ALTERNATIVE APPROACHES TO REPRESENTING KNOWLEDGE IN THE HUMAN ENVIRONMENT

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How is knowledge represented in the environments that surround us? What messages are best promoted, most compelling, or most sophisticated? The impact of our knowledge environments is becoming more apparent as economies become increasingly information-driven and facing our global challenges relies on reliable knowledge. On the scale of the individual, knowledge environments influence the thoughts and feelings that we act upon.

Fig 1. Still from the film, Euphoria. A neuron chandelier is hung from bridge in Baltimore. Copyright 2008, Making Euphoria, LLC

Fig 2. Screen shot from Fieldtrip showing access to films, filmmakers and discussion. Copyright 2007, InfoCulture, LLC and UMBC

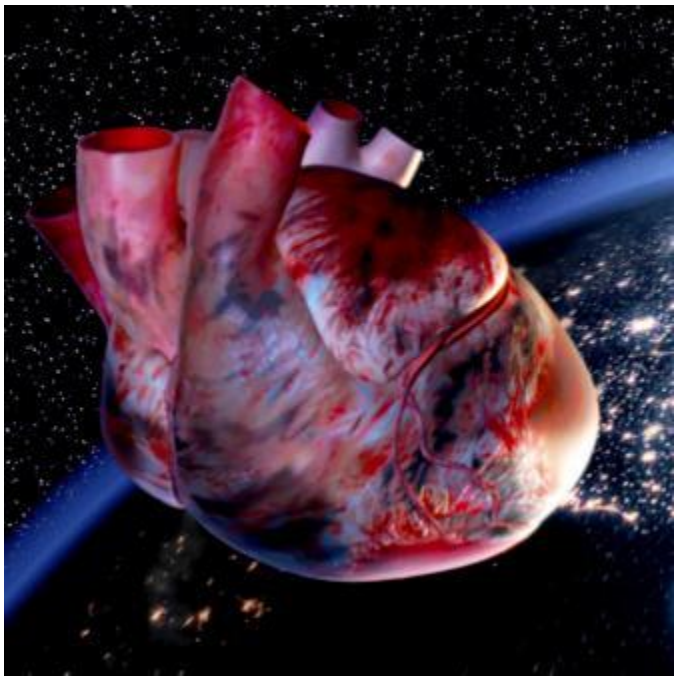

Fig 3. Screen shot from SpeakHeath showing a film about community and cardiovascular health. Copyright 2009, Lee Boot and UMBC

So much of what a civilization does, internally and externally, is defined by how it handles information: the degree to which it is controlled, the emphasis placed on discovering new knowledge, and ultimately how knowledge becomes embedded cultural wisdom.

Historically, civilizations have produced special artifacts to contribute to building culture from key knowledge they (usually, their leaders) believed was essential. The ideas of the Catholic Church were famously promulgated by the art and architecture in Florence, and the sand paintings of the Navajo people of North America express spiritual ideas that form core beliefs of their culture. In the present-day United States, however, the two best funded, most visually arresting and ubiquitous informational artifacts are not intended to increase cultural wisdom. Instead, commercial advertising and entertainment share the purpose of producing revenue. Social psychologist Albert Bandura's social learning theory advanced our understanding of how signals embedded in people's environments impact individuals' beliefs, attitudes and, ultimately, behaviors. [1] With their ability to dominate the public messaging environment, commercially motivated interests purchase determinant influence on social norms. Advertising in the US is a $400 billion a year industry. For over one hundred years it has employed not only highly skilled message and image-makers, but psychologists, anthropologists and more recently, neuroscientists, to produce highly sophisticated persuasion schemes. [2] These have had a cummulative, synergistic effect on socially normal beliefs and attitudes that many believe is out of line with wisdom. [3] In contrast, media that could contribute to valuable cultural knowledge is severely under-resourced. Hollywood films routinely cost 1,000 times as much to produce as educational programming ($100 million, versus $100 thousand per product). Broadcast venues have been commercially controlled, leaving negligible room for social concerns. Even when educational or prosocial programming proves to be commercially successful (as was the case with the well-known 1977 television series Roots, or producer Norman Lear's series All in the Family) the industry eschews socially motivated endeavors. [4] Such commercial control of the airwaves sets the US apart from other developed countries from Britain to South Africa to Nepal, where governments reserve significant parts of the broadcast spectrum for prosocial and educational programming.

The proliferation of inexpensive, high quality production tools and the open venues of the Internet and mobile networks now allow alternative and valuable information artifacts to be created and to enter the cultural discourse. Evading both state and commercial attempts to control or bury them, such artifacts can ignite political change and also serve the quieter mechanisms of cultural evolution such as the slow growth of common wisdom.

For over ten years, transdisciplinary collaboration between the Imaging Research Center at the University of Maryland, Baltimore County, the media research and development firm, InfoCulture, LLC and other researchers from the US and Canada has led to experimentation with new forms of knowledge to test how contemporary media tools and venues might best be used for social goals. Each of the three projects described below is aimed at learning how to engage a population in knowledge that might help them improve their health, education and wellbeing.

Euphoria

Like nearly everyone, young people want to feel as good as they can for as long as they can. They want to know how to survive and thrive emotionally. In the US, despite that the pursuit of happiness is a founding ideal, young people are typically provided little knowledge of what helps the brain sustainably

produce chemical rewards. Neuroscience and psychology literature as well as the experience of psychiatric clinicians support that when a person commits to the pursuit of meaning and engagement as a way to achieve the most positive emotional states, the euphoric effect meets or surpasses that produced by mood altering drugs or adrenalin-producing high-risk behaviors, but also is sustainable. However, for lack of that wisdom prevailing in socially normal thinking people engage in more destructive pursuits - a problem that has increased human suffering and plagued societies around the world for decades or longer.

To find a way to engage young people in considering the pursuit of meaning and engagement, the US's National Institutes of Health funded *The Euphoria Project*. Artists and filmmakers worked with neuroscientists to develop content. It became clear that profound discoveries that had been made about the brain had not entered mainstream thought from which young people were taking cues. Specifically, in addition to the neurochemical rewards of pursuing meaning and engagement, such a pursuit and the rewards it supplies feed off each another in a feedback loop - suggesting to young people that the effort they might expend will be multiplied when returned. Further, the sheer power, complexity and beauty of even a single neuron firing, combined with the astronomical number of connections in the brain is impressive knowledge that could build self-efficacy (one's belief in one's own ability to accomplish and objective). Especially when combined with information about neural plasticity - the concept that a brain grows and changes to increase its ability to face new challenges.

The story seemed strong, but to learn more about how to tell it in a way that might cause young people to engaged with it, researchers chose to represent the knowledge in a feature film, but to abandon the structural conventions of educational and informational media designed to be clearly understood in real time on the first screening. Instead, the new experimental design would be informed by structural concepts found in celebrated works in all the arts - works that have historically engaged audiences and become culturally significant. It would use aesthetics, analogy, ambiguity and authenticity - what the team came to call the 4 As, to compel audiences to reflect and discuss the work to understand it - thus facilitating more personal connection to the ideas in the film. The experimental structure would juxtapose a stream of visual metaphors - three-dimensional sculptures and tableaus built on urban and rural landscapes, against a narrative that wove together some of the neurobiology, social psychology, anthropology and history related to the pursuit of happiness. In one scene, we see a man standing on one leg, constrained by a big box he is wearing and surrounded by the outline of a head drawn in metal pipe. At the same time we hear dialog about the neural basis of depression. In another scene, multicolored clay feet are dropped, one at a time, into a pool of clear blue water where each releases dye which all combine into polychrome clouds that form abstract designs. All the while, the narration discusses the negative impact cross-cultural traumatic conflict can have on an individual's ability to pursue happiness. The narrator himself, rather than appropriating conventional host's garb, wears copper colored, bejeweled shoes and often appears in only his underwear. The incongruity of these juxtapositions plays out for viewers, mostly unexplained. Researchers gambled that it would be better for the film to confuse the audience than be didactic, unimaginative or condescending. The objective was to give the audience something they could not dismiss with easy categorization or predictability, and thus good engage in open-mindedly.

A randomized, controlled study of the film's effect on 500 high school students found that students who saw Euphoria were able to make the connections necessary to understand the content, and reported liking the film more than those who saw the sham film, Storm Chasers reported liking that film. Perhaps most interesting was data from a follow-up survey that showed that the beliefs and attitudes of students who only saw the sham film had shifted toward the ideas in the presented in the Euphoria film,

suggesting as the only plausible explanation that the film initiated a social discourse. Though an experiment, Euphoria was accepted into several national film festivals, winning a gold award at the Houston International Film Festival and garnering a substantial amount of praise in the press. Most important, the film showed that the conventions of informational and educational media could be replaced by a more artistic approach and be more effective as a result.

Fieldtrip

Online and mobile technologies don't just change the ways we do things; they change what things we can do. Fieldtrip is a research project that explores how to best leverage today's portals and venues of communication to provide a specialized social network where teenagers can engage one another in discussions about their thoughts about and feelings toward education. Developing such a discourse on the contemporary technologies that are woven into students' lives outside school, in environments where attitudes about education often form, is something that was previously unaffordable for educators and school systems. In the past, motivational issues had to be addressed by parents, or in school. Of course, young people use these technologies to connect with one another, not with adults. Accordingly, Fieldtrip is based on literature supporting the promise of peer mentoring and peer support to deal with a range of issues.

Researchers used $20 iTunes gift certificates as incentives to recruit a population of 14-19 year-olds to join an online community. Members supplied assent and parental consent forms and filled out an online survey about their attitudes toward, and achievement in, school in order to establish baseline data from which to measure potential changes. One another's real identities were unknown to recruited members. Instead, new online identities were begun as members created screen names by combining three words from a large list (resulting in names such as *FreeSushiCasserole* and *TheWildRose*). To prompt dialog on the site, 2-3 short films were posted each day. They were personal video journals made by high school-aged filmmakers. They documented the impact that family, peer and internal struggles were having on the filmmakers' orientations toward school. Through members' written comments, a dialog emerged among community members that would be analyzed to assess the project's potential for shifting members' educational motivations. (Members were not required to watch the films or comment in order to get their iTunes voucher).

The project posed two key challenges: First, to integrate the expertise of adults in order to make the films compelling enough for teenagers to elect to watch, without losing the fact that these were authentic teenage voices. Second was the problem of moderating and facilitating the discussion without distorting it. These questions lie far beneath the veneer of the technologies that made the project possible and reflect the larger, historic question: What is the most constructive relationship between young people and adults in situations where adults are trying to encourage growth?

Professionals mentored the young filmmakers and edited their footage to increase production value, but this expertise was invisible to most people because the faces and voices viewers saw remained those of teenagers. [5] Near-peer-aged, college students of psychology moderated the discussion, chosen with the hope that they could be sensitive to the need to preserve the adolescent-owned character of the discussion but move them forward in constructive directions. [6] Thus, the perception that teenagers controlled the site was maintained.

During the month-long pilot, hundreds of comments by community members accumulated. Analysis showed that the content of comments mapped well onto motivational literature: These were the kinds

of discussions that could affect teens' ability to succeed at school. Modifications to the interface of the site and moderation practices were made for a second pilot, and helped further orient community members to the messages in the films, increasing the adolescent engagement in discussions, suggesting self-reflection and the development of beneficial self-perception had occurred. The next step in the research is to scale the online community to reach a wider teenage public and keep it open indefinitely.

SpeakHealth

The US spends more on healthcare per capita than any other nation and is home to some of the greatest advances in medicine and medical technologies, yet the health of US citizens is ranked 37th in the world. [7] The primary cause of this problem is destructive behaviors such as eating habits and a sedentary lifestyle, rather than a lack of available care. It is clear that people are acting in ways they know will hurt them. Further, commercial messaging aimed at selling potentially harmful consumption is unlikely to be significantly countered by more helpful messages. Could an online public discourse infuse common attitudes with new ways to think about health and tilt the balance back toward more constructive social norms?

That was the research question driving the *Speakhealth* project. Like the Fieldtrip project, the effort would build discourse with media. This time, however, experts would be a very visible be a part of the mix. To develop content, a transdisciplinary team of medical practitioners, artists and social media producers created three extensive graphic information maps: the first of constructive health ideas, the second of US cultural traits that might facilitate or undermine the adoption of those ideas, and the third of potential co-mission groups. Content emerged when lines were drawn across the three maps, linking ideas with cultural traits and potentially supportive groups. It was decided that the most supportive initial group was likely to be health professionals themselves. The hope was that they would then spread the ideas through and beyond their own networks. Given the modest budget of the project, media that was edgy and improbable would be used to draw attention. A similar strategy had worked in the Euphoria film, and in the Truth anti-smoking campaign sponsored by the Legacy Foundation (thetruth.com). That effort also used unusual, extremely sarcastic and imaginative online films and is credited with 22 percent of the decline in young adult smoking from 25.3 to 18.0 percent between 1999 and 2002. [8]

The website was launched with a talk at a major integrative health conference in front of doctors and other healthcare practitioners. Reaction was extreme and mixed. While some in the audience were enticed, many found the films disturbing. One film presented an enormous computer-generated, though very real-looking human heart orbiting the earth, which then entered the atmosphere and slammed into a suburban cul-de-sac, bouncing nearby residents out of bed and leaving their traffic circle in flames. The short film was intended to introduce the site's visitors to research findings indicating that a sense of community, something US suburbs often struggle to establish, is significantly correlated with improved cardiovascular health. [9] The audience did not expect to see such departures from the norm. Over the following six months, the *Speakhealth* project built an active online community. It was clear that the most controversial and/or imaginative media created the biggest draw. However, the project's research sponsor, an independent integrative medicine organization, became fearful that this media would harm their funding support and alienate some colleagues. Rather than allow the sponsor's organizational needs to redirect the project in ways not supported by literature and experience, the research team chose to end the project.

As the projects described above indicate, the opportunities for social progress offered by unprecedented access to mass audiences provided by new media and communication technologies are only beginning to be understood. A great deal seems possible, but research is necessary to test new approaches.

References and Notes:

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