



Cosplay for Science

Leveraging Pop Culture to Make
Science More Accessible

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Fig. 1. Raymond M. Alf Museum of Paleontology staff member Bailey Jorgensen shows a guest a sabertooth cat skull cast while dressed as a *Star Wars* character at a Cosplay for Science pop up exhibit booth.

The Cosplay for Science pop-up exhibit program (fig. 1) began when a team of museum professionals decided to dress up while doing an outreach booth at a local comic-book convention. Staff members from two California museums – the Western Science Center in Hemet and the Raymond M. Alf Museum of Paleontology in Claremont – had formed the team in order to collaborate on events that overlapped in service areas. It made sense: the two regional natural history museums are located in the Inland Empire region of southern California; both museums had developed robust outreach programs in the last five years; and both were geographically close to each other. In 2017, the idea was to cohost a pop-up exhibit about both museums’ collections at Comic Con Revolution in Ontario, California.

Events like Comic Con Revolution originally began as comic-book conventions; they have since morphed into a general celebration of pop culture where fans of film, television, books, and other media gather to enjoy their fandom in the company of others. Fans will often dress up when they attend. Called “cosplay,” it’s defined by *Merriam-Webster* as “the activity or practice of dressing up as a character from a work of fiction (such as a

comic book, video game, or television show).” In the spirit of the event, staff members from both museums decided to dress up as characters from the popular 1993 scientific adventure film *Jurassic Park* for fun. However, what started as a way for museum staff to enjoy the event (and get paid while doing it) turned out to have an unexpected benefit: convention-goers seemed to find them far more approachable while they were in costume. Staff members had previously attended comic-book conventions and other outreach events without being in costume; while their displays had attracted interest, there was now a new level enthusiasm from visitors. Suddenly, they were not just scientists looking to disseminate information – they were fellow fans ready to share their love of dinosaurs and paleontology with the public. Even if attendees were not initially intrigued by the outreach booth’s display of 3D-printed fossils, they were interested in the group’s character costumes. At that point, introducing themselves as actual paleontologists – while dressed as the some of the most famous on-screen paleontologists in film history – was simple and welcomed.

Out of that initial collaboration, the Cosplay for Science (C4S) initiative was born (fig. 2).

COSPLAY FOR SCIENCE



Fig. 2.

The Western Science Center and Raymond M. Alf Museum of Paleontology staff at their first collaborative booth. They are dressed as characters from the *Jurassic Park* film series.

Outreach Through Story

Cosplay for Science is a science communication initiative founded by Gabriel Santos (from the Raymond M. Alf Museum of Paleontology), Brittney Stoneburg (from the Western Science Center), and two paleontologists, Michelle Ramirez-Barboza and Isaac Maganelles, with the goal of fostering an appreciation for natural history in our communities through popular culture. The team has since expanded to include Dr. Lisa Lundgren, Michael Zeigler, and Victor Perez, who are part of the Cosplay for Science research and education division, assisting with developing lesson plans and conducting research into the efficacy of Cosplay for Science's programs.

Research shows that while many consider scientists trustworthy, they often do not perceive scientists as approachable.¹ Our goal is therefore to create a community that acknowledges the importance of science and appreciates it as we do, all while having fun with it at the same time. While we are pursuing these goals in multiple ways, including through social media and teaching modules, our primary method has been through the development of pop-up exhibits inspired by pop culture.

Museum outreach booths displaying curated collections and institutional information are already a common sight at conferences, science fairs, and other STEM-based events. Prior to developing pop-up exhibits through Cosplay for Science, both the Western Science Center and the Raymond M. Alf Museum of Paleontology had produced outreach booths with touchable objects, activity sheets, and advertising literature. While these booths did well and were enjoyable for visitors, they were not “fun” per se – they were interesting and engaging, but an interaction often ended after a discussion about an object or the demonstration of an activity.

Our pop-up exhibits are designed in such a way as to seamlessly integrate museum collections with an overarching pop-culture narrative as much as possible, while remaining

scientifically accurate. We use professionally designed graphics, artwork, and signage that is meant to invoke the feeling of walking through a museum exhibit, while incorporating pop-culture in an event space specifically organized to celebrate it.

By bringing cosplay and pop-culture themes to an outreach exhibit, we have found that conversations with visitors take on new elements. Visitors that are not interested in the content of the booth are often interested in the content it is inspired by, or by the themed costumes of the scientists. A kid who may not be especially interested in dinosaurs might be far more interested in Pokémon (a pop-culture phenomenon that includes films, games, and more about imaginary, collectible monsters that “evolve” into different, more powerful forms), and how Pokémon can teach them about evolutionary theory.

In addition, by virtue of being inspired by pop culture, a themed booth also adopts a narrative structure and context by incorporating visitors' existing understanding of a property. We have leaned into this structure with several pop-up exhibits, particularly our exhibit inspired by the science fiction film series *Star Wars*. At an outdoor *Star Wars* event organized and hosted by California's Rancho Cucamonga Library, where Cosplay for Science was invited to participate, guests were treated to a science-based tour through the zoology of a galaxy far far away, hopping from planet to planet as they moved in a queued line through our open-air exhibition. To demonstrate how much of the movie franchise's creature design was sourced from our current knowledge of the field of paleontology, a Bantha (a large, hairy mammal featured in the films) was represented by a cast of a mastodon skull from the Western Science Center collections (fig. 3). This gave visitors a firm connection between the pop-culture content on display and the science we wanted to help them learn about.

Part of the real fun of these pop-up exhibits and their reliance on narrative is the opportunity given to visitors to participate directly in both the science and the story by



Fig. 3.

A cast of a juvenile *Mammut Americanum* skull at a *Star Wars* themed pop-up exhibit.

interacting with objects and with scientists, and to give them a familiar framework to more easily explore complex scientific concepts – but are they actually effective platforms for science communication and education?

Collecting the Data

The Cosplay for Science team has begun using surveys to collect data from our pop-up exhibits in order to study the efficacy of our outreach model. We want to assess the following:

- Are visitors to a natural history-based pop-up exhibit more or less likely to visit a natural history museum afterwards?
- Does interacting with cosplaying scientists impact visitors' perceptions of scientists?
- Do visitors find scientists more friendly and approachable after interacting with them at a pop-up exhibit?

We distributed a survey in which visitors responded to Likert-scale questions about their perceptions of scientists and their interest in visiting informal STEM centers after interacting with the pop-up exhibit;

as mentioned previously, research indicates that many people do not find scientists approachable.² When asked about their perceptions of scientists after interacting with our cosplaying scientists, visitors indicated that scientists were similar to other people in their interest of sports, art, and music.³ Additionally, they perceived scientists equally able to spend time with their families – reinforcing the idea that scientists are “normal” people with hobbies and interests outside of science. The majority of visitors indicated that after visiting with cosplaying scientists, they were likely to visit a natural history museum (although several also indicated the opposite), and they were very interested in learning more about natural history (fig. 4, p. 102 & fig. 5, p. 103).

Even though we are still collecting survey data at conventions and events, our preliminary findings demonstrate that visiting our pop-culture inspired exhibits improves positive feelings and attitudes towards both museums and scientists. This information has helped us further develop the booths to make them both engaging and educational.

Challenges

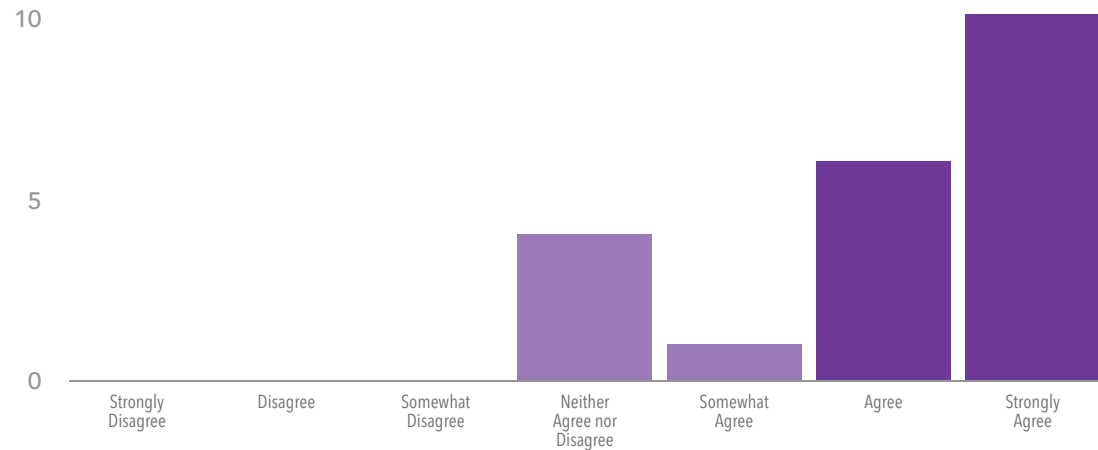
While cosplaying for work and designing pop-culture inspired outreach booths is

Fig. 4.

Measuring visitors' perceptions of scientists based on collected responses.

PERCEPTIONS OF SCIENTISTS

Scientists like art and music as much as other people do.



unquestionably fun for us as professionals, and preliminary data has shown our efforts to be a success, it is not without its own inherent challenges.

For one, by interfacing with pop culture we are also interfacing with brand conscious, corporate media properties, and no nonprofit institution wishes to expose itself to legal liability (which very well might be the exact opposite of a fun time for all involved). For this reason, Cosplay for Science conducts its activities under fair use, “a legal doctrine that promotes freedom of expression by permitting the unlicensed use of copyright-protected works in certain circumstances.”⁴ In this way, we operate in a similar fashion to organizations such as the 501st Legion, a *Star Wars* costuming fan club.

All representations of copyrighted material are produced by an independent artist, and we display a disclaimer sign in obvious view on the pop-up exhibit. When talking with pop-up exhibit visitors, staff and volunteers are coached to use the words “inspired by” when talking about the properties represented.

Other challenges are logistical in nature. Currently, our pop-up exhibits are sponsored by the Western Science Center and the Raymond M. Alf Museum, and the collections

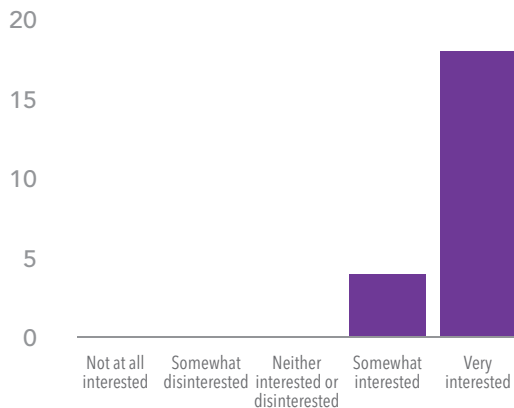
of these two institutions form the bulk of display material. In order to reach audiences across the United States and the globe, we foresee partnering with local museums to ensure that display material is local, easier to transport, and accessible, so as to expand our reach beyond events in southern California. In addition, the pop-up exhibits are not immune to the difficulties faced by traditional outreach booths, such as confrontational visitors and a limited amount of time to explain difficult scientific concepts. While these challenges have not reduced the apparent efficacy of this model, it is something we will always have to be aware of going forward.

What's Next?

To date, Cosplay for Science has hosted pop-up exhibits inspired by such popular culture properties as Pokémon, the hugely popular TV series *Game of Thrones*, and, as previously mentioned, *Star Wars*. In 2019, the Jim Henson Company, an entertainment company most famous for creating the Muppets, asked the team to put together a pop-up exhibit to celebrate the launch of the Franken-Sci High young adult book series by author Mike Young. It has made clear that demonstrating that our format can be adapted from almost any narrative medium.

INTEREST IN SCIENCE

How interested are you in learning more about natural history?



Because of the project's origins in a collaboration born between two natural history museums, and due to the subject expertise of the initiative's founders, most of the pop-up exhibits developed so far have been centered around paleontology, geology, and biology. Going forward, however, we believe that this concept is easily adaptable for other scientific fields. During the 2018 Los Angeles Comic Convention, C4S collaborator and chemist Dr. Kellen Kartub, a recent PhD graduate of the University of California, Irvine, supplemented the Pokémon themed pop-up museum with chemistry-based activities. In the future, as more funding for C4S pop-ups is secured and more collaborators are available, we hope to expand our repertoire to scientific fields and fandoms of all kinds.

In times when trust in science is often frayed and scientists are viewed as out of touch, we have an opportunity to course correct through play and pop culture. Science is an essential ingredient of many of the pop-culture properties we love, which gives us scientists an incredible opportunity to connect with audiences in new, exciting, and yes, fun ways.

Brittney Stoneburg is Outreach & Communications Coordinator for the Western Science Center in Hemet, California, and a graduate student in Environmental Studies at California State University, Fullerton.

Following visiting the Cosplay for Science booth, how likely are you to visit a museum?

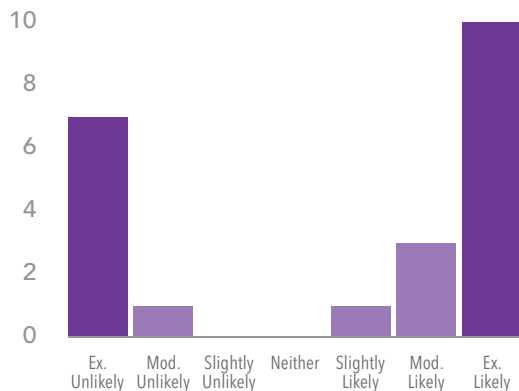


Fig. 5.

Measuring visitors' interest in learning about natural history and inclinations to visit a natural history museum after visiting a Cosplay for Science booth.

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Gabriel Santos is Collections Manager and Outreach Coordinator for the Raymond M. Alf Museum of Paleontology in Claremont, California.

1 Paige Brown Jarreau, Imogene A. Cancellare, Becky J. Carmichael, Lance Porter, Daniel Toker, Samantha Z. Yammine, "Using selfies to challenge public stereotypes of scientists," *Plos One*, May 10, 2019, <https://doi.org/10.1371/journal.pone.0216625>; S. T. Fiske and C. Dupree, "Gaining audiences' trust and respect about science," *Proceedings of the National Academy of Sciences* 111 (Supplement 4), 2014, 13593-13597, DOI: 10.1073/pnas.1317505111; A. Dudo, J. C. Besley, "Scientists' Prioritization of Communication Objectives for Public Engagement," 2016, *PLOS ONE* 11(2): e0148867, <https://doi.org/10.1371/journal.pone.0148867>.

2 The Likert scale is a "rating system, used in questionnaires, that is designed to measure people's attitudes, opinions, or perceptions. Subjects choose from a range of possible responses to a specific question or statement; responses typically include "strongly agree," "agree," "neutral," "disagree," and "strongly disagree." See "Likert Scale", accessed August 12, 2020, <https://www.britannica.com/topic/Likert-Scale>.

3 The majority of visitors identified as female (n = 14), white (n = 14), and between the ages of 25 and 34 (n = 11).

4 "More Information on Fair Use," Copyright.gov, accessed May 1, 2020, www.copyright.gov/fair-use/more-info.html.