Interacting with people versus interacting with machines:

Is there a meaningful difference from the point of view of theory?

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I want to start with an uncomfortable truth that we are ALL aware of. After more than 20 years, we still remain deeply uncertain about the effects of electronic media, interactive media in particular, on human development. Papers on interactive media presented at SRCD remain in a small minority, even as the issues surrounding media influence in a technological society loom larger and larger as important practical and theoretical issues.

The problem is not methodological. Never have the tools for research available to us been more diverse, robust, and nuanced. The problem is conceptual. Our ideas about technology have been less than helpful as a guide in shaping the questions we need research to answer. We have only been able to nibble around the edges of the media, unable to sustain a principled inquiry into how it influences human development and behavior. What I want to do today is, hopefully, shift your thinking. Shake out some of the useless clutter surrounding ideas about media effects that we all are carting around, and suggest a new way of considering media, one that I believe is far more fertile and more true to what we know about the development of the human mind.

In order to create, it is said, one must sometimes destroy. Piaget once said that you should always have theoretical whipping boys to help focus your thoughts. His were associationism and behaviorism. Mine is media theory. I am here, therefore, not to praise Marshall McLuhan but to bury him. Most academics and intellectuals who study media today have grown up under the dominant idea from Marshall McLuhan's famous, if rambling analysis of TV from three decades ago: THE MEDIUM IS THE MESSAGE. This assertion, which has been treated as an article of faith by media critics such as Neil Postman and by media researchers, states that every medium has its own unique properties, and that those properties mutate, or deform, the medium's content in specific, predictable ways. These deformations, in turn, are assumed to influence the thought processes of the technology user, changing them to map to the medium's form.

Thus, for example, TV is often cast as an intrinsically evil technology that by its very nature promotes passivity in users, crushes verbal and textual content in favor of shallow visual images. Oh yes, and did I mention that the style of TV editing also leads to short attention spans? Stated more formally, the idea is that different media have essential structural properties, and that these structural properties actually alter thinking in some new, unprecedented way. These new media, the result of technological progress never before seen, would have effects that were new and never before seen as well. A new kind of person, a new kind of culture, was going to be created because electronic media were something new, without history, and they were going to create a new kind of person as well.

This idea has failed us, in two pernicious ways.

First, it has led us to look at the different media forms in a very simplistic, causal manner: As distinct stimuli that have distinct effects. If we can just clarify the properties of each medium, TV, the internet, video games, etc. we can assess their effects. Decades later, it is clear that this idea is no longer defensible. Electronic media do not come in distinct species, like animals, and they cannot be grouped by their structural properties in any meaningful way. Electronic media have done nothing but mutate, variegate, and diversify, at an increasingly dizzying pace, in the past 30 years. And as they have done so, their properties have become increasingly hard to define in a structural way. Is there a meaningful difference between xbox games vs. SEGA games? Between online game-playing and playing at a console? Even defining the differences between such seemingly obvious things as virtual 3d immersive environments and those displayed on 2d images on computer screens has proved vexing because of digital graphical tricks. In a world where media forms do not remain fixed but constantly change, trying to identify structural features of a given medium is simply futile. And trying to isolate these features so their effects can be studied clearly and experimentally is thus even more futile. The publication lag alone means that studies of computer games are often out of date before they are even published. Studies of games with no sound now seem useless to us, for example. And studies of specific software features, in software no longer published, provide little insight, either. What's worse, a fixation on the medium itself leads to studies that are reports on the artifacts of the medium itself, rather than useful insights into general media effects. A cautionary tale for us might be the sad history of instructional media research in the education field. Keith Mielke, a now retired veteran educational researcher, once told me with great embarrassment of how he used to conduct

studies comparing black and white films to color films, trying to isolate which format was better for teaching what kinds of content, as if the addition of color made some huge structural change in how the films were processed by their viewers. William Gibson the science fiction writer once said that if Marshall McLuhan was alive today, he'd have a nervous breakdown. And that's the point. We have not had a nervous breakdown as a society or as individuals. The idea that different media forms have distinct effects on thought has not aged well.

This idea has also produced great collateral damage to our thinking about media by encouraging us to see different media as so distinct that they do not have useful or instructive similarities. Interactive media, for example, are treated as if they are radically different from, and unrelated to, television. 30 years of TV research has been ignored by researchers studying interactivity as a result. It is true that in the late 1980's and early 1990's, the possibilities that digital media presented us seemed truly dazzling, almost magical. For several years, it truly did seem like the world was being remade. This was as much a marketing buzz as an intellectual and cultural one, and it was intoxicating and seductive. But the buzz has worn off. As Sholly and I know from working in a company that produced both TV and interactive media, TV and digital media are actually more similar than the are different, despite the hype. I used to freak out colleagues at computer conferences by referring to interactivity as "TV plus," but I believe that assessment is closer to the truth than the idea that the two media are so radically distinct there is nothing to learn about interactivity from TV research or vice versa.

More important the idea of structural media has failed us in a more fundamental way because it rests on a false assumption about the mutability of human nature. The idea that the form of the medium shapes or transforms thinking rests on the notion that human development is so open to environment influences that consciousness itself can be shaped by the impact of a given media form. This viewpoint may have been tenable when McLuhan was writing 30 years ago but it is, to put it mildly, at odds with what we know now, in the early 21st century, about the development of the human mind. What we have learned in the past 30 years is quite clear: Thought, like physical development, is not malleable and without form, like putty, open to dramatic reshaping from media or anything else. In fact, the opposite is true. Thought has structure, and that structure is determined to a large extent by our biology. Thinking IS malleable, but only within certain very narrow limits set by our physical brain structure. Thought is constrained. One does not have to be a dreary determinist like Stephen Pinker to agree that humans are not blank slates. But to be a rational psychologist and scientist, one does have to accept that we are biological organisms and that how we are made shapes how we think and know about the world to a much larger extent than any of us would have thought only ten years ago.

What I want to do this morning is argue that our new understanding of the structure of mind is the key to changing how we think of media. Specifically, I want to argue that the emphasis on media properties as influences on thought is precisely backwards. People's interactions with media are not so much shaped by the medium as by the organization of the human mind itself. **And my main argument today is that the structural features of mind that matter for media psychology are not the cognitive ones but the**

SOCIAL ones. One of the most dramatic things we have learned about the organization of the human mind is that, like all organisms, we respond to certain stimuli in consistent ways based on our biology. And in particular, humans are strongly predisposed to detect human social cues. Research on autism in particular is increasingly demonstrating that humans are highly specialized at perceiving, interpreting, and responding to social cues from our conspecifics, or fellow humans, and that such responses are fundamentally a part of our "wiring."

And this is my big point: Focusing on media forms leads to a theoretical and empirical dead end because the properties of the medium are not what are important. What is important is that humans respond to technology with social ideas and social expectations. We have been missing the forest for the trees in media research. It is not the medium but the CONTENT that matters. A truism from the digital media industry is to say that content is king. In other words, TV show or PC game, online site or video game, the platform is irrelevant. It is the actual content that matters, not the delivery system.

And media content is overwhelmingly human. "People are the stuff of television" is the line from Big world, Small Screen, the masterful summary of TV research, and the same is true of interactive media as well. Whether we watch them on TV, manipulate their actions in a video game, pretend to be someone else in a multi-user domain, or program them as Sims, it is people who are the subject. Our interactions with media are really interactions with that social content, the people, in them.

Now, this is the first part of my argument: the social content of media is really what users respond to, not the medium itself, and that studying the medium is to ignore

the real issue. But I am going to now make a second, stronger argument that this, one that applies with special relevance to interactive media: It is not just that the content is social, and that we respond to these images of others and images of ourselves as we would to real people. Our engagement with media, how we approach it and react to it, even when the content is not humans or even animate beings, is STILL by its nature social. Our hardwiring won't let us respond any other way. What interactions have shaped us, genetically and evolutionary, as humans? Those with other people. When we encounter technologies that respond to our actions, or solicit responses from us, we can't help but apply unconscious social rules to the encounter.

Now, this idea is not new. It was first put forward by Byron Reeves and Cliff Nass, two social psychologists at Stanford who study human-computer interaction. They called their theory CASA, an acronym for "computers as social actors." Their students, and followers of their work, have produced a growing body of evidence that suggests that both children and adults respond to interactive media in ways that mimic their responses to human actors. To date, this research has been conducted as a branch of the computer interface field, with little or no consideration of developmental issues, but these suggestive findings point to a potentially fertile framework for developmental inquiry. If children interact with media using social rules, media effects may be manifested in the same manner as interpersonal social effects are.

Reeves and Nass made a specific assertion: Find any documented social effect in the psychology literature, substitute an interactive machine for one of the human actors, and the effect will still exist. That is, subjects respond to media as if they are people. Now,

RN and their students have gone on to demonstrate this effect in a variety of typical social psych experiments, and the results are consistent and impressive. People respond to computers using male and female voices differently, computers with smiling faces on their screens are rated more warmly than those without, computers utilizing polite language are rated more highly than those that do not, and so on, with all the effects being exactly as had been reported in the social psych literature.

Another source of evidence about the strongly social nature of human-technology interaction comes from what I would like to call "proof by design." What happens if we actually create interactive characters that deliberately mimic implicit social rules as part of their interactions? The result is truly astonishing. I offer a couple examples from my work with Microsoft's interactive Barney character. We designed Barney as a social agent, and carefully scripted his speech and interactions based on well-studied social rules from the psych literature. Barney talks directly to the child using personal pronouns, for example, and uses statements of positive emotion to foster an atmosphere of trust. Barney interacts with his TV program using a wireless data link, too. He acts as a coviewer, commenting on the show as it is in progress in supportive ways. When something important to the curriculum appears on the screen, for example, Barney says "Oh, look!" to call attention to it, or he asks a question, "What is that?" or "Who's that?" In our studies, children responded to Barney as if he was another person watching TV with them. When Barney said "Oh, look!" the children did not turn to look at him, they would look at the screen. When he asked a question, they responded by actually telling him the answer. And when he sang the I Love You song at the end of each episode, children not only sang along with him, they hugged him! In control studies with just a

non-interactive plush doll, none of these things happened. I myself have fallen victim to implicit social rules with Barney. During his inactive periods, he says affirmational phrases like "You're my special friend." One day, when I had him at home, he was sitting on my desk as I worked on a paper and he said "You're my special friend." And without thinking about it, I said "Oh, thank you, Barney!"

Given that we have this solid information, from both applied and basic research studies, I think you can see where I am going in my quest for a new theoretical home for media research, and interactive media research in particular. That new theoretical home is not cognitive psych, but social developmental and social learning theory. We should treat media, and interactive media in particular, as social agents. Not as things, strange new machines with strange new effects, but rather like peers, authority figures, and neighbors whose thoughts, feelings, and actions influence our own. This is not as great a leap as you might suppose. Social learning theory, which has provided the strongest theoretical force behind TV research, is about interpersonal social learning, not about television.

Viewed through the lens of social interaction, we can begin to ask questions that are much more theoretically fertile than under the previous model. Just a few ideas that occurred to me while writing this paper:

1) Do the results of research on TV violence replicate with violent video games? If not, what are the differences?

2) Are favorite video games experienced by users as familiar friends? Are the characters in video games responded to as role models? Peers? Authority figures?

3) Are social interactions from interactive games imitated in the real world, as TV interactions often are?

4) People often attribute anthropomorphic properties to computers. How broad is this phenomenon? Is it similar to attributions made about other human beings?

We could do worse that engage in our own version of RN's project, seeing if children respond to interactive machines and characters in the same basic ways they do to peers and others. These questions show that, through a social lens, we can tie media research back to fundamental human behaviors, without having to treat the medium like some mysterious, powerful force.

In sum, I'm proposing a radical reversal. Let's reverse the lens we have used to study media effects on development. Forget the medium. Concentrate on the human content, the modeling, the mimicking, the people. What are they doing in these media? Killing each other? Solving mysteries? Learning? Play-acting in the online version of a masked ball? It is the human mind, with its strong bias toward social interaction, which shapes responses to media, both in content and in form. Instead of starting with the medium, let's start with the human. Instead of treating media effects as some strange new influence on development, let's study them as if they are similar to the influences we already know about: Parents, peers, community, you know. Let's bring the HUMAN back into the human sciences. You will be surprised where it leads. My work with interactive characters required not just knowledge of the science of social interaction. It involved understanding puppetry, stagecraft, and pretend play as well. Fundamentally

human endeavors, all. Shifting our perspective to focus on the human in human-computer interaction, and to how electronic media trick us with own humanity, seems to me a far stronger foundation for scrutinizing media than the technology-centric model we have lived with but never questioned for all these years. The medium is not the message. As John Wright always used to say, the message is the message. And we react to it as if it was delivered by a person. Let's start there, and see if we can't make some true progress in putting media into perspective as part of human development in the 21st century.

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