Johnny **Holland**

How Your Coffee Mug Controls Your Feelings

What would you say if I told you that objects you use every day are now believed to be practicing a form of mind control on you? Sounds crazy, right?

by SETH SNYDER *on March 1, 2011*

> Remote controls of the future

Well, although cognitive scientists probably wouldn't use the term "mind control", they wouldn't disagree that while we interact with physical elements of our environment, our brains are performing what's known as underline embodied cognition, a sneaky sort of intuition that drives how we feel and behave and is breaking down century-old mind/body link claims with a vengeance. It may seem incredible to imagine that the boring coffee mug you held this morning while chatting with your kids, or the clipboard you held while filling out that interview this afternoon, were actively priming your behavior and emotions. How could these static, boring objects change the way you feel and act towards others? Well, fortunately there is a wealth of new research to back up these bizarre claims. While uncovering this research, I couldn't help but think about how the design of everything from consumer products to education, could be transformed by the notion of embodied cognition. And so I dove into the ever-overlapping worlds of design and cognitive science once more, this time to unearth more about what it could mean to design with embodied cognition in mind, at the very least subconsciously.

Yale University's John Bargh is among a small but international group leading the charge to understand embodied cognition and its behavioral priming capabilities. Bargh recently co-authored a paper for the journal Science documenting the dramatic power of the sense of touch, when paired with the

brain's abilities to affect how the world is viewed. Bargh's team found over a series of two studies that subjects:

- who read a passage about an interaction between two people were more likely to characterize it as adversarial if they had first handled rough jigsaw puzzle pieces, compared to smooth ones.
- sitting in hard, cushionless chairs were less willing to compromise in price negotiations than people who sat in soft, comfortable chairs.
- judge other people to be more generous and caring after they had briefly held a warm cup of coffee, rather than a cold drink.
- holding a heavy clipboard while interviewing job applicants took their v more seriously than their interviewing counterparts holding light clipboards.

Considering that none of the subjects in any of the experiments were told they would be tested on how they react to their physical environment, it's the more amazing that while their conscious focus was on a very specific task, their subconscious was deciding how they should feel towards literally everything around them, based on literally everything they were interacting with at a given moment, including the jigsaw puzzle pieces, the chairs, the cup of coffee, and the clipboards. An independent Dutch study titled "Weight as an Embodiment of Importance" dives even deeper into the notion of physical characteristics affecting abstract psychological concepts. Focusing on one concept, weight, the study found that people deal with the abstract concept of weight in an analogue way to how they deal with the physical characteristic of weight; they invest more effort. The study showed that weight, *the abstract concept* leads to:

- greater elaboration of thought
- greater polarization between judgments of strong versus weak arguments
- greater confidence in one's opinion

while weight, the *physical characteristic, as in physical objects*:

- require higher energetic costs to move or pick up
- have a greater impact on people's bodies
- require more effort, in terms of physical strength and cognitive planning
- cause people carrying weight to judge distances to be greater and hills to be steeper (than those who do not carry the weight or who carry less weight)

As groundbreaking (and awesome!) as this research is, it's worth providing a bit of background in similar thinking, albeit purely linguistic as opposed to

physical. In 1980 George Lakoff and Mark Johnson published <u>Metaphors We Live By</u>, a seminal work that suggests that metaphors not only make our thoughts more vivid and interesting but that they actually structure our perceptions and understanding of the world around us:

> "The concepts that govern our thought are not just matters of the intellect. They also govern our everyday functioning, down to the most mundane details. Our concepts structure what we perceive, how we get around in the world, and how we relate to other people. Our conceptual system thus plays a central role in defining our everyday realities. If we are right in suggesting that our conceptual system is largely metaphorical, then the way we think, what we experience, and what we do every day is very much a matter of metaphor. But our conceptual system is not something we are normally aware of. In most of the little things we do every day, we simply think and act more or less automatically along certain lines. Just what these lines are is by no means obvious. One way to find out is by looking at language. Since communication is based on the same conceptual system that we use in thinking and acting, language is an important source of evidence for what that system is like."

Lakoff and Johnson proposed a new recognition of how profoundly metaphors not only shape our view of life in the present but set up the expectations that determine what life well be for us in the future. While they may have limited their research to the notions of using physical embodiments as metaphorical communication tools, Lackoff and Johnson's link to current day embodied cognition research is undeniable. In fact, the Dutch study notes that weight is a metaphor for importance in many languages, including English, Dutch, Spanish, and Chinese, and that people:

- 'weigh' the value of different options before making a decision
- 'add weight' to place emphasis on important ideas
- judge opinions as 'carrying weight' if the source is considered knowledgeable or influential

Lakoff and Johnson discovered that we use embodied metaphors, such as weight, to tie abstract concepts and emotions to physical objects and environments, they just didn't realize that these very same physical objects and environments are actually driving human perceptions, emotions, and behaviors. Lawrence Williams, who helped design the warm coffee cup experiment with John Bargh says "it's no coincidence that we use the same word — warmth — to describe both a physical and an emotional experience. Somewhere in the brain, those two sensations are linked," he says. Williams and the Dutch study both allude to the idea that embodied cognition could be

developed early on in life – either starting in the womb (where the child would find love, comfort, and physical warmth), or at least in early childhood development.

The notion of a designed thing performing a kind of hypnosis on its user would be nothing new to Marshall McLuhan, writer of the ever poignant if too often quoted "We shape our tools and thereafter our tools shape us." Author of the 1964 ground-breaking manifesto, Understanding Media: The Extensions of Man, McLuhan was a purveyor of radical media theory such the subliminal effects of what he refers to as "the medium". Advocating th by by too narrowly focusing on the content, we are blinded to the actual character of "the medium" including its psychic and social effects. Bringir this into the realm of designing with embodied cognition in mind, take the electric light bulb as a classically referenced example. Upon initial consideration, the light bulb might be thought of as a product as opposed to a medium, however McLuhan would propose that the light bulb provides light, which greatly affects the perceptions and emotions of the people for whom the light bulb provides the light. Therefore, McLuhan gives us a new lens through which to look at designed products and interactions, not as cold, static things that we act onto, but as active participants in our perceptual and emotional world.

There is no denying the volatility of McLuhan's theories, but some neuroscientists, linguists, and philosophers, emblazoned with the new research on embodied cognition, are giving him a run for his bold money. These thought leaders claim that "human characteristics like empathy, or concepts like time and space, or even the deep structure of language and some of the most profound principles of mathematics, can ultimately be traced to the idiosyncrasies of the human body." If we didn't walk with two legs, grasp with opposable thumbs, or communicate with modern language, they argue, we would understand these concepts in completely different ways. Put simply, the experience of being human, of having a body, specifically our own body, is intimately paired with our intelligence. And since the experience of having a body is inherently tied to the objects and environmental factors the body uses to interact with the world, I would assert that the current suite of things and interactions available to people is really what frames the current state of human thinking.

Montessori Spindle Box — combining abstract concepts with embodied ones

think what makes embodied cognition so fascinating is how it deals with social responses to environmental factors. The fact that those people holding warm coffee cups perceived other people to be more generous and caring, and those people sitting in soft chairs were more willing to compromise makes me think three very interesting thoughts: that we never think in a vacuum, that we never, ever, stop thinking, and that designers, some of whom may have considered metaphor as a tool to deliver an experience that users can relate to another positive experience, now have so much more to consider when designing. As for the notion of a thought vacuum, I think its incredible to consider that no matter how bleak an environment you may find yourself in, or how dull an object you may find yourself holding, these things are always influencing how you think and feel about the people and places around you. Industrial and interaction designers are perhaps more aware than most, of how many unpleasant objects exist in the world, waiting to be held or touched, poised to take over our emotions and make us judge people. Granted, in order to keep costs down and ensure that the masses can afford to buy new things, high design and quality materials are often overlooked or kicked by the wayside. But high design is not what we're talking about here. A warm coffee mug is not better designed than a cold one; same goes for the heavier clipboard – the opposite may be true in that case, in fact. So how can the design process be informed by the notion of embodied cognition? Is it possible to design better things through a deep understanding of the human mind's disposition for connecting abstract emotional concepts with concrete physical things? For starters, we know that the sense of touch is an essential aspect of being human – physical concepts such as roughness, hardness, warmth, and weight being amongst the first that infants develop. And if we cross reference that with the design process, which often deals with materials selection, we can start to imagine how designers could use embodied

cognition as a tool, even helping young children and adults develop abstract concepts about people and relationships. At the very least, I think it's worth experimenting to see if designing products and interactions for specific embodied cognition applications can work. Wouldn't it be cool if, while designing a new thing, we could test for embodied cognition affects in potential users? Want to know if your new laptop inspires greater confidence (with the opposite sex, let's say) in potential owners? Slip it into one of John Bargh's studies, give half the test group your new computer and the other half the competition's machine, have them chat online with a blind date and collect data. Imagine what you could learn about users' reactions to the physical characteristics of the laptop – the feeling of the keyboard, the we of the metal body, the glossiness of the screen, the auditory feedback wh you click. Testing for these things using embodied cognition experiments could become a new product development research standard. But what i using embodied cognition as a tool in the design process could extend beyond testing for emotional and behavioral responses to new products and services? What if designers could create interactions and products that enhance the ability to learn and memorize? Well, it turns out this may be possible. New embodied cognition research, aimed at identifying the value of physicality in education revealed that:

- children can solve math problems better if they are told to use their hands while thinking.
- stage actors remember their lines better when they are moving.
- subjects asked to move their eyes in a specific pattern while puzzling through a brainteaser were twice as likely to solve it.

Imagine using embodied cognition principles to transform education, shifting the focus from static reading, writing, and reciting to movement and simulation. Imagine if rehabilitative medicine specialists could use their understanding of their patients' embodied cognitive abilities to help them recover lost skills after a stroke or other brain injury. This research proves that designers can use a knowledge of embodied cognition to re-investigate and invent new, more successful physical tools and interactions for a variety of applications. Designers could perhaps think beyond traditional ergonomics in the sense that we design things that fit the human form, that feel good to hold, to consider "cognitive ergonomics", designing things that fit the human mind, that feel good to think about, or that make us think "nice" thoughts. Armed with a greater understanding for human inclination to embody emotion with physical metaphor and the ability of physical things to affect human perception and emotion, designers could take on the challenge of cognitive ergonomics. To figure out how to design for the mind, not just the body. After all, as Bargh points out, "The old concepts of mind-body dualism are turning

out not to be true at all". Altering the physical condition of the body affects how we perceive and understand, even for concepts that we think are nothing but metaphors. Our brains are intrinsically linked to our bodies and the relationship is an organic one. We think with our bodies and our brains. So let's design things that embrace that link, that feel good to think about, that take the cognitive rough edges off, hone them down, and smooth them out. Let's redesign our physical world with embodied cognition in mind.

Internet Encyclopedia of Philosophy NPR: Study Links Warm Hands and Warm Heart Boston Globe's Report on Embodied Learning Touch and Gender Stereotypes (Psych Central) —— Coffee image CC by cogdog, Montessori Spindle Box CC by 54mama,

Seth Snyder

Seth Snyder is an experience designer at Tellart in Providence, Rhode Island. He specializes in cross-disciplinary explorations through research, brainstorming, concept development, and interaction design. Prior to joining Tellart, Seth graduated with honors from the Rhode Island School of Design's Industrial Design department. The views expressed are those of the author and do not necessarily reflect the views of Tellart.

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25 comments on this article

Mark Watson on *March 1, 2011 at 2:30 pm*

Thanks Seth
Great piece, it helps frame my thoughts on the world of object / subject, sign / signifier. Cognitive Ergonomics is a great tag in forming theory in artefact design.
Embodied Cognition also helps in underpinning directions in my work towards developing an environmentally sustainable ethic in what I called biomic design.
But then again I didn't know I was practicing design anthropology until that term was couched.
I enjoyed your writing almost as much as it appears you enjoyed the research.

Pingback: <u>Embodied Cognition at myninjaplease</u>

Pingback: <u>» How Your Coffee Mug Controls Your Feelings (& What You Can Do About It) Johnny Holland – It's all about interaction » Blog Archive « Netcrema – creme de la social news via digg + delicious + stumpleupon + reddit</u>

Andrew on *March 1, 2011 at 5:15 pm*

Really nice article. I love your use of the word 'primer' too. I think that a designers, our most fundamental challenges are not only creating products that satisfy needs, but communicating their intent as well. Whether you are crafting an environment around the product or simply imbuing the product itself with certain characteristics, you are priming y audience to subconsciously feel a certain way about something.

It's also interesting how something like the word 'weight' can have directly opposite meanings when taken literally and subconsciously. If one were talking to a focus group about a new phone and the topic of weight came up they would almost all say that lighter is better, however when a prototype is held in their hands its more likely that they will prefer a slightly heavier one because it primes them to expect quality.

Anyway, rant over. Nice work!

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pedant on *March 1, 2011 at 7:36 pm*

"It may seem incredulous"

incredible.

Andrew II on *March 1, 2011 at 7:42 pm*

This is not surprising to me at all. My coffee mug greatly influences my feelings towards others; as in, pre-coffee mug, I hate them. Post-coffee mug things are GREAT.

Greg Salerno on *March 1, 2011 at 7:46 pm*

Fascinating perspective. It makes me wonder how perception of the messages we send is affected by what the receivers of those messages are doing or holding at the time. Is an email received differently on the desktop than on a mobile device, for example?

Kelly Heath on *March 1, 2011 at 9:52 pm*

Seth,
Great article! This is definitely a topic that comes up a lot in exhibit desi
always considering and trying to grasp the connection between our bod
understanding and our brain's understanding. There are a lot of good
ideas here that designers should really be taking into consideration. You
article has really got me thinking!

Jon Jensen on *March 2, 2011 at 5:43 am*

Minor correction: The name is George Lakoff, not Lackoff.

Pingback: The Reason Why Your Toothbrush Made You Yell At Your Employee This Morning | 3Brain Marketing - Neuromarketing Blog by Marc Narine.

Laura on *March 2, 2011 at 10:18 pm*

Great article! It was a really interesting read and I related with so many of the points you made. However, I do question how much it expresses intelligence like you suggested. I work wit ha student who is extremely bright but has problems with all sensory experiences. They do not register with him in the usual way. He wouldn't relate to many of the things this post talks about, and while that does affect his ability to relate to others and his surroundings it doesn't seem to affect his intelligence. Thanks for such an interesting article-a lot to think about!

Pingback: it's enough to make you crazy you know… « D-O-A

Pingback: State of Technology Last Week – #1 « Dr Data's Blog

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Pingback: Links and Quilts | Tomorrow Museum

Nick on *March 4, 2011 at 8:26 am*

Thank goodness for these studies and putting nails in the coffin of the mind/body dichotomy. Even though we cognate with our brains, the sensations we experience with brains are full-body no matter how you slice it. It would be the reason we express emotions and mental states through body language and facial expressions.

Pingback: links for 2011-03-04 « Blarney Fellow

Siran on *March 6, 2011 at 6:55 am*

I've some issues with the bit on testing laptop designs that inspire great confidence. Using your competitor's design for the control group may well confound your finding. Instead, you should test your control group with your own product without the specific feature in your design that inspires greater confidence. This way, you make sure the difference you find in users' behavior is and only is due to the design feature that is meant to cause such a behavioral difference. 😃

Sherryl on *March 6, 2011 at 10:04 pm*

Nice article. I especially appreciate you sharing your own thoughts and suggestions in relation to these theories and research findings. You've clearly given this a lot of thought.

Glad to see that psychological theory and method are being perceived as useful in the design world.

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Pingback: <u>8 Control Coffee Sites</u>

Pingback: <u>Embodied Cognition and How It Affects Judgment and Decision Making | An Aesthetics of Touch</u>

Pingback: <u>New Research Shows How To Throw Away Negative Thoughts And Feelings</u>

Yes or no, does Johnny love you?

Post that thought