urbanhermes: Social Signaling with Electronic Fashion

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ABSTRACT

Fashion signals are displayed to indicate access to information. Consistent, timely, and meaningful signal displays are only made possible if one is well-connected. While fashion is typically associated with clothing or personal objects, fashion can also transpire within the domain of electronic media. Idea-based fashions flourish on online communities centered on weblogs or discussion lists, where a concept emerges, diffuses throughout the virtual network, and fades as soon as something newer materializes. While production / disposal tactics of material-based fashions limit the signal refresh rate, an absence of materiality enables electronic fashions to cycle as quickly as the flow of information. We present the design of *urbanhermes* as a communicative accessory that integrates the fresh, dynamic, fluid nature of electronic-based fashion signals within the tactile, face-to-face environment of a physical space. This paper presents the prototype and design discussion within the framework of fashion as a social signal.

Author Keywords

Social signals, signaling theory, fashion, urban space, accessories, wearables, mobile devices

ACM Classification Keywords

H.5.3 [Group and Organization Interfaces]: Theory and Models; J.4 [Social and Behavioral Sciences]: Sociology

INTRODUCTION

Social signaling is a fundamental method we use for forming impressions. We emit and read signals everyday, ranging from posture and language to merchandise and commodities. The reliability of a signal rests squarely on costs within the domain of the quality being signaled. Because high-cost signals are more difficult to replicate easily, they are therefore more reliable [5,7]. Use of signals for impression formation directly rests upon their reliability.

Fashion as a Social Signal

Being "fashionable," or to emit fashion signals, exhibits one's quality of having access to information [9]. If one has access to information—going to the right places, communicating with the right people, keeping up with the ongoing cultural dialogue—one may disclose this quality in variably recognizable ways. Examples include wearing a designer's new collection, eating at a particularly trendy restaurant, or listening to underground music. Because information describing these fashion signals eventually spreads and diffuses through a populace, those who wish to signal high-quality fashion must differentiate themselves from the others by generating a new signal in a different form. Displaying a reliable fashion signal requires the cost of time and effort to connect to updated sources of information and to consistently maintain these connections over time.

Identity Within the Cycle

There are multiple ways to represent this hierarchy of information flow [3]. Fashions may filter from the traditional model of upper-class to lower-class [10], trickle bottom-up from subcultural niche into popular culture [8,9], or traverse in ad-hoc trajectories. New ideas travel down the hierarchy, originating with trendsetters and diffusing through various information channels to early adopters, latecomers, and the critical mass. At this point, trendsetters must develop a new form of the fashion signal to distinguish themselves from the mass population. Fashion cycles are prompted by the continual renewal of the signal form. Costs of information accessibility and signal production determine the longevity and pace of a fashion cycle.

The cost of accessing information is much higher in the beginning stages of the hierarchy. When knowledge is nascent and unpublicized, a significant amount of time and effort must be invested to find the information. With time, as information diffuses to more parties, the same information is much easier to acquire. As an idea becomes popularized, the cost to access the information, as well as the quality of the signal, decreases. A trendsetter's signal may be costly and highly reliable, but its emergent form may only interpretable by a chosen few. In contrast, a popularized signal may be low-cost and less reliable, yet easily readable by a larger segment of the population. Depending on the context in which it is displayed, a fashion signal conveys to others where (and how) one lies along the information hierarchy.

Electronic-based Fashion

Physical-based fashions, such as clothing or architecture, can only cycle as rapidly as regeneration processes can permit. As of yet, most people cannot invest the time and money to update their wardrobes on a daily, or even hourly, basis. However, electronic-based fashions, such as items disseminated on blogs or ideas circulated among close-knit online communities, possess no limitations of materiality.

Electronic fashions experience a much quicker pace than their material counterparts. Studies on the active blogging movement illustrate how rapidly a fashion cycle can transpire online [1]. Ideas circulated on blogs are generated, discussed, embellished, and forgotten on a quotidian cycle. RSS feeds subscriptions are commonly updated on a fresh, regular basis. Articles on "the latest chatter in cyberspace" are published everyday [12]. Because the fashion cycles experience such a brief lifespan, high-quality fashion signal displays must be renewed persistently, promptly, and intelligently.

The major costs in displaying high-quality electronic-based fashion signals lie in accessing the freshest, most salient information. Since distributing information online is low-cost, more time and effort must be invested to find the yet-untapped morsels of new knowledge. Highly fashionable bloggers spend enormous amounts of time each day reading other blogs, seeking obscure websites, and writing posts regularly [6] in attempt to be ahead of the fashion cycle.

Self-identity can be articulated in many ways via electronic fashion signaling. In addition to blogs, other examples of signal maintenance include crafting distinctive music tastes through a publicly shared iTunes playlist [11], uploading and tagging creative photographs to an image collection on Flickr [4], or contributing knowledge as an established member of an online community.

The popularity of mobile phone ringtones illustrates an electronic-based fashion display in the real world. As new ringtones command their own "top-10" charts [2] and are relatively easy to acquire and renew, mobile phones serve as physical channels for personal electronic fashions.

However, this signaling system has its constraints. With ringtones, the signal can only be broadcast whenever an external party calls in; the user has limited control over when and where the display occurs. We wish to develop a richer fashion signaling system that would enable better control over the display and audience of the intended signal.

The challenge we present is to develop physical objects that can go beyond the limitations of their materiality, and to signal with the rapidity of electronic-based fashions.

URBANHERMES

Urbanhermes addresses this challenge by connecting physical and virtual worlds. Dynamic displays embedded in messenger bags enable the language of electronic-based fashion signals to negotiate the physical social space. Ephemerality and freshness of information are imposed by temporal and quality constraints, and public traces of image histories encourage users to define and express their personal niches.

An envisioned usage scenario is presented below. We will use this scenario as reference during our design discussion.

Scenario

The day begins. Sofia arises, makes coffee, and begins browsing through her favorite news items, blog feeds, and community postings on her computer. Her list includes both relatively popular as well as extremely niched items. She reads a bit, and wirelessly transmits three images to her bag: a new icon just released on her favorite graphic designer's blog, an amusing image circulating around her crafting community, and a photograph she took while attending a Björk concert last night in the city. Transmitting images to her bag is one of Sofia's regular rituals, like figuring which shoes to wear, as she assembles her fresh images for the day. She sees it as having free reign in an enormous, ever-changing networked wardrobe and picking out what she will want to wear for the new day. Sofia displays the icon on her bag as a neutral default, with the other two images stored invisibly within her accessory.

Sofia heads out the door to work and waits for her ride at the bus station. After a minute or so spent waiting for the bus, Sofia's bag vibrates gently to notify her that someone in short-range is currently displaying an image that shares a common *source* with one of Sofia's collected images—the crafting image. Sofia has the option to switch her display from the icon to the crafting image, but she first looks around her area carefully to see if she can see who is displaying the related image. She soon recognizes it, noticing a guy sitting a few seats away from her whose bag features another recent image from the same crafting community. She quickly assesses his character from other existing physical signals: his clothes, hair, face, posture. He seems like an interesting, artsy, innocuous stranger, so she changes her bag from the icon to the crafting image. As they board the bus, her bag is visible to the man. After he now can recognize this female stranger an active member in the same crafting community, he can speculate about her identity with richer context and connection.

Once she arrives, Sofia switches her display back to the designed icon, a neutral image more appropriate for work.

That morning, a curious co-worker Grace asks Sofia about the icon image on her bag. As Sofia describes the designer, Grace is thrilled to learn a new name in the graphic design world, one she informally follows. Since she would love to show it later at her reading club that evening, Grace requests the icon image from Sofia. Sofia agrees and transmits the image from her bag to Grace's. However, since Grace's version is Sofia's copy, its quality degrades, an artefact of being second-degree from the source. Even so, Grace is happy to have her own copy to display that day.

At lunch, Sofia meets with her friend Hunter. She manually changes her display to the Björk photo since they went to the concert together. Since he had a fabulous time at the concert, Hunter recognizes Sofia's photo immediately. Hunter asks if he may acquire a copy of the image for his collection, since he didn't bring his camera but he'd like his bag to display he was at the concert. She agrees and transmits the photo to his bag. He thanks her for the second-degree copy and dons it immediately.

Mid-afternoon, Hunter and Grace (who are unfamiliar to each other) happen to be getting tea at the same café. Hunter wears the Björk photo while Grace has the icon. Both of their bags vibrate privately, notifying each that someone in close proximity is displaying an image that shares a common social link with one of their own images. Specifically, both Hunter's and Grace's images have ties to a common intermediary, Sofia. Grace doesn't recognize the Björk photo, but Hunter recognizes the icon from Sofia's bag earlier that day, so Hunter intuits that the woman in the café is somehow socially connected to Sofia. Through the timeliness and meaningfulness of Grace's image, Hunter can infer more about Grace's personality with this supplementary bit of visual information in a social milieu.

As the images in Sofia's collection are designed to expire after a certain brief lifespan, she is prepared to replenish her accessory with fresh images for the next day, or possibly the next hour. Her time spent acquiring new, meaningful displays manifests itself as a reliable fashion signal.

Design Details and Discussion
We designed *urbanhermes* as a mobile system constructed within the framework of fashion signaling theory. The augmented messenger bag is a prototype in progress, a project motivated by the desire for a dynamic, expressive fashion accessory. The following sections will demonstrate and discuss our design decisions.

Production
Trendsetters, who originate and influence an entire fashion cycle, are prominently featured in our design. As the source of a hierarchy, they form the link between other members nestled within the hierarchy. For example, in our scenario, Sofia represents the source for the photograph she took. Therefore, originally created images are indelibly tagged with the source's distinct signature. The source also programs the temporal parameters of the image: how the image will degrade with each distribution (akin to physical copies-of-copies degradation), how long before the image expires (like obsolete articles in RSS feeds), or how many instances of the image can exist simultaneously (analogous to a limited-edition release). The degradation and expiration of content necessitates fresh displays of information, identifies whose form of the signal is closest to the source, and encourages users to acquire more meaningful displays. Maintenance of a fresh and updated signal provides rhythmic momentum to the fashion cycle.

Distribution and Acquisition
Once produced, images can be acquired digitally or physically. Within our scenario, Sofia downloads the icon from the network, yet Hunter receives the photograph directly from Sofia. The electronic representation allows for fluid, networked distribution, while the physical mobile interface encourages close-range social exchange.

In the same way that bloggers represent themselves through the ideas they display online, *urbanhermes* users must choose what kind of impression they want to create on others.

Each time the image is exchanged, each party along the distribution chain leaves it trace. An image can therefore be identified as *n* degrees away from the source, and can trace all the parties in between. Virtual connections between individuals within a fashion hierarchy are formed.

Connection
Urbanhermes serves as both a tool of personal expression and of communal connection. Through its ability to enrich impression formation, *urbanhermes* enhances the way individuals reveal, negotiate, and interpret social signals.

Common fashion sources provide a social link. In our scenario, Sofia gets notified at the bus stop that someone in her immediate environment has an image that shares a common source with one in her collection. The fact that Sofia recognizes the crafting image, one that may be meaningless to anyone outside of that community, means that Sofia can ascertain parts of his character that would not be otherwise visible to others at the scene.

Mutual social networks also provide a social link. When Hunter recognizes the image on Grace's bag in the café, he can form a better impression of Grace knowing she's somehow associated with his friend Sofia. While social triangulation can serve as a social catalyst, having the knowledge that a stranger may be only one or two degrees away may impart a stronger impression.

The choice to degrade the image after repeated distributions was motivated by a wish to constrain the system from making endless indistinguishable electronic copies. Degradation of an image serves as an auxiliary signal that shows how many degrees away it is from the source. Some users may want to display full-quality niched images, showcasing their trend-setting characteristics. Other users may choose to display degraded images, evidence that they spend more of their time socializing offline and swapping images with friends. The technique in which users display their images also defines their choice of self-representation.

What is important here is that the users themselves (and not the system) can make the decision to reveal parts of their identity. Every choice to display or hide particular signals is made in context of other readable social signals and of the overall physical environment.

Figure 1. Urbanhermes messenger bag prototype with embedded dynamic display capabilities

PHYSICAL PROTOTYPE

We designed a personal device that would be mobile as well as expressive. The current construction of *urbanhermes* consists of a pair of neutral, unisex canvas messenger bags, each of which features a clear window that exposes the screen of a housed PDA. The large screen of a PDA maximizes visibility, and Bluetooth and IR (infrared) modules enable short-range proximity sensing and data transmission. We are currently using a Sharp Zaurus as our communications medium, as it features a Linux-based development platform and can be wirelessly programmed.

More intimate sections of the bag, such as the inner lining and shoulder strap, are key locations for accommodating and managing user controls. A vibration mechanism close to the body allows unobtrusive, personal notifications, and easy-access navigation buttons along the strap enable a user to quickly select and change the image display. An integrated system with conductive textiles and threads can be designed for a soft, comfortable, stylish accessory.

USER FEEDBACK

The framework, concept, and prototype of *urbanhermes* were presented to several individuals. They walked through a usage scenario and envisioned how they would use this system. Some insights:

- The bag serves as a helpful accessorizing signal. It adds a layer of information to person's visible characteristics.

- A prominent benefit is the increased ability to attract, impress, and discern people within a desirable niche.

- Image degradation may become an equally strong secondary signal. Creative degradation characteristics of the images may become fashion signals in themselves.

- An interesting experiment would be to follow how fashions that originate from an online source (*e.g.* a blog) differ in breadth and lifespan from those that originate from an offline source (*e.g.* a location-based event).

Urbanhermes received general enthusiastic response, and many could see themselves using the fully developed system. The primary concern was the investment of time to acquire fashionable images, though a routine (similar to reading blogs on a daily basis) may develop over time.

EMERGENCE OF A NEW FASHION CYCLE

With *urbanhermes*, an individual in the material world can display a fashion signal that parallels the rate of information flow. These fresh, timely signals can define and convey qualities about our identities to each other.

As a communicative, social accessory, *urbanhermes* attempts to define a new fashion signaling system. This system aims to extend the current signaling capabilities of the physical environment by integrating the dynamic fluidity of the electronic environment. By developing new methods in which to represent identity, we hope to elevate the level of informed and meaningful social interactions.

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