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AUGMENTED OR ADMENTED REALITY? THE BOUNDARY CONTEST OVER MARKETING APPLICATIONS AND THE FUTURE OF AN EMERGING TECHNOLOGY

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Technologies that can overlay 3D, real-time data over one's field of vision have long been a fascination in engineering. In recent years, with the introduction of augmented reality (AR) browsers and a variety of AR games on mobile smartphones and tablets, users are now able to install these applications, hold up a consumer device, and access augmented content on top of physical space. These mobile applications have made AR widely available and economically viable for public use after decades of laboratory research and development (Azuma, 1997; Zhou, Duh, Billinghurst, 2008).

As the AR industry is making broad sweeping claims about transforming multiple industries such as medicine, education, manufacturing, law enforcement, and entertainment, the trajectory AR technology takes will likely be shaped by early advocates and developers of the technology and the particular futures they advance (Brown, Rappert, & Webster, 2000; Van Lente & Rip, 1998). From this perspective, the visions that actors hold for AR technology and the promises they choose to advance are an important unit of analysis, because they are "'constitutive' or 'performative' in attracting the interest of necessary allies (various actors in innovation networks, investors, regulatory actors, users, etc.) and in defining roles and in building mutually binding obligations and agendas." (Borup et al., 2006; p. 289).

In the early contestation over technologies, the Social Construction of Technology approach argues that there can be many different outcomes depending on social intersections and intergroup negotiations, a concept known as 'interpretive flexibility' (Bijker, 1995; Pinch & Bijker, 1987). Depending on whose perspective is accounted for, these relevant social groups draw boundaries around the community and have different interests and resources to bring to bear on the design of the technology (Pinch & Bijker, 1987).

The corpus of data consists of fieldnotes from participant observation at 10 AR conferences spanning industry, standards, and academia. Additionally I was able to conduct 46 qualitative interviews with people working in the AR community. I

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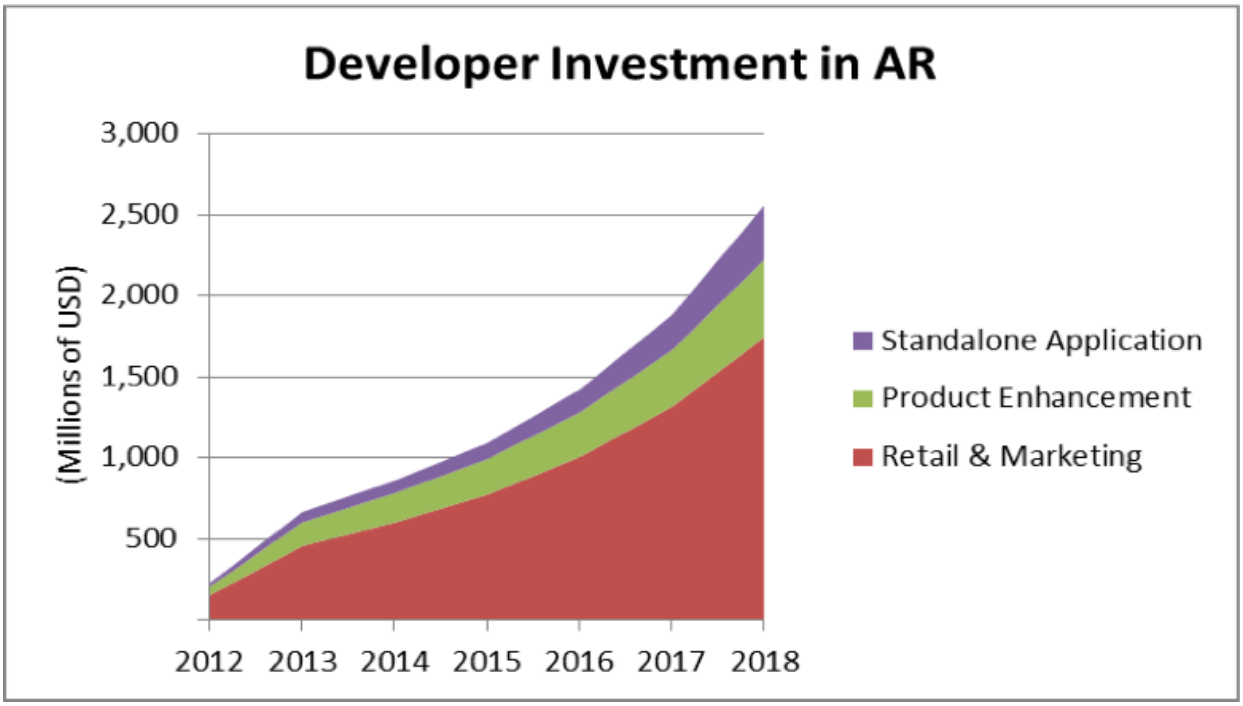
qualitatively coded the data for emergent themes and characteristics of futures (Michael, 2000).

The findings report that a rift is forming in the AR community over the future direction the technology takes. While nominally all of the members support AR technology, they have markedly different visions for what the technology should be used for and what the technology will look like. One segment of the AR community is actively building partnerships with marketing/advertising firms. Another coalition is opposing them and attempting to distance AR from marketing.

Emerging technologies often face the challenge of obtaining resources. With AR, it is the marketing/advertising industry that has been a key source of funding for the burgeoning AR industry. At the conferences, the exhibition halls are filled with marketers demoing their latest AR ad campaign. At the conferences, many representatives from multinational corporations are present (e.g. Lego, IKEA, Disney, and Mercedez-Benz). Industry reports estimate that around 68% of developer investment in the AR market comes from retail and marketing, and that proportion is expected to continue (Figure 1).



(Figure 1 – ABI Research, 2013)

The benefits of AR for marketing were tested in an industry report which compared a 2-dimensional ad versus an AR ad. The study found that 74% people say they would consider buying the toy in the AR condition versus 45% in the 2D condition. People also reported a willingness to pay more for an AR product, 5.99 pounds compared to 7.99 pounds when shown an AR ad. These figures are major reasons that AR has been enthusiastically embraced by many marketing and advertising firms.

The advertising vision for AR, however, is one in which the technology is simply a means of achieving clearly defined goals within marketing – gaining attention,

increasing affinity, motivating transaction, fulfilling needs, and securing loyalty. At the same time, that partnership is pushing the technology in a particular direction because AR stakeholders begin to mold AR toward the marketing problem space. This has implications for the design and the capabilities of the technology. One instance of this is in the computer vision algorithms that recognize real world objects. Computer vision technology was first able to recognize 2D images, but at the request of major beverage companies the computer vision providers added recognition for 3D shapes, specifically cylindrical objects so the technology could recognize bottles and cans. This is one example of how the marketing problem space is having a direct effect on the developers of technology, their conscious decision making process for technological features, and the technology itself.

A separate group is trying to redraw the boundaries of the community, because they are worried that the marketing emphasis might affect people's perception of AR technology. First, on the content side, the marketing orientation ensures that much of the augmented content that exists is advertising, which could drive users away. Secondly, the opposition group worries that the marketing applications portray the technology in the most mundane way, one that does not fully demonstrate the potential of AR and potentially crowds out other associations (e.g. medicine, education). Lastly these actors are concerned that the marketing uses open AR up to criticisms of overload/distraction, privacy violations, and safety. Due to these overarching concerns, this group has been distancing AR from marketing by advancing dystopian views of AR advertising, using the technology to re-appropriate brand logos, and pushing for legal recourse.

This study argues that in its early stages, marketing is closely partnered with the AR industry and actively shaping the development of the technology through direct funding and by imposing their problems and constraints on AR developers. Simultaneously, a group of stakeholders are worried about the association and attempting to break that relationship. It remains to be seen how this contestation will play out, but these findings have significant implications for AR technology itself while also contributing to our understanding of the individual motivations, economic pressures, and institutional constraints that need to be negotiated in the emerging technology space.

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