

Overcoming environmental communication barriers with Augmented Reality

Communicating about environmental problems is not an easy task. We rarely directly experience these problems - we see them happening to other people, far away in space and time. How to convince people to act *NOW* to solve problems that will happen in the future? Augmented Reality might help.



Plastic pollution affecting sea animals (Photo by innay on Unsplash)

The Urgent Problem of Plastic Pollution

Environmental protection has become an urgent topic of interest on a global level. Not only the global biodiversity was richer more than double 50 years ago, but billions of people - especially the world's poorest - are in danger to lose their livelihoods, jobs and food. Human behavior strongly impact the quality of our environment, so it is critical to stop the constant destruction of eco-systems caused by activities that contribute to environmental degradation, one of which is plastic pollution. Today, in the "Plastic Age"; instead of coral reefs and infinite green lands, one would probably come across plastic bags, fishing equipment and food containers. The world produces more than 300 million tons of plastic every year. Unfortunately, mostly due to human activities on the land, the majority of the plastic waste ends up in our oceans. Similar to many other environmental problems, the challenge of plastic pollution is that its consequences are not immediately observable; they are happening "somewhere else", distant in space and time, and are therefore perceived as irrelevant and unlikely to happen.

Environmental Communication: What it is and Why it Matters

Environmental communication is a communication that is concerned with environmental affairs and issues. This includes journal and scientific articles, newspapers, TV and other media including social media, that might be the most common information source especially for the younger audiences. The environment is changing, but the *way* we talk about the environment is changing too; nowadays we consume news in some new forms that didn't exist before. With the constant accumulation of the content on the web, environmental communicators are struggling to catch attention of the audience. Therefore, they have to develop strong and innovative communication strategies to raise public awareness of environmental issues.

What Are Environmental Communication Barriers?

The gap between the causes and consequences of environmental problems might be the biggest challenge of environmental communication. How to convince public that urgent behavior change is needed *NOW*, for something that will happen in the future? The answer is: *let them experience it*. Studies have shown that those people who directly experience environmental crisis are the ones who feel most concerned about the future and are the most motivated to act. However, it is impossible to bring all the people to the melting icebergs, burning forests and polluted oceans. How to overcome these barriers?

New Trends in Environmental Communication

Unlike traditional one-way communication, social media has enabled public discussion in which everybody can, by sharing content within their network, be involved in an environmental campaign. Besides professionals (governments, nonprofits, environmental agencies, media, museums, schools and such), lay people can also be a part of a dialogue. Such campaigns can become viral, “loud”, and therefore, powerful enough to put pressure on policy-makers and polluters. For example, a 2010’s Greenpeace viral social media campaign convinced Nestlé to stop buying palm oil from producers that destroy rainforests.

How To Overcome Environmental Communication Barriers With Augmented Reality?

Not only it can enhance social media communication, but with Augmented Reality (AR), people can now experience realistic, vivid and interactive simulations of environmental threats. For example, by looking at the camera feed of a smartphone, users can interact with an animal suffering from the consequences of plastic pollution, presented in a form of a vivid tridimensional hologram. By letting users virtually experience the cause-and-effect relationship of environmental threats without waiting for decades to pass, Augmented Reality might help overcoming the temporal and spatial barriers of environmental communication.

How Augmented Reality (AR) works?

Augmented Reality (AR) is a type of immersive technology, and together with Virtual Reality (VR) creates a Mixed Reality (MR) continuum. Unlike VR which is completely immersive and block users’ sight to the real world by a headset, AR merges real and virtual worlds by embedding 3D digital objects in their immediate surrounding in real-time. While these technologies are still in their adoption phase, many users around the world already own a VR device, or have at least tried an immersive experience. Thanks to the rapid development of Internet, mobile devices and social media, we may soon witness AR becoming mainstream.

Recent Applications of AR

AR has been used in an innovative and useful ways and has broad spectrum of applications. For example, an award-winning AR app called HoloAnatomy helps students learn about human anatomy in a ways that no textbook can provide. And not only did it enhanced understanding of human body; this app, accompanied with Microsoft HoloLens, helped students overcome the challenges of remote education during the global pandemic COVID-19 crisis, by enabling them to learn from their homes. AR is a very powerful storytelling medium. Enhancing the reality and embracing creativity, AR can tell memorable stories in a way no other medium can. This potential has been recognized many museums, art galleries and cultural heritages, which enhanced their narratives through immersive virtual experiences. The potential of AR has been also recognized in other fields such as medicine, where it is used for education, training, surgeries and clinical treatments.

AR Applications in Environmental Communication

Recently, “big names” in the ecosystem of environmental communication have started to supplement traditional environmental campaigns with AR content. UNEP has launched a social media AR campaign #CleanSeas in which, by interacting with sea creatures made from plastic waste in a virtual ocean, users can take a photo, make a social pledge and share it within their social networks. In another similar awareness-raising AR campaign, the WWF’s campaign “Take a Photo with the Leopard”, more than 10,000 users from around the world took a photo with a 3D image of a leopard superimposed over their real surrounding. AR is impacting journalism as well: The New York Times has introduced an immersive storytelling experience that lets users project smoke particles in their backyard, to facilitate understanding of global air pollution. With constant advancements in digital technologies, we are expected to observe more and more such examples.

Research directions

As a scientist, one takes a great responsibility not only to contribute to scientific knowledge but to make it applicable for society in general. Therefore, researchers in the field of environmental communication could take a part in designing and developing mobile AR experiences whose aim is to bring the problem of plastic pollution psychologically closer to people. As already mentioned, social media platforms Facebook and Instagram provide their users with the possibility to enhance their reality with AR. AR could be used to let people virtually experience the consequences of plastic pollution in their own city, on most vulnerable sea animals. Through their camera feed, they would be able to see a realistic 3D model of a sea turtle, a dolphin, a whale, a seal, a fish, or a sea bird covered in plastic litter. They can record their experiences and share them with others, and that way motivate behavior change through the power of social norms.



An example of using AR for environmental communication: demonstrating the consequences of plastic pollution

To conclude...

Augmented Reality is a type of immersive technology that, by embedding digital holograms into the real world in real time, provides interactive and vivid computer simulations. Environmental communicators can use these simulations to compress the long-term consequences of environmental problems, and let public experience what might happen if we don't change our behavior. *Experiencing is believing* – a recent environmental research indicates that immersive narratives may be a method to overcome environmental communication barriers and raise public awareness of environmental issues.

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To find out more about the project, please visit:

<https://sites.google.com/view/barbarabuljatravmond/research/project-eco-animals>