertising based on gender. Gender-exclusive products do exist, and to market them to the opposite gender makes little financial sense (a specific example are gender-specific personal hygiene products, while there may be some cross-over purchases, they will be few in number and barely profitable). There is nothing discriminatory in that version of cost-benefit analysis. If marketing feminine products to Bill Smith brings little income to the business, and causes him irritation or embarrassment, then the utilitarian would argue that such an advertising decision did not maximize for the greater good. It is the consequences that matter in utilitarianism. In this instance, under this logic, advertisers select Bill because of his ability to purchase the product.

For teenagers, there is a different utilitarian approach. What are the costs and benefits to being a member of a social networking site and sharing specific pieces of information? How does it benefit to share the high school one attends or the interests one has? Do teenagers consider the advertisements unavoidable and ignore them, or do they read take the advertisements as subtle lessons on what is and is not acceptable? Of course, do they even realize that the advertisements are targeted at them based on what they thought was private information? If they are unaware of the fact that their data is mined by a third party, the utilitarian approach would label this unethical and point out that the costs outweigh the benefits. The users can arguably reap the benefits of products that are within their economic grasp; however, the lack of a choice is a cost that arguably outweighs the benefits.

Finally, utilitarianism assumes that there is a way to measure the costs and the benefits. While the advertisers can measure theirs in

dollar figures, the adolescents cannot. If Bill Smith's concept of post-secondary schools is shaped by the advertisements he sees, and he chooses a trade school over a four-year school, there is no way to accurately measure what costs or benefits exist. Additionally, if he chooses certain clothing styles or adopts certain behaviors based on the advertisements and the world that they offer, there is no tangible way to measure the costs or benefits. One can only measure half of that ratio. Perhaps he went to a trade school and paid \$8,000 to become a dental assistant. Is that a cost or a benefit? Given that one cannot see a parallel experience and find out what would happen if he went to a four-year school instead, or went directly into the job market, there is no way to determine whether or gained or lost as a result of being profiled.

A deontological approach must be coupled into the argument for a broader look at the issue. Deontology looks at one's duty to others, not just what brings the least amount of pain. Immanuel Kant developed the *categorical imperative* which clearly states that one should behave in such a way as if his or her actions were to become a universal law of nature. If social networking sites, then, sell their data to businesses for the sake of advertising, then the way that they provide it would become law. If they charge, everyone should charge. If they do not remove identifying details, no one can remove identifying details. If they profile and discriminate, then all can profile and discriminate.

Simplifying Kant's imperative is the paraphrase: *do unto others as you would have done unto you*. Deontology lacks a utilitarian cost-benefit list. Its focus is on higher abstract principles – e.g., honesty, promise-keeping, fairness, and justice. The questions within a deontological argument would focus on whether or not the users of the site are aware of the data mining and how it impacts the ads that they see as well as on the issues of discrimination and filtering.

What is the duty of the owners of the social networking sites towards adolescents? Is it just to profile a member and provide advertisements geared for the demographic that he or she falls into? If the advertisements are for products and services that Bill Smith can afford and can use, then yes. A basic

tenet of business is to give the customer what he wants. Providing advertisements for products that are too expensive for him or are useless to him is poor business sense. The question is who decides what the customer wants and needs. Is it up to the customer or up to the business?

Duty-based ethics expect that technology will be used for good and not to harm, that those who create and run social networking sites will use the information provided and the power that computer technology allows them to wield will respect the users who sign into their sites. Under duty-based ethics, social networking sites will be honest about their capabilities (Spinello, 1997). Just what those capabilities are, however, remain unclear. Social networking sites are in their infancy and their overall power remains only partially defined. As facilitators of social interaction, social network sites need to consider their duty to their impressionable users – though perhaps they first to have to determine what that duty is.

Ideally, under deontology, Bill Smith would know that he was targeted for trade schools because of his school's history and neighborhood's economics situation – and he would have the opportunity to view ads that are fairer because they offer wider variety of products advertised. The social network site that he belongs to would offer privacy settings and options regarding third-parties in an easy-to-access location on the site with user-friendly directions to help him make informed decisions. Though whether he makes the "right" choices is up for argument, the point is that he was able to choose.

Those who have convinced the site's users to share their information have a *duty* (which is the deontology school of ethics) to use that information in a manner that minimizes harm and maximizes benefits for the sites' users (which is the utilitarian school of ethics). Recognizing that *harm* comes in the form of price and market discrimination allows for better decision-making regarding the use of the data collected from these sites. Recognizing that teenagers are not fully formed individuals but rather are youths experimenting, to varying degrees, with various identities, suggests that a higher

degree of care should be taken in how analysis of the data is conducted and implemented.

## 5. CONCLUSION

*Racial profiling* is a reviled term, one brought up when certain races are, or are perceived to be, discriminated against by others. *Consumer profiling* is a quieter form of such discrimination. Using algorithms to determine what choices consumers are allowed to see when they log onto their social networks prevents them from having the same choices that they would have if profiling were not present.

Consumer profiling is not exclusive to teenagers; it is engaged in for all ages. Teenagers, though, present a unique challenge in that they are not only developing personalities but also have the autonomy and the disposable income to make purchases on their own. This mix creates an opportunity for businesses to woo them. However, when the businesses' actions are discriminatory in nature, these actions are unethical. And, when these actions ultimately influence the teenage consumers self-concept and developing personalities, these actions are unethical.

Social networking sites have a basic responsibility to develop user-friendly sites that allow their members to determine privacy settings. This is not a new argument and a simple search on the Internet can reveal a host of articles regarding online privacy. Additionally, social networking sites have a responsibility to *recognize* that they are stewards, holders of users' personal information, which was willingly shared (a) to join the site and (b) to interact with their friends and family electronically. This personal information was not shared for the explicit purpose of advertising, nor was it shared to allow other people to mold their likes and dislikes, their expectations and desires.

Selling data is "an externality because the cost is imposed on the individual whose data is sold," not on the seller (Spinello, 2006, p. 38). In the case of adolescents, the cost is the freedom to choose from the options that exist. Relegated to choosing from what advertisers deem appropriate, based on their de-personalized personal profile, adolescents cannot develop into the person that they could

be but rather they develop into what the ads say they should be. The teenage experience is one where adolescents work on determining their identity (Erikson, 1988). If adolescents use their experiences to determine their identity, then advertisements (which are part of the online experience) have an impact on their sense of who or what they become. Knowing this influence exists, social network sites need to find new ways to communicate their data warehousing policies to the users so that they are aware of how their information is being put to use. These ways need to be easily available to the users, and they need to be easily understood.

Social networking sites do not have to stop advertising. What they have to do is remember that they have a responsibility to their users to respect their privacy – and to offer them a legitimate variety of choices, rather than pigeonhole the users, sentencing them to pre-determined behaviors and product choices.

Social networking sites like Facebook and MySpace were relatively unheard of in the United States before 2004. With the demographic of social networkers growing younger and the speed in which social networking sites have increased in popularity, it is never too early to understand the impact of this medium and its influence on young minds. Further research on the ethical nature of social networking sites should continue to be addressed. Theoretical constructs for understanding behavior patterns of social networkers and users' perceptions of privacy will lend to closing the knowledge gap between information disclosure, privacy concerns, and its use by Internet advertisers.

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