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e-ink and fashion

E-ink is a digital display technology. Beneath its screen, it contains different kinds of ink particles. When something signals a change in the display the ink particles shift. However, because these are physical particles creating the image, the display can be retained without using any energy. The only time it needs to be powered is when the image is changing. The creators of the technology call this a bi-stable display.¹ Also, in contrast to an LCD screen, the e-ink screen uses a reflective display versus a backlight, changing in brightness as its surroundings do. This also decreases energy consumption. These two factors bring a major environmental advantage to e-ink.

Besides being environmentally friendly, e-ink is extremely durable. Because it does not need a glass display, it is possible to have a fully flexible display. This means that you can bend and twist the screen, almost as you would a piece of paper. It is also very rugged, able to withstand drops. And finally, the material makes it extremely lightweight compared to LCD-based displays, and especially compared to a textbook.

Finally, of course, because it is a digital display, it is infinitely changeable and therefore you only need one display (compared to something like paper).

Currently, the main use of e-ink technology is in e-readers such as the NOOK®. Its other common uses are in retail displays, to change prices, on machine indicators where power may be limited, watches, and keypads. It has also been used in a few magazine

¹ "Ink Technology: Electrophoretic Ink, Explained." E Ink. Accessed March 1, 2015.

advertisements. The “concept showcase”² offers potential uses such as displaying recipes on a cutting board, stats on a snowboard, or dynamic prescription containers. These designs only scratch the surface of what is possible with a low-energy, flexible, and rugged digital display.

A re-design of the medium of e-ink can be accomplished by combining it with another medium. E-ink’s three main distinguishing factors (low energy, flexible, rugged) and it’s nature as a digital display allow for the possibility of incorporating digital displays into fashion. The ability to make clothes as dynamic as a phone screen offers enormous possibilities.

Take graphic t-shirts, for example. Most people who buy graphic t-shirts are buying the design or the message on the t-shirt... the shirts themselves don’t vary much in material or style. With e-ink, one item could be used to display all of these designs. Users could go online and buy or download designs, or even make their own designs, and upload them to the display to wear immediately. It would also be possible to have animated designs, if there was a battery attached. The implications of clothing that is so easily changeable are vast.

First, it is important to consider what qualities of fashion exist already and will be brought to e-ink technology. There are main two characteristics to consider, in terms what will change the medium of e-ink the most, and in considering the socio-economic effects. Firstly, fashion should be considered a mass media. Secondly, in fashion, there is a high value on authenticity and originality. What do these two statements mean and how what will be the result of using e-ink in consideration of these properties?

² http://www.eink.com/concept_showcase.html

When talking about mass media in media theory, the mediums of discussion tend to be broadcast mediums (radio, television), print, and the Internet. Fashion is not considered probably because it requires some interaction with another person, making it seem one-on-one. This is a misconception, however – fashion does not rely on direct human interaction. John Durham Peters contrasts personal interaction with mass media as antitheses in *Critical Terms for Media Studies*:

In personal interaction particular content is typically addressed to one or a few usually familiar recipients, and the media of delivery are of local range and short duration. (Notions of content and medium, it might be noted, are in this case retrojections from more expanded systems.) With mass media, communication differentiates into distinct roles: the delivery device multiplies both messages and opportunities for their reception, the audience expands to include strangers, and content must be adapted accordingly. The relationship among participants becomes loosely coupled, distanced, or otherwise problematic. Indeed, the differentiation of author (who sends) from audience (who receives) is an artifact of the increased complexity of mass media; in everyday conversation, people are interchangeably senders and receivers.³

These differences, described by Peters, are what make fashion a potential mass media. The reception of a message in fashion is not dependant on interaction; if a person is wearing a shirt with a message, that message can be received by anyone in proximity to that person, whether they are in direct interaction with the person, or simply close enough to see them. As the person moves, more people will receive the message. The role of the wearer remains the “sender” of the message the entire time. Peters goes on to talk about the importance of

³ John Durham Peters, “Mass Media,” in Mitchell and Hansen, *Critical Terms for Media Studies*, 266–279.

“range” in mass media. It can connect dispersed people, or in other words, it must be able to reach a large audience across a distance. Of course, one person will not wear an article of clothing far enough and long enough to meet that standard, but rarely does only one person own a particular shirt. Large brands and trends make it possible for fashion to permeate even greater audiences.

By including e-ink technology in fashion, the audience that receives a particular message can be even greater. Because digital art can be shared so rapidly and easily, designs for clothes would become even more accessible. A t-shirt could go viral as easily as a YouTube video. Posting a picture on tumblr, facebook, or twitter would only reach your followers and then branch off from there. But, if you share a picture on your clothes, you can reach anyone that comes within a certain distance to you.

This form of mass media could be a powerful tool in protests and political movements. Because it is wearable, it is much easier to use words and art of protest in daily life with these clothes, as opposed to signs, chants, etc. It would be possible to continue to protest throughout your normal activities by wearing your message. This is possible with normal t-shirts, but e-ink offers an advantage. Because it is a digital technology, designs and statements are able to go from conception to reality almost as quickly as news breaks. While a regular shirt requires design, manufacturing, and shipping before it is wearable, an e-ink shirt would be available immediately after design. The design can also be widely shared through the Internet at little cost for others to download. This re-design, however, could result in a much more physical process of sharing designs. When one sees another's design, it is possible that they could link physically link to share designs, if desired. This could be a powerful tool in protest, by subverting restrictions that may be made on sharing

certain content online. In Foucault's idea of the Panopticon, the major point that makes this idea of a state work is the lack of communication between the lower members of the society.⁴ As long as members of a society can communicate with each other, there is still the possibility for revolution. The abilities of fashion as a mass media, as indicated above, plus a system where messages can be shared quickly through digital technology, but without a network connection that could be hacked could be a powerful tool against those who wish to suppress communication.

One could argue the opposite is possible, however. The Nazi's forced the Jewish to identify themselves with a Star of David on their clothes. If a government could force citizens to wear this re-designed apparel that is connected to a network, the government could forcibly display propaganda on its citizens, or tag them. Applying the digital technology of e-ink to the mass media qualities of fashion could have extreme social and political implications.

If e-ink fashion were to become the standard of apparel, there would be major changes to the economics of fashion and the commodity that is an item of clothing. In clothing, there is high value placed on authenticity (an authentic Gucci versus a knock-off, for example) and labor (in couture fashion). In the mid-2000s a controversy arose as the brand Johnny Cupcakes started to emerge. People began to make knock-off designs of his shirts. While lower in price, knock-offs generally have a much lower use value. Despite many articles being mechanically reproduced, the authenticity of the brand is extremely

⁴ Michel Foucault, *Discipline & Punish: The Birth of the Prison* (Vintage Books, 1977 [1975]), "Panopticism", 195–228.

important to consumers. In apparel, the socially necessary labor time, as defined by Marx⁵, is high and important in determining the price of an item. Something that is hand-stitched, and made from real silk will have a much higher price. The introduction of e-ink would drastically change these two characteristics.

The use-value, or the social need, of a particular brand's items could decrease with the emergence of e-ink fashion. No clothing would have the "aura" of authenticity, as Benjamin describes. In *The Work of Art in the Age of Mechanical Reproduction*, Benjamin describes authenticity in relation to reproduction as, "Even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space."⁶ While an article of clothing does not remain in the same place, it was manufactured by a company, and bought from that store, and therefore has this presence of time and space that renders it authentic over similar looking pieces. While with e-ink you would still have the value a particular artist designing a piece that you've bought to display, this lack of physicality would most likely decrease the value of the artists name. The use-value of the actual aesthetics may become more important than the name.

Because all graphics would be produced in a similar fashion, couture would be almost non-exist from this end. Incorporating digital technology means that articles with similar designs will have used a similar amount of labor time. Rather than one being mechanically printed and one being hand-screen printed, both are produced in the same way. This levels the field, and again, would make the aesthetics take priority over labor.

⁵ Karl Marx, *Capital*, trans. Ben Fowkes (London: Penguin Books, 1976 [1867]), Chapter 1, "The Commodity", 125-131, 163-177.

⁶ Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction," in *Illuminations* (New York: Schocken Books, 1968), 217-251.

Anyone could design something, and their work would have the physicality that is lost when art only exists on the computer. The e-ink display used this way would bring something tangible to digital artists and in this way they can commodify their work with little investment. The value of labor would likely still exist, though. This could come in the form of how the e-ink is incorporated into the clothes and the clothing to screen ratio, for example. It is also important to note, that there is still labor going into the making of the e-ink displays itself. Nevertheless, the economy of e-ink fashion may operate much differently than the market of fashion today.

In summation, because of the unique properties of e-ink technology as a digital display, and fashion's ability to function as a mass media, by combining the two this re-designed medium can be a great tool for politically. This re-design would also bring about significant changes in the economics of the market of fashion.

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