Stop Nigmas: Experimental Speculative Design through Pragmatic Aesthetics and Public Art

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ABSTRACT

This paper describes a project titled Stop Nigmas which explores the future of privacy and surveillance. Guided by pragmatic philosophy and approaches from futures studies, speculative design, the project seeks to demonstrate how interactive objects can be used to engage the audience in creating alternative narratives about the future. In the first section, the paper outlines a narrative in a form of a timeline of events that leads to a future with explicitly restricted privacy in public spaces. Following the timeline of events, the paper describes the process of scenario development, object design, interaction design and audience engagement. The author outlines how engagement through public art and social media allows the interactive object to serve as means of speculation through John Dewey's notion of consummatory experience, allowing both the designer and the audience to act as agents of speculation. The paper concludes that pragmatic aesthetics and futures studies can provide useful guidance in designing speculative objects and interactions that are open to dialogue and participation. It suggests new research avenues for speculative design research in human-computer interaction (HCI).

Author Keywords
Speculative design; design research; futures; pragmatism.

ACM Classification Keywords
D.2.10 Design: Methodologies.

INTRODUCTION
This paper outlines preliminary results of an experimental application of speculative design using public art and social

media. The project, titled Stop Nigmas (also referred to as Stop Nigma), explores the use of social media engagement as a way to draw participants into the process of speculative design and to explore the future of privacy. Speculative design is a method of inquiry in which fictional cultural artifacts (objects, images etc.) are used to represent alternative worlds and value systems [1]. The practice is referred to by other terms including critical design, design fiction, adversarial design and others. The goal of this project is to demonstrate how speculative design and social media can be used in public discourse and suggest new avenues for research at the intersection of speculative design and HCI.

What follows is an outline of key events that lead to the future under investigation and speculation. The timeline starts in 2013 and ends in a distant future which sets the stage for the main events of Stop Nigmas. Following the timeline of events, I will present the design methodology, process and findings.

TIMELINE OF KEY EVENTS
May 20, 2013. Edward Snowden, a former contractor for the U.S. National Security Agency flies to Hong Kong after he left his employer Booz Allen Hamilton. A few weeks later he reveals a cache of confidential information to journalists Glenn Greenwald, Laura Poitras, and Ewen MacAskill. This leads to revelations of mass government surveillance in major newspapers including The Guardian, The Washington Post, Der Spiegel and New York Times. He eventually flies to Moscow where he requests political asylum.

November 13, 2015. A coordinated terrorist attack in Paris results in 130 deaths. A terrorist organization by the name of Islamic State of Iraq and Levant (ISIL) claims responsibility.

April 3, 2017. After several years living under asylum in Moscow, Edward Snowden launches a campaign to seek pardon and secure the right to return to the U.S. Mass rallies are held in major U.S. cities in support of Eduard Snowden's return.

May 4, 2018. In response to a continuous threat of terrorist attacks, a coalition of major world powers, under the leadership of the U.S., announces plans to introduce a new encryption standard to be introduced over the next 10 years. The new encryption standard guarantees privacy of individual users, but also requires the provision of limited "backdoor" capabilities. All internet service providers, mobile device manufacturers and software developers will be required to use this encryption standard as part of the global trade regime.

June 1, 2019. The UN Security Council proposes a new standard of personal privacy which comes to be known as the Privacy Separation Doctrine. Under this standard, the right to privacy is redefined as a privilege. The rights of societies, communities and governments to transparency about the citizen's lives are expanded. However, to preserve the fundamental right to privacy, a legal framework is established to allow states to separate citizens into classes based on the level of privacy they demand.

March 25, 2020. After prolonged negotiations with the U.S. Department of Justice, Edward Snowden returns to the U.S. and all charges against him are dropped. Shortly after his return, he announces plans to run for office in U.S. Senate on the platform of U.S. adoption of the Privacy Separation Doctrine, which Snowden believes is the only way to protect privacy in the long run.

November 1, 2021. Sephora, a global cosmetics company, introduces the first ever anti-surveillance face lotion. The lotion emits micro-electromagnetic radiation making the wearer's face protected from facial recognition software and surveillance systems.

January 1, 2023. Privacy Protection and Separation Act (PPSA) is signed into law in the U.S. Provisions of the law include establishment of designated privacy sanctuaries in all public spaces, including libraries, parks, and federally funded ground, rail and air transportation systems. These sanctuaries do not allow for any tracking of personally identifiable information (PII), video or audio surveillance. Additionally, PPSA allows businesses to establish separate standards of service for persons seeking privacy. Any business or public space where anti-surveillance devices, clothing, or make-up is not welcome should be clearly marked. PPSA also protects businesses against discrimination law suits. Supporters of the law claim a significant victory for privacy protection. Critics argue that it will create legal segregation and discrimination against people who wish to remain private.

January 10, 2023. McDonalds becomes the first major business to ban anti-surveillance devices, clothing and make-up in its restaurants. Company officials state security concerns as the main reason for the policy. Various signs such as "PPSA Restricted Privacy Area" and "Limited Privacy Zone" can be seen in the restaurants. Many other retailers, restaurant and coffee shop chains follow suit.
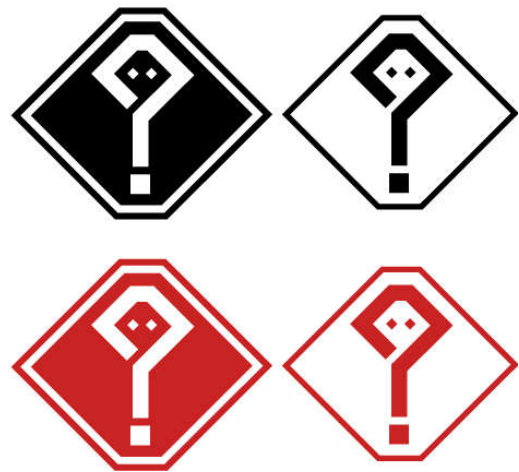

Figure 1. ISO 7010-2025 symbol for restricted privacy, commonly referred to as No Nigma sign. Image: Sandjar Kozubaev art direction; Jason Linder graphic design CC BY-SA 2.0

June 15, 2023. Following a backlash from customers, Starbucks, announces that it will provide privacy sanctuaries in its coffee shops in its existing stores over the next five years and in all its new stores starting in 2024. Opponents of PPSA call for the repeal of the law, citing a return to the era of segregation.

What started as an exercise in graphic standardization becomes a cultural phenomenon. Around the same time, the first mentions of the term "nigma" begins to be used in social media. Nigma, is a short form of "enigma." The word signifies a person who seeks to protect his or her privacy at all costs. Nigmas are usually associated with heavy use of anti-surveillance technologies, clothing and even food. Not all nigmas are activists however. Many nigmas accept their new social status and try to live normal lives without interfering into the debate about the legitimacy of laws that created them.

April 12, 2027. Merriam-Webster officially recognizes and defines the word *nigma*. The word is defined as "an individual who protects privacy at all costs. Considered socially unacceptable." The definition causes controversy due to the negative connotation attributed to it. The publisher refuses to change the definition citing the fact that the word is typically used as a derogatory term of suspicion and untrustworthiness. Critics argue that *nigma* is associated with a political stance for civil rights and should not be associated with slurs or other types or derogatory attitudes.

January 1, 2033. On the 10th anniversary of PPSA, Pew Research conducts the first comprehensive study of social attitudes towards the law and nigmas. According to this milestone study, 57% of citizens approve of PPSA. 60% of citizens believe that PPSA protects privacy rights. 97% of citizens recognize the ISO symbol and associate it with PPSA.
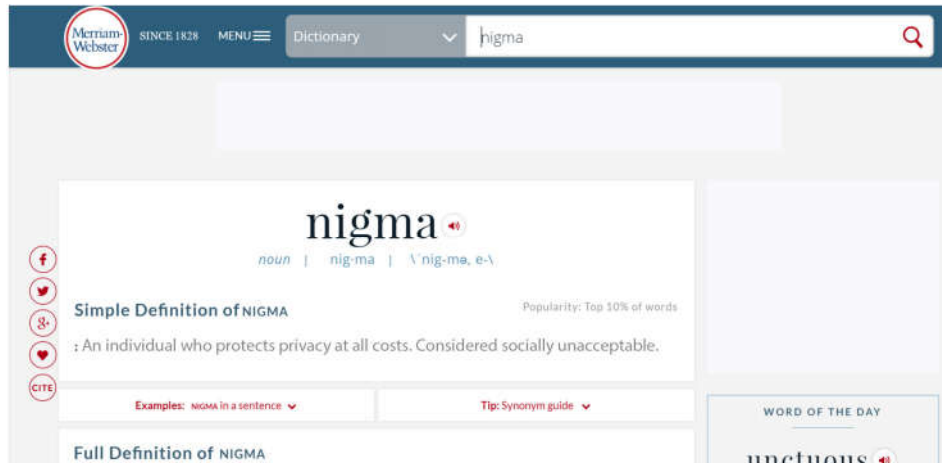
Figure 2. Merriam-Webster Online Dictionary definition of the word *nigma*. Image: Sandjar Kozubaev CC BY-SA 2.0

23% of the population self-identifies as nigmas, 60% self-identifies as not nigmas, and 17% self-identifies as neither. Among the citizens who do not identify themselves as nigmas (i.e. 77% of respondents) 85 percent believe that nigmas are not trustworthy and 43% believe that they are a danger to society. This study, along with other research published in recent years, points to an increasing division between nigmas and the rest of society.

September 5, 2035. Atlanta, GA becomes the first city to introduce restricted privacy areas for driving. Signs have been introduced on major highways and streets around the city. Other cities follow suit and introduced their own guidelines on privacy restrictions in public spaces.
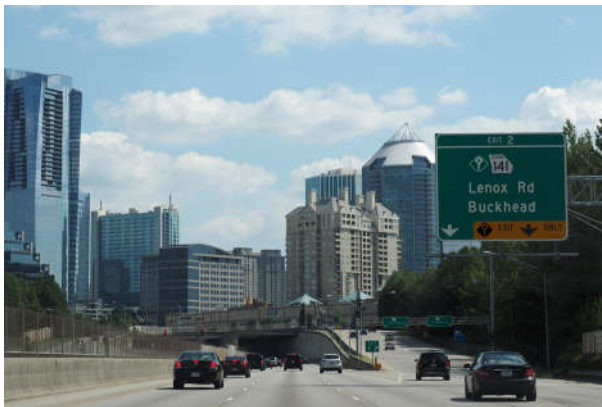
Maintaining privacy in cities is becoming increasingly difficult and it further intensifies the separation between nigma and non-nigma citizens.

Restaurants, museums, public parks, office buildings, and places of worship have introduced separate spaces for nigmas along with privacy-restricted spaces. An increasing number of nigmas have given up on the practice under an increasing pressure and logistical inconvenience. This makes people who remain committed to exercise their right to privacy rarer and more marginalized. Dedicated spaces with full privacy become smaller and less populated and those who use these spaces are under constant suspicion and social pressure.

Figure 3. Highway signage in Atlanta indicating restricted privacy in certain areas of the city. Image: Sandjar Kozubaev CC BY-SA 2.0

Figure 4. A local mosque in Atlanta with an improvised No Nigmas sign. Image: Sandjar Kozubaev CC BY-SA 2.0

BACKGROUND

This speculative design project draws upon three distinct traditions of inquiry and critical analysis. The first is futures studies, also known as strategic foresight. The second is a series of practices which are referred to by various names such as critical design, design fiction and speculative design. For purposes of this paper, I will collectively refer to them as speculative design. Finally, the third and most fundamental, is the pragmatic philosophy of John Dewey, William James and Charles Pierce.

Futures Studies

Futures studies is a relatively new discipline that emerged in the decades after World War II. Early practices of futures originated in military scenario planning during the Cold War and involved complex mathematical simulations of high-stakes situations such as a military attack involving nuclear weapons. A common misconception is that the goal of futures studies is to predict the future. However, many futures practitioners oppose predictions. Contemporary definitions of futures studies vary; James Dator, one of the founding scholars of the discipline, offers a succinct one. The goal of futures studies is to "forecast alternative futures" in order to study them in a continuous, iterative process. It seeks to help its practitioners move towards a "preferred future" [8]. Today, futures studies is an interdisciplinary field and is applied in corporate strategy, public policy and, more recently, in design.

Futures studies offers a useful set of theoretical and practical tools that promotes creation of divergent versions of the future. While it is a generative activity, plausibility is an important consideration in futures studies and it imposes constraints on the inquirer when it comes to scenario development. In this project, I used a futures method called "four futures" or "futures archetypes", first articulated by Dator in [7] and later elaborated by Candy in [5]. The basic premise of the method is that the entire range of long term futures can be communicated by a small set of archetypical narratives: continued growth, decline or collapse, discipline and transformation. Growth refers to a continued prosperity and expansion. Decline or collapse is a largely dystopian future where all the current social, economic and other systems no longer work. Transformation is a future with a completely new alternative set of values and systems. Finally, discipline is a future characterized by rigidity and strict constraints. I will describe how this concept was used in the Design Process section.

Speculative Design and Tactical Media

The goal of speculative design is to use objects not as solutions to tangible problems but provoke debate but to initiate some kind of debate or conduct philosophical inquiry [1]. Dune and Raby suggest that critical design applies designer's inherent ability to solve problem to complex issues and to give them a kind of materiality to engage people [10]. We can trace the roots of speculative

Figure 5. Drone Shadow 008 installed in Berlin. Image: Copyright James Bridle, Berlin, June 2015. Image courtesy of the artist, www.booktwo.org.

and critical design to the Critical Theory and the Frankfurt school [2]. The objects are produced in order to critique society and its rooted values of capitalism as well as to imply changes necessary to emancipate its members from various forms of domination (economic, political, cultural etc.). Speculative design also seeks to intervene and disrupt common beliefs and values, and it often relies on an emotional response by the audience by means of engaging in controversial or ethically sensitive topics. Auger suggested in [1] that in such cases, a designer needs to be careful to balance the need for an emotional response with the need to engage the audience with the topic under investigation. In other words, too much emotion such as disgust or shock, could disrupt such investigation and focus the audience on the shock value of the object itself.

Another practice related to speculative design is what Raley refers to as *tactical media*. The goal of tactical media is to insert objects into everyday social settings in an uninvited and disruptive way [17]. The goal of these *micro-disruptions* are, in my view similar to the goals of speculative design but there are key differences. First, Raley's conception of tactical media focuses closely on digital media and its contribution to digital humanities. However, its use of micro-disruptions and political activism is what is most relevant to the Stop Nigmas project. James Bridle's *Drone Shadow* project depicted in Figure 5, is a compelling example of tactical media that is not digital.

In this project, Bridle uses a life-size outline of a military drone which is usually placed in a public space. Here is how Bridle describes the goals of this work.

> *... by making them [the drones] visible, we start to understand a little more about how these technologies work, and therefore we have a greater agency in the world. We understand how to use these technologies for our own benefit, and we start to understand some of the moral implications*

of how they might be used, and therefore we can have a rational and genuine discussion with governments and different forms of power about how we think these things should be used. [13]

While Bridle's work is not digital, its form and placement aligns it with the aspirations of tactical media. At the same time, the way Bridle articulates the intended goal of his work also aligns it with speculative design although the object itself is not designed in a traditional sense, but a provocation about another object. In determining the role of the object and its placement in the real world, Stop Nigma drew both from practices of speculative design and tactical media.

Experience, Engagement and Debate

One of the criticisms of speculative design is that it can be a self-serving practice that does not actually fulfill its promises. One of the reasons is that speculative design objects are usually displayed in public setting such as exhibitions and that becomes a key indicator of how successful the object is. However, little is known about whether the objects create the kind of debate and reflection that speculative design claims to enable. An empirical analysis of speculative design by Kerridge in [11] demonstrated that there is a conflation between how speculative designs are circulated (primarily through exhibitions) with the process of public engagement with science and technology. In short, these debates do not and cannot happen in a museum exhibit. Not only is the audience unable to interact with the object, but the authors themselves are not available to engage in the conversation with them.

My awareness of this situation of speculative design turned my attention to pragmatic philosophy of William James, John Dewey and Charles Peirce. Pragmatism offers a rich conceptual framework for design research in general and for speculative design specifically. Dalsgaard argues that pragmatism is uniquely suited to serve as a conceptual framework for design inquiry because, like pragmatism, design relies on a reciprocal relationship between theory and practice [6]. In HCI, McCarthy and Wright demonstrated how pragmatism can inform a reconceptualization of technology as experience in the real world and felt life rather than an isolated object [12].

In Stop Nigma, I relied on two key ideas in pragmatist philosophy. The first is from the writings of Pierce and it is a concept that came to be known as the pragmatic maxim which states the following:

Consider what effects, that might conceivably have practical bearings, we conceive the object of our conception to have. Then our conception of these effects is the whole of our conception of the object. [15]

Applying this concept to speculative design implies that the meaning of the object is the sum total its practical effects. This key implication here is on how we design and situate an object so that it has a practical bearing in the recipient experience. The maxim also calls for an experimentalist approach to speculation. That is, the designer's goal is to continuously experiment with the object and incrementally improve her understanding of the object's practical effect on the audience.

The second key pragmatic concept comes from Dewey's pragmatic philosophy of aesthetics. Dewey himself argued against the museum concept of art because it separated the aesthetic experience from the ordinary experience in a way that prevent us from ever understanding how aesthetics fits into the ordinary life of the experiencer. Dewey also defined an experience as a balance between doing and undergoing [9]. In other words, experience is not something we receive passively but participate in the construction of it. This construction could be either mental or material but it has to be active and goal-oriented. It is not the intensity of activity that is important here, but the degree to which it helps move towards a practical goal. The ability of the object to strike this balance and create what Dewey called a *consummatory experience* became one of the key considerations for the project.

DESIGN PROCESS

Having outlined the theoretical background for the speculative approach, I will now describe the process by which I developed the future scenario, designed the object and disseminated it.

Scenario Development

The revelations of the U.S National Security Agency's surveillance program by Edward Snowden prompted a debate about citizens' right to privacy and the limitations of those rights given current technological capabilities to track and gather citizen data on a massive scale. One could be tempted to interpret these revelations as a sign of a dystopian, Orwellian future that is about to unfold. However, one of the interesting facts about the Snowden Affair is that such a mass surveillance system exists in a relatively democratic society with relatively strong protections of free speech and other civil liberties. In other words, it is far from the completely dystopian and authoritarian future George Orwell portrayed in *1984*. Furthermore, there is an ongoing debate regarding the right to anonymity on the internet. Security agencies are suspected in deliberately sabotaging means for internet users to secure their real identities and location while they are online [16]. Civil liberties organizations such as the Electronic Frontier Foundation, which has been a long-time supporter of anonymous communication as a key mechanism in civic society, expresses concern over such efforts by governments [18].

The global debate on personal identity and privacy in the public sphere was the key source of inspiration for the development of the scenario. The key question for this project is about how future citizens will exercise their right to privacy under sever legal and other constraints. As we have seen with the work of Bridle, designers and artists have already been exploring this question in creative ways. Adam Harvey's work on anti-surveillance fashion and design is another example. Harvey images citizens wearing special clothing and make up to protect themselves against surveillance technology such as facial recognition and thermal imagery. *Stealth Wear* is a line of garments designed to prevent detection by areal drones which usually use thermal imagery to detect human targets. Images of the stealth wear collection can be found on the project website - https://ahprojects.com/projects/stealth-wear/

Another project by Harvey, called CV Dazzle, speculates on ways to manipulate the appearance of the face through makeup and hair styles so as to prevent facial recognition software to detect a face. Images of CV Dazzle can be found here: https://ahprojects.com/projects/cv-dazzle/

Harvey's approach is to introduce both a functional and an aesthetic solution to a speculative problem. He concedes that most people would not object to being imaged by a drone or have their face detected by cameras [14]. But the work provides material evidence for a speculative situation, in which everyday objects like clothing are part of the ongoing struggle between citizens and the surveillance technology. This struggle points to an alternative scenario for the future of privacy. One that is neither a dystopian future with absolute abolishment of civil rights for privacy or utopian future with comprehensive protections against surveillance. Rather, this is a *discipline* future, in which both sides of the debate settled on a compromise. One can imagine a future where the idea of public space had to be redefined and redrawn based on how much privacy is allowed. This is a future of discipline, and to find inspiration to create such future, I turned to examples from the history of civil rights.

Few historical periods are more emblematic of a *discipline* society than the era of racial segregation in the U.S in the early 20th century. The concept of "separate but equal" in the so called Jim Crow laws of that era, is what inspired the discipline narrative of the *Stop Nigma* project. In particular, the institutionalized separation of white and "colored" people in public spaces is one of the most visible manifestations of these laws. The imagery associated of such public spaces still serves as a striking historical record of that period.

One example of such imagery is a photography by Russel Lee taken in Oklahoma City in 1939 (see figure below). The photograph depicts the segregation of the public water fountains. There are certainly images of this period that evoke even greater human suffering, tragedy and death associated with racial prejudice.

Figure 6. "Negro drinking at "Colored" water cooler in streetcar terminal, Oklahoma City, Oklahoma" by Russel Lee. Image: Library of Congress, Prints & Photographs Division, FSA/OWI Collection, [LC-DIG-fsa-8a26761].

However, it is the mundane quality of an image in which public space is awkwardly divided to indicate social status, that is most relevant to my project. In other words, my interest is in what Roland Barthes called "the rhetoric of the image" [3]; an image that can communicate an ideology at a moment in time, in this case a moment in the future.

Based on these two narratives, one being the struggle against mass surveillance technology and the other being the idea of public space being divided based on collectively imposed social status, I have developed the future scenario. In this scenario, as outlined at the beginning of this paper, the level of privacy is the key marker of social and legal status of a person in a public space. Citizens have access to various kinds of anti-surveillance technology that allows them to remain anonymous. But the dominant ideology in this future does not allow such activity in public spaces unless it is in a specially designated area.

Object Design

To communicate of this future scenario through an object, I developed the following design criteria:

1. The object needs to serve as an extension of the main narrative
2. The object needs to represent segregation of public space based on privacy.
3. The object needs to be accessible to many potential interactors.
4. The interactors need to produce an image with the object in a public space.

Based on these criteria I developed a concept of a generic sign, inspired by internationally recognized symbols such as the Stop Sign. Road signs and similar signage represent an institutionalized standards of normal behavior. They serve to maintain order and continuity in public space. The Stop Sign we know today was introduced by the 1968 Vienna Convention on Road Signs and Signals. Although the sign

Figure 7. Stop Sign on an American Street. Image: Christopher Sessums CC BY-SA 2.0

Figure 8. Variation of the Stop Sign in China and United Arab Emirates. Image: Public Domain

is used slightly differently in various countries, its shape and color represent a universal meaning.

Following design cues of the international standard for Stop Signs, I designed a logo and a sign for areas of limited surveillance. The initial designs for the sign are presented in Figure 9.

Figure 9. Early sketches of the No Nigma sign. Image: Sandjar Kozubaev CC BY-SA 2.0

In addition to the design of the signage, I also developed a fictional word which would be used as a semi-derogatory term to refer to people who seek to protect their privacy. It should serve the same purpose in everyday language as the sign serves in public space. The word *nigma* is derived from the word enigma which refers to something puzzling, unknown or difficult to understand.

Interaction Design and Free Art Movement
The next step in the process was to design an interaction based on the Stop Nigma concept. I chose the community of the free art movement in Atlanta, Georgia which allowed me to reach an audience of local artists, makers and their followers to disseminate the object across the city. The free art or gift art movement refers to the way artists distribute their work for free using social media. The local version of the movement in Atlanta, is called Free Art Friday or #fafatl. #fafatl is a cross between social media conversation and a scavenger hunt. The rules are as follows. An artist places (or "drops") a small piece of art somewhere in the city, takes a picture of it and posts it on social media, usually Instagram and Twitter. The task of the followers of #fafatl is to identify the location of the piece based only on the image. Whoever finds the piece, publicly claims ownership of it so that other followers know that is no longer available. Both professional and amateur artists participate in #fafatl. For amateurs it is a casual hobby of expression. For professionals, it is a way to connect with fans and promote their commercial art. Collecting free art pieces is a hobby for many participants.

The interaction between authors and audience in the #fafatl community provided a suitable platform and model for distributing the future narrative and the Stop Nigma objects. First, the interaction is in a location that both the author and the audience have to visit. The main advantage of this interaction is that the audience does not just see but experience the interplay between the speculative object and physical space. A strategic choice of the location became important because it has to fit into the narrative of the future of privacy in public space. Second, the audience can place the object in their own environment extending the reach of the narrative beyond its original placement. Third, because the audience is now in possession of the object, it can contribute images and narrative back to the community. Here, it is important to note that while the future scenario was developed first, the audience was not exposed to its details while interacting with the object. Their main clue as to what the object represented was a fictional dictionary definition of the word Nigma which read: Nigma (n.) - An individual who protects his privacy at all costs. In early 2060s, considered dangerous and socially unacceptable. The dictionary definition format was a way to briefly communicate the complexity of the future scenario, establish a timeline, while leaving the implications of the object somewhat open to interpretation.
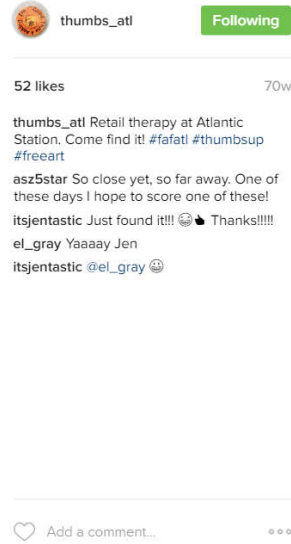
Figure 10. A #fafatl Piece Being by a Local artist in Atlanta. Image: Instgram user thumbs_atl. Used with author's permission.

Object Deployment

The deployment of the objects in public space took place in three phases over a two-year period.

Phase 1 - Primary Narrative and Audience Growth

In this phase, I experimented with several techniques to create miniature versions of the No Nigma signage. After several prototypes, I created a first set of pieces using reclaimed wood from old ceiling fans. The objects were distributed using Twitter (www.twitter.com/stopnigma) and Instagram (www.instagram.com/stopnigma). The first phase of the project was to build awareness around the narrative and the meaning of the object.

Because of the character limitations on Twitter and Instagram, the main narrative of the future scenario could be told only incrementally. The fictional dictionary definition of the word Nigma was is displayed in the profile descriptions on Twitter and Instagram. Each additional object released in public space provided an opportunity to extend and deepen the narrative.

Initially, the objects were distributed only in the Atlanta area. Subsequently, with the help of the network of local artists and #fafatl enthusiasts, they were deployed in other U.S. and European cities. Although the free art movement is not as developed in those cities, the images retrieved from those locations helped convey a more global story.

Phase 2 - Secondary Narrative

The primary narrative established the main scenario which is segregation of public space based on citizen's privacy. The secondary narrative involved other types of objects and images. I developed another concept called Nigma Drone which is a future drone designed to seek out and tag individuals in public space that might be obstructing surveillance technologies.

The Nigma Drone objects were distributed in the same way. Subsequently, I added stickers and stencil art as an alternative way to represent the symbolism of the Stop Nigma sign.
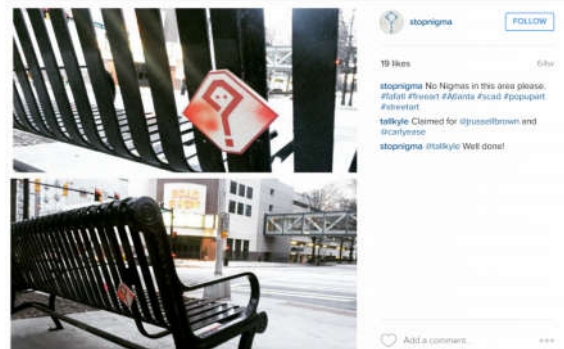

Figure 11. Examples of Stop Nigma objects near prominent landmarks in Atlanta, USA. Image: Sandjar Kozubaev

Finally, following the traditions of the #fafatl community, I participated in monthly themes (e.g. Star Wars, 8-Bit Art and others) and designed special versions of the Stop Nigma object, which provided additional audience engagement opportunities.

Phase 3 - Solicitation of Audience-generated Images and Narratives

Once the project attracted a sufficiently large audience of followers, I solicited the collectors to create their own images and narratives. This is the ultimate purpose of this project; to use a designed object in public space to co-create the narrative with the audience and engage it in the futuring process. For example, Instagram user *kelseyrb* created an image near a public library and developed a narrative about restricted privacy.

Outcomes

Stop Nigma was an experimental attempt at using futures studies and interaction design to create a narrative about an alternative future and allow the audience to extend and modify that narrative. The project produced three main outcomes.

First, Stop Nigma created a small but growing following in the #fafatl community. The future scenario and the object is compelling enough for the audience to make effort and collect the objects. More recently, some members of the #fafatl community mentioned rerepeated efforts before they were able to successfully find and claim a piece. However, this would be more difficult to achieve if the city of Atlanta did not already have a community of free art enthusiasts. Inserting the design fiction into an existing community, following their rules and conventions, was key to making an impact.

Second, using futures as method helped create a more robust scenario in which Stop Nigma can be one of many other potential objects, each extending the narrative in their

Figure 12. Example of an image and narrative created by the audience. Image: Instagram User kelseyerb. Used with author's permission.

own way. In other words, audience participation depends not only on the design of the object itself, but also on the potential richness of the scenario.

Third, Stop Nigma audience members propagated and even modified the speculative narrative in their own way. Many of the followers who successfully claimed the objects later shared pictures of it in their own home collections (e.g. on a fridge or a wall). Although I did not observe how they explain the meaning of the symbol and the object to their peers, it is reasonable to assume that the most meaningful parts of the future scenario would be preserved. Perhaps the most significant outcome is that some followers created their own versions of the narrative of how these objects might manifest themselves in the future, as shown in Figure 12.

DISCUSSION

Drawing on previous research in speculative design, futures studies and pragmatic aesthetics, project Stop Nigma sought to demonstrate how interaction designers can contribute to the process of collective speculation in a more inclusive and generative way. In speculative design, the primary goal of the object is to represent a future scenario to create certain discourse and reflection about it [4]. The emphasis is often on the object's representative or interactive properties to create and communicate a narrative about the future. Bleecker refers to these objects as *diegetic prototypes* [4]. However, because the designer is the researcher and the author of the narrative about the future, the object offers little agency for the audience to think about and express potentialities of the future in question.

In Stop Nigma, I deemphasized the role of the object and (re)emphasized the role of the audience in the process of speculation. Although the object itself does tell a story about a future, its ultimate goal is to help the audience create their own versions of the future. This approach offers novel avenues of research in HCI and speculative design. First, as mentioned earlier, the project was guided by pragmatism, in that it sought to create speculative objects that constitute a *consummatory experience* for the audience. Wright *et al* argue that making digital artifacts more open to interpretation make the interaction more conducive to such experiences [19]. In other words, speculative objects should not only be diegetic, but also dialogical.

Second, my approach to interaction design was guided by futures studies in that it relied on methodical development of the scenario. This creates a wider context for potential interpretation and helps deemphasize the role of the speculative object, thus creating opportunities for the audience to participate in the speculation. The meaning of Stop Nigma is both meaningful and open-ended because the scenario helped make it so.

While Stop Nigma suggests new ways for the audience to engage in speculation, in this experiment, human-computer interactivity was mostly focused the distribution of the objects and collection of audience-generated narratives through social media. This helped with the feasibility and scalability of the project but there is potential to take advantage of the affordances of digital media and computing in the design of the objects themselves. Limitations notwithstanding, the design principles used in this experiment can inform future research on speculative design.

CONCLUSION

Stop Nigma explores the future of privacy through speculative design, futures studies, and pragmatic aesthetics. I demonstrated how pragmatism can inform the design of the speculative objects in which the audience is an active contributor to rather than a passive recipient of the speculative narrative. This approach helps create a dialogue between the designer-inquirer and the audience by allowing the audience to co-create alternative narratives about the future.

Building on existing work by speculative designers and artists, this project opens opportunities for further research in HCI. In particular, further research is needed to understand the role of interactive objects in helping the audience understand complex issues and create alternative narratives about the future. Furthermore, it is important to understand what kinds of reflections and modes of inquiry about the future could such objects and interactions enable. Finally, additional research is needed to understand how HCI impact the audience's sense of agency in issues about uncertainty and futures.

These research questions are not unique to this project, and it is the author's belief that they should be posed by all researchers who seek to promote debate and reflection through design. With this experiment, I sought demonstrate that these questions could be addressed by engaging the audience to interact with the object and participate in the speculative process. Following the pragmatic maxim, the next step is to evaluate the practical effects of these objects and interactions.

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