

# A New Story

Purposeful storytelling and designing  
with data

You must make a difficult choice, right now. Give up your name, identity, and sense of self to be housed, fed, and clothed. Or wander aimlessly through life, hungry, in constant fear of the unknown, and alone—but in control of who you are.

Stop reading and make that decision. Or someone will make it for you.

This is the choice many children face when entering the large, and often chaotic US foster care system. It is also the foundation for *My Sky Is Falling*, a new kind of participatory, purposeful story.

The following case study documents the development of a toolkit for creating and evaluating immersive, narrative experiences. Throughout this paper we explore the ways in which integrating data collection and evaluation into the development of immersive platforms can benefit purposeful, participatory storytelling practices.

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# Introduction

At the [Harmony Institute](#) (HI) we study the impact of entertainment on individuals and society. Our organization is founded on the premise that stories are powerful tools for creating social change; stories foster empathy, present new perspectives, and encourage audiences to think through complicated social issues. We are increasingly interested in the evolution of the storytelling landscape, particularly in the realm of [purposeful storytelling](#), a narrative approach that enables audiences to become collaborators through the use of immersion, participation, data collection, and transmedia platforms. The media journalist Frank Rose breaks down these overlapping terms.<sup>1</sup> He describes “participatory” as being more than interactive, but also encouraging a response, like “an instigator constantly encouraging you to comment, to contribute, to join in.” Furthermore he explains immersion as being able “to drill down as deeply as you like about anything you care to.”

During the fall of 2012, we partnered with [Reboot Stories](#), [Orange Duffel Bag Foundation](#)—a nonprofit that provides coaching, training, and ongoing mentoring to at-risk youth—and [a graduate film class](#) at Columbia University led by Lance Weiler, to help develop and test a purposeful storytelling experience on the subject of foster care.

Our evaluation goal for the project, *My Sky is Falling* (MSiF), was to understand the impact of participatory stories by assessing changes in the audience. These changes included shifts in their comprehension of the social issue, shifts in attitude and empathy for the issue of foster care, and responses such as donations to the foster care community, or requests for more information.

We are sharing our preliminary results and analysis with the hope that creators, researchers, and funders can build on our methods to develop and measure the social impact of their work.

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<sup>1</sup>Rose, Frank. *The Art of Immersion: How the Digital Generation Is Remaking Hollywood, Madison Avenue, and the Way We Tell Stories*. W. W. Norton & Company, 2012.

# The story

*MSiF* is a multi-layered story that uses a science fiction aesthetic to convey the realities of a social issue.

## Social issue layer

*MSiF* is based on the lives of former foster care children, [Lydia Joyner](#) and her cousin Kathy, both of whom entered the system at the age of seven. The story juxtaposes Kathy's horrific experience, which included drug addiction, incarceration, and murder, with that of her cousin Lydia, who overcame personal issues to thrive in the foster care system.

The goal of *MSiF* was to forge empathic ties between participants and children in the foster care system, as exemplified by Lydia and Kathy's experiences. Early on in the creative process, Reboot Stories felt that the issues and statistics associated with foster care were so foreign or invisible to the general public that it was as if foster youth lived in another world. Called to action by this motif, their creative team developed an allegorical science fiction narrative.

This narrative sought to evoke the emotions experienced by foster care children, such as disorientation, uncertainty, distrust, sadness, anxiety, and hope. However, bringing those emotions alive for a wide audience posed a challenge.

## Science fiction layer

To distance the story from the stigma attached to foster care, *MSiF* was developed as science fiction with no explicit mention of the social issue. The experience incorporated a [fictional storyworld](#), or unifying set of backstory, plot, and characters. This storyworld informed the creation of an immersive physical environment, complete with actors, soundscapes, and props that could be handled and examined.

As the experience begins, participants are taken to a lab and introduced to a group of scientists called the Donna 13s. These scientists claim to have constructed a simulation that can predict world events, which demonstrates that free will does not exist and human fate is predetermined. Meanwhile, fugitive Anita Bradt leads a rebel group to destroy the simulation. Participants must choose whether to endure psychological testing in order to enter the simulation or risk losing their identity and follow the Bradt rebels on a path of creativity and free will. On either story path, participants are meant to feel unsure of whom they can trust, and whether or not the choice they made was the right one.

## Story connections

As the story concludes, the participants learn that they have experienced a science fiction version of Lydia's life. Surrounded by her extensive collection of files from foster care, Lydia talks about growing up at 1313 Donna Avenue, why she felt her cousin Kathy couldn't escape that world, and how Anita Bradt—her high school drama teacher—was the one person who believed in her. In this conversational Q&A, Lydia and participants use the language and experiences of the science fiction layer of *MSiF* to connect, share, and empathize with each other.

# Evaluating immersive environments

Henry Jenkins, transmedia scholar, tells us that “...transmedia stories are based not on individual characters or specific plots but rather [on] complex fictional worlds which can sustain multiple interrelated characters and their stories.”<sup>2</sup> This feature of transmedia is shared by participatory narratives, which may make use of a storyworld framework by creating detailed real-world environments for audiences to explore.

Throughout the research and development phases of the project, Reboot Stories and HI identified features of the immersive storyworld that contributed to opportunities for impact evaluation and measurement. The story’s interactive nature presented a unique context for measuring narrative impact, and on a level more granular than what is traditionally possible with formats like television or film.

## Traditional evaluation settings

In [previous media evaluations](#), HI has interviewed audiences in the field or brought them into a laboratory or focus group setting. Both of these environments have limitations. Field studies are costly and such environments are difficult to control, making it difficult to isolate variables and identify effects on participants. In contrast, lab settings offer more control, though they also have drawbacks. Labs may feel artificial<sup>3</sup> and cause subjects to adjust their behavior based on what they assume to be the researcher’s expectations. This is known as the subject-expectancy bias,<sup>4</sup> and is one bias among many interpersonal expectancy biases that can occur in social science research and cloud impact measurement.

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<sup>2</sup>Jenkins, Henry. “Transmedia Storytelling 101.” Confessions of an Aca-Fan – – The Official Weblog of Henry Jenkins. [http://henryjenkins.org/2007/03/transmedia\\_storytelling\\_101.html](http://henryjenkins.org/2007/03/transmedia_storytelling_101.html) [accessed July 1, 2013]. <sup>3</sup>Mitchell, Gregory. Revisiting Truth or Triviality: The External Validity of Research in the Psychological Laboratory. SSRN Scholarly Paper. Rochester, NY: Social Science Research Network, March 12, 2012. <http://papers.ssrn.com/abstract=2020561>.

<sup>4</sup>Rosenthal, Robert. “Interpersonal Expectancy Effects: A 30-Year Perspective.” *Current Directions in Psychological Science* 3, no. 6 [December 1, 1994]: 176–179. doi:10.1111/1467-8721.ep10770698.

## Immersive evaluation settings

To counter biases in reporting, participants must feel comfortable enough to behave naturally in an environment where researchers can make meaningful observations. In *MSiF*, much of the surprising observational data came from the final stage of the story, when Lydia spoke openly with the participants. By matching these interactions to qualitative survey responses, we were able to develop a more nuanced understanding of the participant experience.

For example, in response to an open-ended question on the post experience survey, one participant simply described the mechanics of his experience: “I found it a little hard to follow the two factions. [M]aybe if they were led by stronger personalities?” While useful, this information reveals little about the participant’s emotional state or relationship to the issue. We compared this response to observations of this same participant’s behavior during the final stage of the experience. Here the participant admitted that, during his time in the experience, “Every question I was asked [by the actors], I lied to.” He explained his actions in terms of the story’s personal resonance, which triggered memories of emotional moments from his past. This reflexive, critical thought contrasts with the suggestions left on the survey. The differences in his two points of qualitative feedback are striking and illustrate the level of detail or degree of personal information a participant may be willing to admit in an immersive setting versus on an impersonal questionnaire.

### What we learned

- Immersive settings may help enrich impact measurement by mitigating expectancy biases. People may reveal more about their feelings and emotions in these rich, interpersonal contexts.



# Accounting for iteration

Iterative design and rapid prototyping are tools that storytellers and experience designers use to improve their stories. However, without critical planning to accurately track data and feedback on improvements, the ability to measure their value beyond anecdote diminishes quickly. Balancing the creative improvisation of storytelling with accurate impact measurement means thinking systematically about data collection within the narrative, both at the early stages of design and throughout the production. *MSiF* has had three public performances. We treated each performance as an opportunity to add another layer of data to drive the narrative.

The second performance of *MSiF* ran during [Envision 2013](#), an event co-organized by the [Independent Filmmakers Project](#) and the United Nations. Whereas previously the narrative had been informed by the stories of multiple former foster care children, in this iteration the story was substantially redeveloped along the dual chronology of Lydia and Kathy's lives. The Reboot Stories team used the nine stages of the popular monomyth, the Hero's Journey <sup>5</sup> as a guide to develop two story paths, one for the Bradt rebels and one for the Donna 13s. At the beginning of the performance, participants were given a choice of which path to follow, and were asked to choose again at a later point.

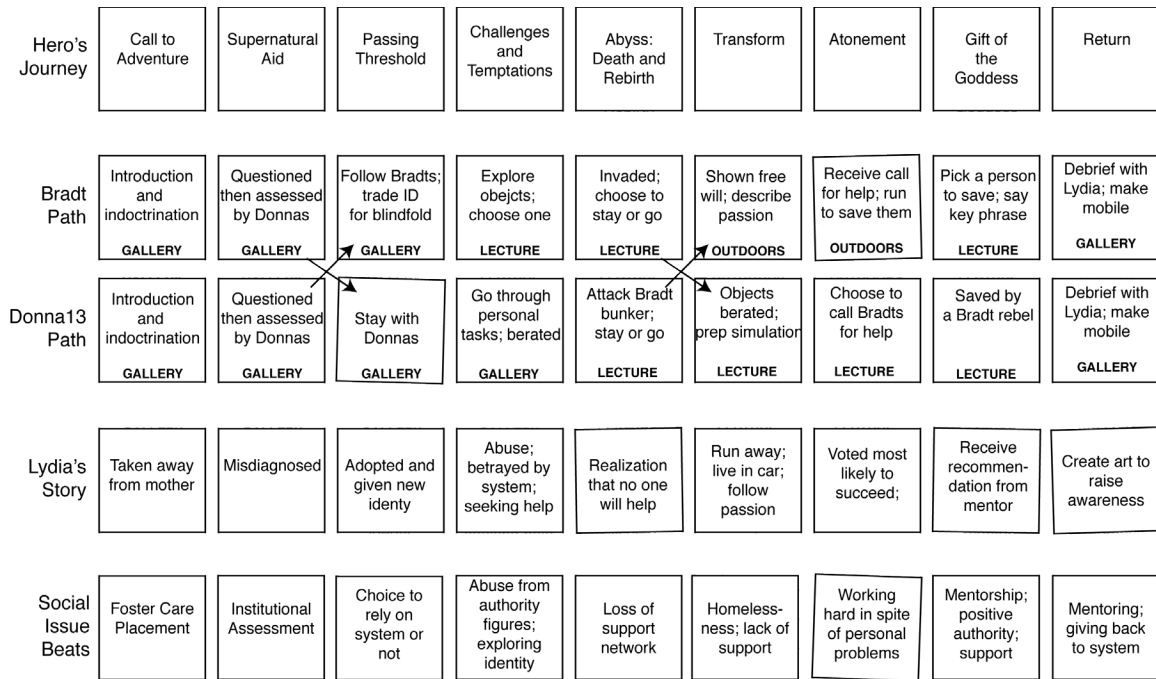
## System maps, story beats, and choice

In order to systematically understand the ways in which participants could interact with the two storylines, we created a system map that broke down the participatory narrative into discrete plot units, or story beats, guided by the structure of the Hero's Journey. By mapping the story beats in relation to an overarching plot structure, we could clearly identify pivotal moments within the story where participants could exhibit agency in choosing their path through the narrative.

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<sup>5</sup> Monomyth Website, ORIAS, UC Berkeley."ORIAS Home Page. <http://orias.berkeley.edu>. orias.berkeley.edu/hero/JourneyStages.pdf [accessed July 1, 2013].

## Mapping the story



This system map, built for the second performance, shows a relationship between the science fiction layers and the social issue from both a general perspective and Lydia's personal perspective.

This systematic approach clarified the relationship between the science fiction layer and the social issue layer. Taking the second story beat as an example, at the level of the Hero's Journey we see "Supernatural Aid" or "aid from a protective figure."<sup>1</sup> In Lydia's personal story, this beat was titled "misdiagnosed" and supernatural aid translated as a metaphor for the multiple, conflicting reports of her mental health by doctors and social workers in the foster care system. Furthermore, in the series of social issue story beats, which describe what any child in the foster care system may face, this experience was extrapolated as "institutional assessment." We were later able to use these beats in a survey in order to test both participant comprehension and how effectively the science fiction story conveyed the issues surrounding foster care.

## Feedback loops

System mapping also helped us identify narrative feedback loops, or mechanisms that progress the plot of a story based on the decisions of participants. For example, to continue on the Bradt story path, participants had to give up a personal form of identification, such as a driver's license or passport. While some refused to do so, most participants felt compelled to relinquish their piece of identification, exhibiting a willingness to accept the risk of trusting a stranger to go further in the narrative. This choice set the emotional stage for similarly uncomfortable trust games that occurred later in that story path.

### What we learned

- Systematically mapping the story to the social issue in discrete beats helped us further develop the story, locate potential narrative feedback loops, and plan for impact evaluation.

# Tools for measuring media impact

In our experimental designs with *MSiF*, one of our goals was to develop new tools for quantitative and qualitative data collection and analysis. We were interested in exploring the ways in which quantitative and qualitative data could be combined to provide insight into audience experience.

## Quantitative engagement data

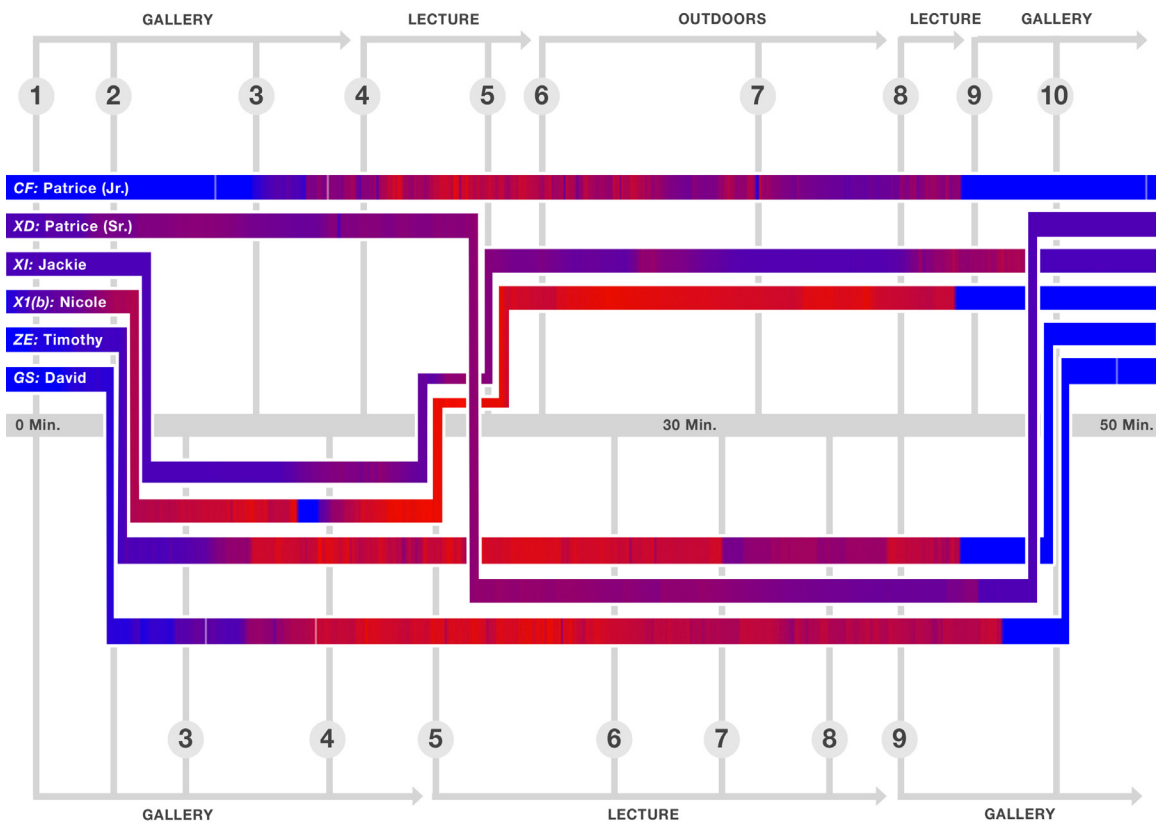
One of the major differences between the first and second iterations of *MSiF* was the introduction of [Q-Sensor technology](#). Developed at the [MIT Media Lab](#), the Q-Sensor is a device worn on the wrist that measures electrodermal activity (EDA), or the degree of change in the electrical properties of skin. <sup>6</sup> High levels of EDA indicate high arousal, such as engagement, excitement, or worry, while low levels indicate states like boredom or calmness.

The readings from these sensors gave us a new layer of quantitative engagement data, which we were able to map onto the story beats and the timeline of an individual's path through the story.

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<sup>6</sup> Affectiva, Inc. Liberate yourself from the lab: Q Sensor measures EDA in the wild. Waltham, MA, July 5, 2013.

## Visualizing quantitative engagement data



The *MSiF* technical team was able to overlay quantitative engagement data on a system map of story beats, showing how participants were reacting as they progressed through the story.

This data visualization shows the engagement data of six participants as they experienced the story. The upper half of the chart corresponds to the Bradt story path, whereas the lower half corresponds to the Donna 13 story path. Shifts in color represent differences in participant engagement, with red indicating the highest level of arousal and blue the lowest level. In both story paths, the group was generally more engaged in the middle of the narrative. However, a closer look at the readings of individual participants shows slight variations from this overarching pattern. For example, while participants on the Bradt story path were generally engaged during the sixth story beat, in which they must “prove” they have free will, one participant in particular was highly engaged relative to the other two.

## Qualifying the engagement data

### Adding qualitative engagement data



A closer look at individual participants shows slight variations in the overall engagement pattern. In this example, participants were generally engaged during a story beat in which they must “prove” they have free will. However, one participant in particular was highly engaged relative to the other two.

Once we knew which beats were engaging, we added qualitative feedback from the participants to determine why they were connecting with the story beats. In *MSiF*, the participant data generally shows a low level of engagement at the end of the experience. Based solely on this data, we might have inferred that participants were not as interested in this aspect of the experience, as low levels of EDA can indicate contrasting types of subdued states, like relaxation or boredom. Instead, we also considered their qualitative feedback, which included strong, positive adjectives such as “humbled” and “informed.” The combination of these two data sources provided a more nuanced picture of a participant’s experience. In this case, the biological engagement data was low as participants reflected and learned from the experience.

## Immersive measurement techniques

Surveys are one of the most widely used methods for measuring audience opinion and evaluating media impact.<sup>7</sup> This standardized methodology has long been used to study the reception of forms of entertainment like film and television. However, surveys come with limitations, especially with complex social phenomena like entertainment and social change. Self-reporting may introduce biases. Respondents may adjust their answers to what they feel is the socially appropriate<sup>8</sup> or “best” response. Furthermore, in a survey occurring after the media experience, the researcher is asking the participant to remember an emotion, communicate it accurately, and not misrepresent their feelings.

Transmedia and immersive stories offer researchers the opportunity to develop alternative methods for gathering opinion data. The participatory nature of these platforms allows for participants to make choices that advance the narrative in a custom or individualized way. With thoughtful experience design and an evaluation framework, researchers and storytellers can work together to extract meaning from those personalized interactions.

For the third public performance of *MSiF*, which took place at [diy days NYC](#), data collection points were strategically placed at pivotal decisions in the storyline. For example, at one of these decisions points we placed an open-ended prompt within the story. We gauged whether, in response, participants felt compelled to text the phone number provided—a fake corporation offering relief from an intentionally frustrating story beat. These text messages contributed to the profile of each participant, and were later compared against the reflective descriptions they reported after the experience. Though our sample size was small, we found differences between the participants’ language use while immersed in the experience, and the language they used while reflecting on their feelings afterward. One participant who texted the fake corporation reported feeling “uncomfortable” while in an isolation room—though in the survey following the experience he described feeling “at peace” during that point.

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<sup>7</sup> “Survey Research.” Social Research Methods. <http://www.socialresearchmethods.net/kb/survey.php> [accessed July 1, 2013]. <sup>8</sup> Miller, Angie L. “Investigating Social Desirability Bias in Student Self-Report Surveys.” In Association for Institutional Research. Association for Institutional Research, 1435 East Piedmont Drive Suite 211, Tallahassee, FL 32308. Tel: 850-385-4155; Fax: 850-383-5180; e-mail: [air@airweb.org](mailto:air@airweb.org); Web site: <http://www.airweb.org>, 2011. <http://www.eric.ed.gov/ERICWebPortal/detail?accno=ED531729>.

## Adopting survey techniques

Evaluating the immersive and reflective feedback helped us to understand shifts in participants' emotions and attitudes, but we also sought to measure potential changes to their understanding of the foster care system. In the first performance of *MSiF*, we asked participants, "What did you learn?" Though 92 percent responded that they learned more about how a foster care child feels, we had no way to contextualize that information. This issue of creating a baseline, or a starting point to compare changes, is a common challenge for evaluating the impact of media content. In this instance, we didn't know the degree to which participants had learned more than they had known at the outset, or which aspects of the experience contributed to their understanding. More importantly, the participants may have felt as if they had learned more about the social issue, but in reality the experience may not have conveyed that information.

For the second and third performances of *MSiF*, we utilized a traditional research method and gave participants a survey after the experience. We asked them to "describe [Lydia's] real life by using beats from the story." To answer this question, participants had to think abstractly through the science fiction metaphors they had experienced and accurately map these to Lydia's real-life experience. We challenged the participants' ability to recall and process their experiences during the unscripted debrief with Lydia, as different groups got partial and slightly different sides of the story. For participants to map all of the story beats accurately, they had to extrapolate from their emotional experiences with the science fiction and re-contextualize those themes within the social issue of foster care.

For example, in the third story beat, some participants are blindfolded and led to another room, the Bradt "bunker." When participants reimagined this as a real experience in foster care they wrote statements like:

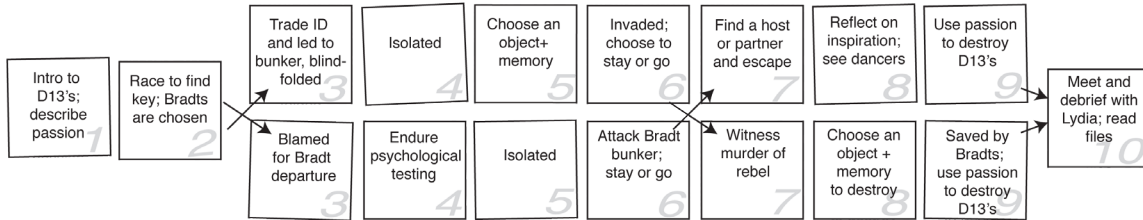
- "...needing to trust strangers"
- "...having to meet with doctors and therapists as a child..."
- "...tried to trust in new environment"



## User feedback survey

Name: \_\_\_\_\_

*My Sky is Falling* has 10 story beats and 2 branches. Using this map, trace the route you experienced.



Describe how you felt at each beat of the story.

1	2	3	4	5	6	7	8	9	10
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Based on what you learned from meeting Lydia, can you describe her real life by using beats from the story you experienced?

1	2	3	4	5	6	7	8	9
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In addition to asking how participants felt at discrete story beats, our user feedback survey asked participants to map the science fiction story beats to the realities of Lydia's experience in foster care. This provided qualitative feedback for participant comprehension of the social issue.

Overall, 80 percent of participants who responded to this section of the survey were able to correctly or somewhat correctly identify beat three's corresponding social issue of having a "choice to rely on system or not." The ability to relate one's own emotional experience to another's precisely demonstrates the emotion that *MSiF* aimed to elicit: empathy.

### What we learned

- Though data-driven storytelling is a nascent field, we were able to adapt traditional social science methodologies to assess the impact of a participatory narrative. Likewise, the participatory narrative provided new methodological opportunities to evaluate audience experiences both during the story and at its conclusion.

# Analysis

## Comprehension and immersion

To analyze the degree of comprehension of each story beat we built on the work of communications researcher, Michael F. Dahlstrom,<sup>9</sup> who analyzed the role of narrative causal structure, or the way in which the plot affects the dissemination of information. We also drew on the elaboration likelihood model,<sup>10</sup> which is a theory of how people respond to the presentation of arguments. These theories can both be used to examine the effects that the degree of narrative engagement has on whether an audience internalizes real-world facts or educational content presented in a story.

For *MSiF*, we theorized that a participant's level of immersion or engagement with the narrative would affect their ability to understand the story's relationship to the social issue.

HI researchers collected, coded, and analyzed the response data from 21 participants at the diy days NYC event. To measure participant comprehension we coded responses by the degree of social issue comprehension for each story beat and compared correct and moderately correct answers to the total number of responses. Those participants who gave feedback were able to identify the social issue story beats describing foster care 64 percent of the time. While this number is less than our previous success of 92 percent, it reflects participant testing as opposed to self-reporting.

We also assessed story beats by comparing the degrees of “immersion” expressed by participants. To do so we split the feedback into three degrees: production, story, and

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<sup>9</sup> Dahlstrom, Michael F. “The Role of Causality in Information Acceptance in Narratives: An Example From Science Communication.” *Communication Research* 37, no. 6 [December 1, 2010]: 857–875. doi:10.1177/0093650210362683.

<sup>10</sup> Slater, Michael D., and Donna Rouner. “Entertainment–Education and Elaboration Likelihood: Understanding the Processing of Narrative Persuasion.” *Communication Theory* 12, no. 2 [2002]: 173–191. doi:10.1111/j.1468-2885.2002.tb00265.x.

personal. We found that for six of the ten story beats (including the debrief with Lydia), the majority of participants gave feedback that used personal language, demonstrating a high level of immersion. This immersion measurement was then mapped against participant’s accuracy in describing Lydia’s actual experiences in foster care. For example, in beat three, participants that experienced the Donna 13 story path were able to describe the foster care experience with moderate levels of success, regardless of their degree of immersion. In contrast, participants who both, followed the Bradt story path, and were immersed in the story layer of the experience, were better able to describe the social issue.

## Aggregate analysis of participant responses

**Social Issue Comprehension**

		1	2	3	4	5	6	7	8	9	
Most informative level of immersion		Production	Production	Mixed	Mixed	Production	Story	Production	None	Mixed	
Degree of Immersion	Donna 13 Path	1	2	1	0	2	0	0	2	0	0
		1	0	1	1	2	1	0	0	0	0
		3	0	3	2	0	2	0	1	0	0
	Bradt Path	1	2	1	0	1	0	0	2	1	0
		1	0	1	1	2	1	0	0	0	0
		3	0	3	2	0	2	1	0	0	0
Most informative level of immersion		Production	Production	Story	Production	Mixed	Mixed	Mixed	Personal	Personal	

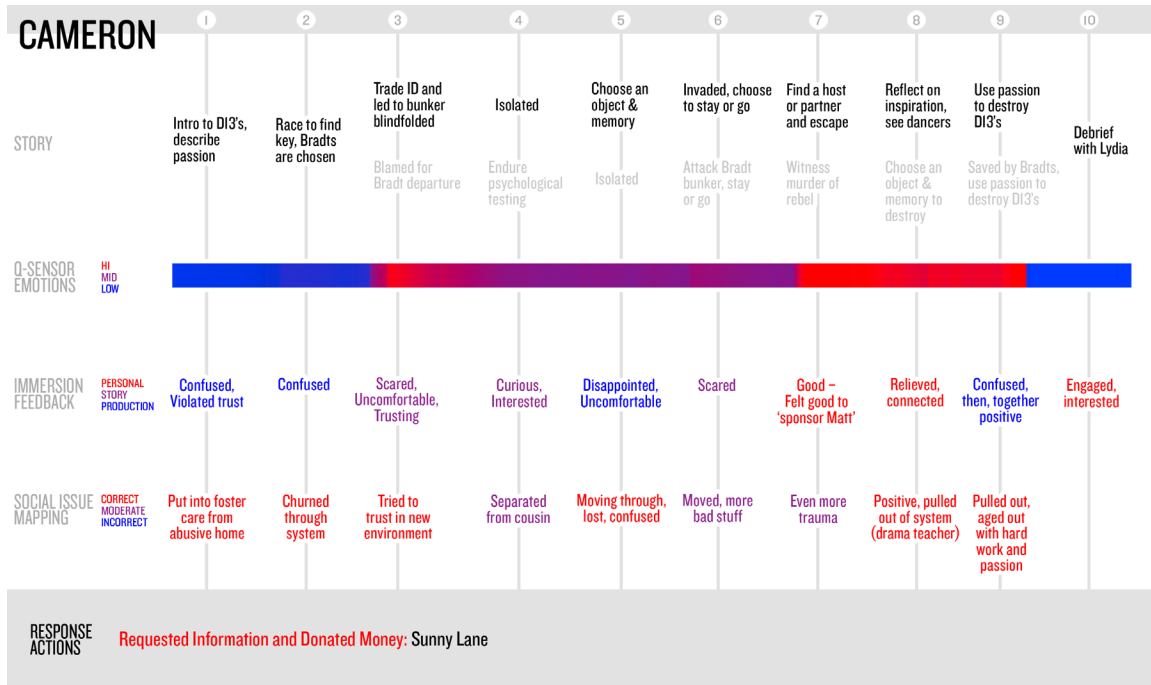
Each story beat was assessed by the degree of immersion the participants expressed in qualitative feedback. This immersion was then mapped against how accurate the participant was in describing Lydia’s actual experiences in foster care. The result is a series of 3x3 matrices for each story beat, showing the number of responses at each intersection. The most informative level of immersion at each beat is the intersection that received the most responses.

Regardless of their level of immersion, participants who took the Bradt path were able to correctly identify beats eight and nine of Lydia’s journey. These beats included mentorship and becoming a mentor herself. We also saw a difference in beat three in which participants who chose the Bradt story path had to trade a personal ID. The tension of this choice correlates with a lower level of immersion but participants had a more accurate understanding of the social issue, as that particular story beat reflected the idea that foster care children often have little control over their identities and who has access to their identity information.

As demonstrated by the previous image, there was no consistent pattern in how immersion mapped to comprehension.

## Diving deeper

The qualitative data for immersion and comprehension was still self-reported, so in order to more fully understand the impact of *MSiF* we compared the participants' feedback with their quantitative engagement data. The following examples take a closer look at two individuals as they experienced *MSiF*. Names of participants have been changed.



Despite wavering levels of engagement, Cameron was able to identify every story beat of the social issue.

Before entering the experience, Cameron reported being a fan of science fiction and somewhat interested in social issues, though not any one in particular.

Cameron followed the Bradt story path for the entire experience. He showed low points of engagement at both the beginning and end of the experience, and his responses on the survey show that his self-reported levels of story immersion were similar.

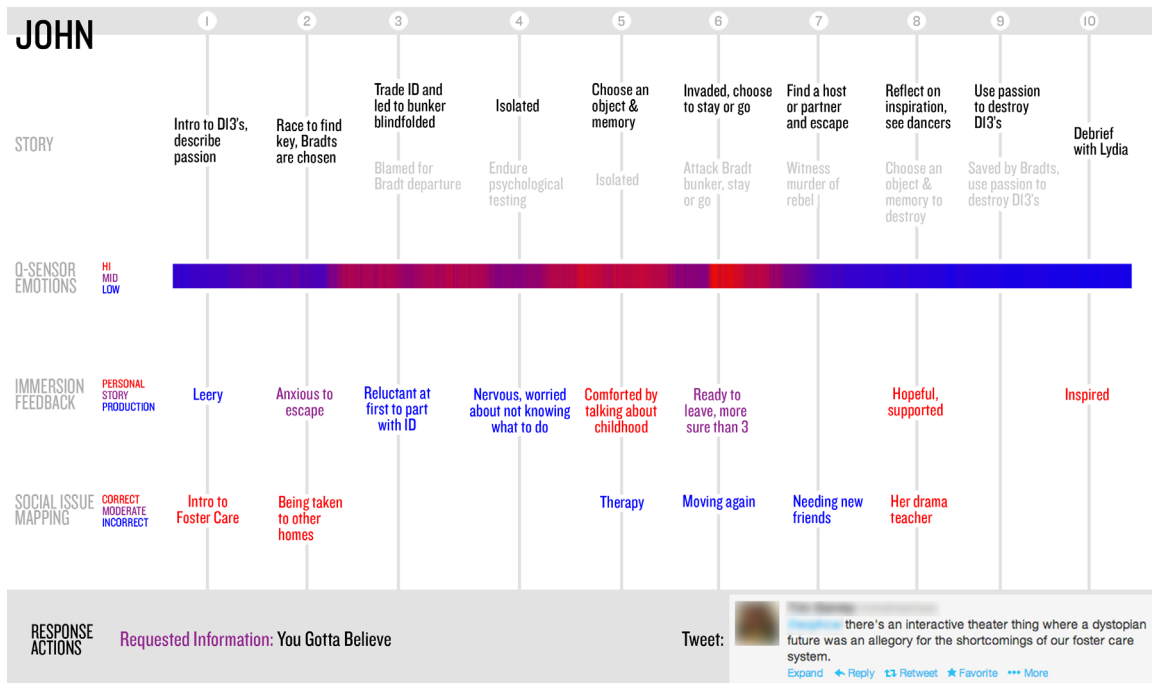
However, the varying levels of immersion contrast with Cameron's consistently high comprehension of the social issue, indicating a factor other than narrative engagement may have been important in his comprehension of the social issue. This assessment is further bolstered by his feedback. In the survey he wrote, "Knowing this was Lydia's story changed

the relationship with the work significantly—makes it about one person, not the system. Is that the goal?”

During the fourth beat of the experience, Cameron interacted with the fake corporation we created, texting that he was “Unhappy that they’re sharing my experiences and fears publicly.” This was likely in reference to the first few story beats in which the Donna 13s ask participants to disclose a personal feeling or story, then loudly exaggerate the response to form a “misdiagnoses” of the participant. In contrast, when he later reflects on this point he writes that he was, “curious, interested.”

Though Cameron previously reported a moderate level of interest in social issues, he was one of the few participants who both requested more information about [Sunny Lane](#), an upcoming film about Lydia’s life, and indicated he would like to donate money to the project. This high degree of response, coupled with Cameron’s feedback and high degree of self-reported immersion during the debrief with Lydia indicates that her personal story had a positive impact on his relationship to the social issue.

It also demonstrates the need to contextualize quantitative data whenever possible, as Cameron’s physiological engagement data was low during the final debrief.



Though John and Cameron experienced the same story, their differing levels of quantitative and qualitative engagement demonstrate the need for individualized impact analysis.

Like Cameron, John reported being a fan of science fiction, somewhat interested in social issues, and disliking theatrical experiences. John followed the same storyline as Cameron, the Bradt story path. Despite similar experience potentials, their engagement data is remarkably dissimilar, with John appearing to be more engaged with the experience in the first half.

John's comprehension of the social issue matches his level of engagement more closely than Cameron's. When John's engagement is low, he correctly identifies the social issue beats, whereas during higher levels he either doesn't answer or is incorrect. For John, engagement in the narrative seems to be a distraction from learning about the social issue.

John also showed a degree of positive response to the social issue and requested information from the non-profit, [You Gotta Believe](#), a group that helps foster care children aging out of the system. Furthermore, John displayed social initiative, tweeting about the "interactive theater" piece, despite previously mentioning his dislike for the medium.

## What we learned

- Aggregate analysis of the participants yielded useful results, but diving deeper into the analysis of individual responses revealed some surprising and interesting differences.

# Building frameworks

Building a well-designed evaluation into the production process is valuable for story creators seeking either to ideate and iterate at early stages of their work or to understand the impact they've had at later stages. Overall, we were able to incorporate data collection points into the *MSiF* narrative from the very beginning, allowing us to introduce elements like bio-sensors, texts, mobile devices, physical computing sensors, and even pencil and paper into the interactive design and data collection. The methods we experimented with in this storyworld will be tested and refined as we continue to study transmedia and participatory narratives.

To recap, here are the main lessons we have learned from designing and implementing our exploratory methodologies:

- Immersive settings can help enrich impact measurement by mitigating expectancy biases. People may reveal more about their feelings and emotions in these rich, interpersonal contexts.
- Systematically mapping the story to the social issue in discrete beats helped us further develop the story, locate potential narrative feedback loops, and plan for impact evaluation.
- Though data-driven storytelling is a nascent field, we were able to adapt traditional social science methodologies to assess the impact of a participatory narrative. Likewise, this participatory narrative provided new methodological opportunities to evaluate audience experiences both during the story and at its conclusion.
- Aggregate analysis of the participants yielded useful results, but diving deeper into the analysis of individual responses revealed some surprising and interesting differences.

We hope this paper illustrates how social change goals can be advanced through purposeful stories, which are thoughtfully designed to incorporate data collection and impact evaluation. We encourage others to expand on the methods we've used to gain new insights into narrative influence.

Above all, we hope our work will empower storytellers and social issue advocates in creating powerful new stories that will challenge and inspire audiences.

## **About HI**

The Harmony Institute (HI) is an interdisciplinary research center that studies the impact of entertainment media on the individual and society. We draw on the methods and concepts of the humanities, data, and social sciences to gain insights on the portrayal, dissemination, consumption, and translation of media messages into individual and collective belief and action. Our work ranges from applied media research to university partnerships on studies exploring fundamental questions around the nature of audience engagement and societal impact.

HI was founded by John S. Johnson (BuzzFeed, EYEBEAM, and the Screenwriters Colony) in 2008. After years in the film industry, Johnson recognized the need to better understand entertainment's impact on audiences. HI was formed out of a desire to see entertainment meet the pressing needs of society, and to build a bridge between the worlds of mass media and science.

HI has evaluated entertainment projects ranging from social issue documentaries to fictional TV movies and multi-platform campaigns, and has conducted research on behalf of The Ford Foundation, MTV, and Free Press, among others. Media coverage of Institute work has included profiles in Science, The New York Times, Fast Company, GOOD, and others

## **About Reboot Stories**

Reboot Stories harnesses storytelling, technology and design science to form an innovation engine for cross-generational digital literacy and social change. Co-founded by Lance Weiler, Janine Saunders and Atley Loughridge in 2012, Reboot Stories has partnered with the UN, the World Economic Forum, Columbia University, and others to design and run global cross-generational learning platforms. In 2012, Reboot Stories was awarded the prestigious Tribeca



New Media Fund award. Mashable recently named Reboot Stories “one of the top five social good/educational startups to watch.”

## **Acknowledgements**

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Contributors

**Alex Campolo, Atley Loughridge, Joanna Racziewicz, Debika Shome**

Layout and graphics

**Clint Beharry, Sarah Henry, Minisun Mini Kim**

## **My Sky is Falling Collaborators September 2012 – April 2013**

### **Partners**

Harmony Institute

Orange Duffel Bag Initiative, Board Chair/Co-Founder Echo Garrett

Columbia University School of the Arts Film Program

Affectiva Q-Sensors, Founder and Director Professor Rosalind Picard, Sc.D.

Moveable Feast Mobile Media, Founder and CEO Steve Schultz

### **Team**

Executive Producer: Lance Weiler, Reboot Stories

Creative Director: Atley Loughridge, Reboot Stories

Writer: Lydia Joyner, Walla Walla Bing Bang Productions

### **Design Team**

Design Director: Laura Arena

Sound Design: Darryl Montgomery

Aesthetic Design: Tessa Mauclere

Installation Design: Jennifer Cox

Interactive Sound Design: Mikhail Iliatov

### **Social Advocacy**

Writer and Social Impact Lead: Lydia Joyner, Orange Duffel Bag Initiative

Social Impact: Heather Henderson, You Gotta Believe

Consultant and Musician: Fekri Kram, You Gotta Believe

### **Technical Team**

Senior Creative Technologist: Clint Beharry, Harmony Institute

Research Analyst: Sarah Henry, Harmony Institute

Intern: Sol Jorgensen, Harmony Institute

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### **Columbia University Students**

Producer: Reka Posta

Writer and Theatre Director: Lena Rudnick

Theatre Director: Vyasari Ganesan

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