Encoding and decoding affordances: Stuart Hall and interactive media technologies

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Abstract
This essay addresses how digital and interactive media scholars might adapt the concept of affordances in relation to Stuart Hall’s canonical ‘Encoding/Decoding’ model to better account for how certain types of interactivity are promoted or discouraged by new technologies and platforms. In particular, Shaw looks at how the perceptible, hidden, and false affordances of designed objects intersect with Hall’s dominant/hegemonic, negotiated, and oppositional reading positions. Merging these theories allows scholars to approach the political implications of audience activities with these technologies in new and more nuanced ways.

Keywords
affordances, digital media, encoding/decoding, interactive media, new media, Stuart Hall, video games
are often described as a constellation of technologies that are networked, computerized, social, mobile, and interactive. It covers a wide array of channels, platforms, technologies, and media. In this essay, I discuss New Media in broad terms, but focus on questions of interactivity in considering how the Encoding/Decoding (Hall, 1991 [1973]) model might be adapted to think more critically about the ideologies embedded into interactive technologies, using affordances as a starting point. My proposed model looks at the encoding/decoding of designed affordances to better account for power, resistance, and interactivity in digital media environments.

Before offering an interjection into one particular subarea of new media studies, however, it is important to acknowledge that new media research has a long and diverse history, as Leah Lievrouw and Sonia Livingstone (2006) review. It has also long ago merged with communication and media studies, given that it is nearly impossible to do 21st century research without engaging in some way with new media. Much of the model I propose below pulls together domains of new media research that tend to be siloed even within this interdisciplinary field. I draw on Julie D’Acci’s (2004) ‘circuit of media study’ in this respect because, as she points out, such a model helps bring into view the wider frame in which our individual research questions lie. Building on D’Acci’s intervention for television studies, new media studies must engage more directly with questions of hegemony via cultural studies methodologies. As both Hall (1990) and D’Acci (2004) articulate, cultural studies approaches to research are of particular importance at moments of crisis within the humanities. I would add that the current crisis, in which educational and research funding increasingly favors science, technology, engineering and mathematics (STEM) programs, practical training, and technological innovations, makes a union of cultural studies, with new media studies a particularly fruitful one. As academic departments pivot toward offering classes and hiring scholars in digital, new, emergent, and computational media, it is imperative that those classes and scholars build on the rich history of communication and culture work. This is not simply to ground new media studies in existing departments and fields, but rather to ensure the work being done is politically engaged.

Hall (1990) writes, reflecting on the role of cultural studies in the United Kingdom, that

the vocation of cultural studies has been to enable people to understand what is going on, and especially to provide ways of thinking, strategies for survival, and resources for resistance to all those who are now … excluded from anything that could be called access to national culture.

(p. 22)

This is the politics driving his Encoding/Decoding model (Hall, 1991 [1973]). Hall’s model imparts a semiotic framework on communication studies, moving away from earlier stimulus-response behaviorist models. On the ‘decoding’ end, there are three ways an audience member might decode any given message. This first is dominant or preferred readings, in which the message is decoded with the same meaning as was intended when it was encoded. Second, negotiated readings involve a mixture of preferred and resistant readings. Third is the oppositional reading in which the audience member decodes the message in the opposite way as was intended by the producer. Importantly, Hall posits through this model that social inequality, largely in terms of class position,
shapes these reading positions as those who are relatively disempowered vis-a-vis those who control the media are the ones who tend to push back on the dominant meanings of texts. As an important caveat, however, David Morley (1992) points out that he and Hall never intended this to be read in an overly deterministic way. Rather they were suggesting ‘a much more complex process, through which structural position might function to set parameters to the acquisition of cultural codes, the availability (or otherwise) of which might then pattern the decoding process’ (Morley, 1992: 12). D’Acci (2004) maps the history of this model, how it informed other models of cultural production and consumption, and its critiques, before outlining her own variation a ‘circuit of media study’. Her model acknowledges the interlinkages between socio-historical context, production, cultural artifact, and reception, as well as the positionality of the researcher. Although I will focus on how the reading positions from encoding/decoding could be adapted to interactive media, future work might explore how to use D’Acci’s model in analyzing new media technologies holistically.

There are some similarities between the reading positions of the Encoding/Decoding model, and how it has been critiqued, and the concept of affordances that comes to communication via psychology, design, and the sociology of technology. The term affordances comes from cognitive psychologist James Gibson (2015 [1979]). He was primarily interested in investigating at what stages people learn to use what he called the ‘action possibilities’ (or affordances) of their environment. In his words,

An affordance is not what we call a subjective quality of a thing. But neither is it what we call an ‘objective’ property of a thing … An affordance cuts across the dichotomy of subjective-objective … But they are not, on the other hand, facts at the level of physics as concerned only with matter and energy with animals left out. (Gibson, 1977: 69–70)

Affordances then are highly interpretive, as deciphering the use of objects and environments is related directly to the subject position of the organism. Moving from the natural to the designed environment, Donald Norman (1988) brought the term into human–machine interaction adding a design twist on Gibson’s original theory. Norman felt that Gibson assumed there were too many open possibilities in how objects in the environment could be used. The original theory did not take into account the way objects themselves encouraged some sorts of uses over others. Later, William Gaver (1991) extended Norman’s approach to explain three different types of affordances: Perceptible, Hidden, and False. Briefly, perceptible affordances are when objects do what it looks like they should be able to do, hidden affordances are uses that are not apparent, and false affordances are those uses objects look like they should be able to do but do not.

Affordances have been a fruitful tool for social studies of technology and communication scholars. Researchers have used this term to analyze communication technologies broadly (Baym, 2010), mobile communication devices specifically (Ling and Donner, 2009), and types of trolling made possible by different online spaces (Phillips, 2015). For an excellent and complete review of how the term has been used by communication scholars, see Peter Nagy and Gina Neff’s (2015) recent article. Affordance has become almost a buzzword in communication technology studies, not because it is a new idea but because it helped solve a problem in how the impact of these technologies was being
described. Like the hypodermic needle model of media effects, pure technological determinism might be a bit of a straw man against which more nuanced theories of technology and culture are framed (Lubken, 2008). Still, people speak anecdotally of the way technology affects our culture, regardless of whether they are describing this as an inherently good or inherently bad thing. This kind of language usually positions technology outside of culture, as Raymond Williams (2003 [1972]) famously describes in relation to discourse about the ‘effects’ of television. This sort of framing recalls Hall’s (1998 [1981]) discussion in ‘Notes on Deconstructing “the Popular”’ of how ‘popular culture’ is described as affected by external dominant forces: ‘Popular culture is neither, in the “pure” sense, the popular traditions of resistance to these processes; nor is it the forms which are superimposed on and over them. It is the ground on which the transformations are worked’ (p. 443). Technology too exists within, not outside of culture and hegemonic power structures. Hall (1998 [1981]) argues that ‘in the study of popular culture we should always start here: with the double stake in popular culture, the double movement of containment and resistance, which is always inevitably inside it’ (p. 443). In contrast to that linear approach described above, scholars who study everything from early computer history to augmented reality technologies are increasingly looking at the way technology and culture are in dialogue with one another. Affordances allow scholars to talk about the imbrication of culture and technology (Nagy and Neff, 2015).

Ian Hutchby argued that the sociology of technology should adopt affordances to find a balance between technologically deterministic arguments that presume innovations change social structure and social shaping of technology claims that presume all new developments are inherently based on social structure. He suggests that affordances offer a compromise between ‘the opposing poles of social construction and realism’ (p. 444). In doing so, however, he focuses only on the materiality of technologies in terms of constraints. In contrast, Nagy and Neff (2015) observe that in communication and technology studies what users can do with technology has become such a primary focus scholars ‘inadvertently describe affordances as dependent on users’ actions’ (p. 3). Hutchby (2001) certainly allows for the enabling aspects of technological affordances, but even then he overemphasizes the technological sides of the user/technology relationship mirroring the emphasis on the user side in communication studies that Nagy and Neff (2015) identify. Like Nagy and Neff (2015), he argues for an emphasis on materiality, but what the later authors add to the conversation is the importance of affect. In his critique of the social constructivist approach, Hutchby (2001) critiques Grint and Woolgar’s (1997) suggestion that scholars consider technologies similar to texts which, in their words, ‘sets the frame for an examination of the processes of construction (writing) and use (reading) of the machine’ (p. 70). Despite the authors’ insistence that this is simply a useful way to think through relationships between design and use, not a metaphor meant to be taken literally, Hutchby nevertheless argues that the metaphor falls apart because it presumes objects can be adapted for just any possible use. Yet as Nagy and Neff (2015) articulate, affordances are useful precisely because it pushes back on both presumed static, rational uses that can be read from technologies and this interpretative free-for-all: ‘Affordances were never theorized as being stable or inherent properties external to perception’ (p. 3). Nagy and Neff propose the term ‘imagined affordances’ as a corrective ‘that helps scholars to reflect technological
environments’ material qualities that mediate affective experiences’ (p. 2). Imagined affordances, and here they mean imagined by both users and designers, push back on the assumption that affordances are rational and immutable while demonstrating that at their core they are about interpretation. ‘Lost in translation when affordance migrated to communication technology studies is this idea of affordance as both and, both environmental and perceptual, both conceptual and imagined’ (Nagy and Neff, 2015: 3).

Using a parallel example, gender and race are social constructs, but that does not make the lived experiences of race and gender any less real. Or, in semiotic terms, the relationship between a signer and signified is arbitrary, but they exist within systems of meaning that guide, yet still do not determine, how they are interpreted. Nagy and Neff’s imagined affordances thus bring us full circle back to Hall’s encoding/decoding, demonstrating that meaning (like affordances) is negotiated in particular moments.

There are parallels between how communication technologies and audience reception have been studied. The linearity of causes and effects in technological determinism or direct media effect theories and neo-Marxist Frankfurt School models belies the lived complexity of hegemonic systems. Similarly, work that focuses only on audiences as inherently and always resistant to those meaning systems is critiqued for ignoring the power imbalances in who gets to make media. In thinking through interactive media technologies in terms of imagined affordances, Nagy and Neff (2015) suggest that ‘extending affordance theory can help communication theorists point to the construction, mediation, and materialization of power and social relationships’ (p. 4). Following this, they discuss the unique insight communication scholars have on this given the field’s history of thinking through how texts are produced and received. Here, I think Nagy and Neff’s (2015) thesis pairs well with my own, because these imagined affordances are tied to a non-deterministic approach to how technologies are used in much the same way an encoding/decoding model pushes back on deterministic media effects models. Designs and environments like media representations do not tell us what to think or do, but they do shape what we think with. In summarizing Grint and Woolgar’s formulation of technology as texts, Hutchby (2001) even uses the term ‘preferred readings’ to describe designer’s intended uses of technology, although he does so without citing media and communication theory (p. 445). Pairing Nagy and Neff’s (2015) imagined affordances, the different types of affordances (Gaver, 1991), and Hall’s 1991 [1973] Encoding/Decoding model offers a fuller picture of what forms of power and resistance exist in users’ relationships to interactive technologies.

To adequately deploy encoding/decoding on new media, however, requires we tweak Hall’s model of course. Specifically, we need to find a way to understand the power differentials involved in how interactive media technologies are created and used while acknowledging the fact that the distinction between the production process and the act of reception in encoding/decoding does not adequately capture the interactivity of new media texts. The distinction between production and reception in the original model for all media has been critiqued of course, as D’Acci (2004) reviews. When it comes to interactive media though, the issue of delineating a site of production becomes doubly complicated. As Axel Bruns (2008) explores, collaborative creation communities blur the previously held distinctions between producers and users of content. These phenomena are distinct in some ways from the active audiences discussed in earlier studies, not
simply because the tools of production and distribution are more readily available but because media industries cultivate this activity. Bruns, for example, explores the myriad ways commercial industries approach the ‘hive’ of produser content (p. 32). Audience activity with digital media does not simply demonstrate the resistive agency of audience members, as in much of digital, contemporary media it is largely a requirement for using these media. A video game, for example, simply cannot function without a measure of activity and involvement beyond that which is required in other media. This makes video games activities as much as they are texts. The interactive properties of the texts, however, do not define the experience of game play. Understanding their reception, thus, must interrogate what actions these texts invite and how players actually use them.

And to do that, we need to start with an affordances perspective. All interactive media technologies can be looked at in terms of what they allow users/audiences to do. What types of uses do they lend themselves to? What types of interaction do they encourage? Technologies are not ideologically neutral in their design, in what types of interaction they allow or disallow (see Figure 1). We can look at what uses (and users) are encoded into the design of interactive objects/texts. New media scholars also need to look at how they are then decoded or what emergent uses we see when they are in the hands of users themselves. As Hall 1991 [1973] notes, of course, ‘the codes of encoding and decoding may not be perfectly symmetrical’ (p. 93). Later he writes, ‘what are called distortions or misunderstandings arise precisely from the lack of equivalence between the two sides in the communication exchange’ (p. 94). Translated to new media objects, misuses of technology are often framed as failures, particularly when committed by people who are seen to be ‘marginal’. We might, via Hall, reclaim those ‘misuses’ as not a fault, but, while not accounted for by a designer, they are still plausible deployments of a technology’s affordances.

Building on this, how might we adapt Hall’s three reading positions (dominant/hegemonic, negotiated, and oppositional) to interactive media? Not to interpretations of the texts, though that can be done as well, but rather to potential activities with new media texts, objects, and forms. One way to think about this is in relation to both Gaver’s
(1991) typology of affordances and Nagy and Neff’s (2015) imagined affordances (see Figure 2). A dominant/hegemonic use would likely be using an object for its perceptible affordances; here, the designers’ and users’ imagined affordances align. An oppositional use might take advantage of hidden affordances or even attempt to turn false affordances into actual affordances; put differently, users might imagine very different affordances than the designers. We might even imagine passivity in using interactive media as a potentially oppositional use of the text. And like negotiated readings, negotiated uses might fall somewhere in between perceptible and hidden affordances. Negotiated use exploits what were possible affordances of the technologies, whether intentionally included by designers or not. And throughout all of these, it is important to keep in mind the power differentials among those who design these technologies and who uses them.

Thinking about games, for example, this approach allows us to talk with a bit more nuance about two subjects that are often seen as potentially oppositional uses of digital games: cheating and modding. Cheating, as Mia Consalvo (2007) explores, may be viewed by some as an oppositional form of game engagement. But it is not inherently oppositional, as some cheats are intentionally built into the texts. They are used during the development process of games to allow programmers to jump ahead and move through the game quickly. They are usually turned off when a game ships, but are often found later by players. My own bootleg copy of *Star Wars Jedi Knight II* would have been unplayable if my friend who copied the game for me never gave me the list of cheats that allowed me to skip over corrupt sections of the file. Mods similarly do sometimes involve making brand new game content (explored in depth in Postigo, 2007). Some modifications of games, however, merely reveal code that was turned off in the shipped version of a game. Take for example, the ‘hot coffee’ mod in Grand Theft Auto San Andreas. This modification allowed players to unlock a normally inaccessible minigame where they could have in-game sexual intercourse (Brathwaite, 2013). It was not something added by players, it was uncovered by them in the game’s original code. In contrast, Robert Yang’s ‘Handle with Care’ mod for Half Life 2 actually created a brand

![Figure 2. Reading positions, types of affordances, and imagined affordances.](image-url)
new game and new meaning. He used the code released for the original game to create his own game, which turned the first person shooter into a game that was in part about two men going through marriage counseling interspersed with the player stacking and then eventually breaking boxes in a warehouse (Yang, 2009). The point in bringing Hall into this, moreover, is to interrogate the power dynamics involved. What counts as a dominant, negotiated, or oppositional use is intrinsically linked to who has the power to define how technologies should be used. When feminist and queer indie game designers appropriate the hypertext program Twine to create short, powerful games, often based on personal narratives, these texts are derided as ‘not being real games’. They fail to abide by dominant definitions of what games should be and how Twine as a program is meant to be used. They also, as Alison Harvey (2014) analyzes, challenge hegemonic norms of game production.

Moving away from games, we can see similar dynamics at play in a range of other digital media objects, texts, practices, and so on. Kate Miltner (2014), for example, looks at the gendered dynamics in accusations of people using memes incorrectly and unpacks the question, ‘Who decides what is the correct use of a meme is?’ As many others have commented, harassment is actually built into Twitter’s infrastructure (Berlatsky, 2015). It takes a tool like Randi Harper’s (2015) Good Game Auto Blocker to shield folks from but one source of Twitter-based harassment, and many of the shortcomings of the tool (e.g. those who feel unfairly blocked) are shortcomings of Twitter’s affordances more broadly (Woffard, 2014). Communication scholars often talk about the problems of governmental and corporate surveillance. The longstanding practices of sousveillance, or more colloquially watching the watchers, exemplified in video recordings of police brutality around the world demonstrate that not all technology-enabled surveillance is created equally. Attempts to curb the latter so that the former can exist unchecked are legal issues that have to grapple directly with changing the affordances of technologies (Bock, 2016).

The fruitfulness in bringing a cultural studies–informed approach to analyzing mediated messages with the study of communication technologies’ uses is most evident in the similar critiques faced by both. Much like Hutchby’s (2001) critique of Grint and Woolgar’s (1997) ‘technology as text’ metaphor described above, Costall and Richards suggest ‘representationalists’ (like Hall) assume meaning is completely open to interpretation. Costall and Richards (2013) characterize Hall’s ‘representationalism’ as insisting that ‘the meanings of things are, one way or another, in “us” not in the things’. Thus, they argue semiotic approaches are inadequate in comparison with Gibson’s affordances, which ‘is an account of meaning that can exist prior to the development of language, symbolization, and categorization’ (pp. 85–86). Yet their entire argument seems to conflate meaning and function. Gibson’s (1977; 2015 [1979]) discussion of affordances is actually very similar to Hall’s discussion of how representations come to mean. Hall’s Encoding/Decoding model acknowledges that we are not simply free to interpret texts (or technologies) in just any way. Costall and Richards (2013) write, ‘affordances are not simply discovered, but nor are they mentally projected upon inherently meaningless things. They are negotiated’ (p. 91; italics in original). Yet, this is precisely the same argument made by post-structural semiotics, which argues that meaning can only be expressed through systems of representation, and individual signs only mean things in relation to a system of meaning. Individuals construct meaning within these systems.
Hutchby (2001) writes, ‘different technologies possess different affordances, and these affordances constrain the ways that they can possibly be “written” or “read”’ (p. 447). His emphasis on the material limits of those technologies is his attempt to push back on the social shaping of technology sociologists focusing too much on the agency of users and not the technical restrictions on what is possible. Nagy and Neff (2015) argue, in contrast, that the solution is thinking about affordances in terms of imagination: ‘Imagined affordances emerge between users’ perceptions, attitudes, and expectations; between the materiality and functionality of technologies; and between the intentions and perceptions of designers’ (p. 5). By introducing imagination to affordances, in addition to bringing design and use back into the picture, they also acknowledge that there are aspects of mediated experiences that are invisible to users. Algorithms, for instance, affect what users can and cannot do in online spaces, but operate out of view. Building on their insights, I suggest that we can take this form of imagination one step further by integrating perceptible, hidden, and false affordances into the encoding/decoding reading positions to create a new model for understanding how users experience interactive media and technologies (Figure 2).

Interactive communication technologies require that we treat audience activity as expected and promoted by these texts and technologies. Because of that, we have to rethink the political implications of audience activity somewhat differently. All activity is not resistive, of course, but neither is it complicit. It is complicated and requires that we are attentive to new kinds of questions about what this activity means. Building on this, we might integrate this ‘encoding/decoding of designed affordances model’, with Hall’s (1997) ‘Circuit of Culture’ and T.L. Taylor’s (2009) ‘Assemblage of Play’, to make sense of how these afforded activities fit into the bigger picture of meaning-making, ideology, and social structures. Models of this type of work exist in cultural studies of course, as demonstrated in Du Gay et al.’s (1997) study of the Sony Walkman. I think, however, unpacking new media technologies in terms of affordances offers an important update to cultural studies of new media that better accounts for interactive media. In fact D’Acci’s (2004) ‘circuit of media study’ is perhaps a better starting point, of which my model would address but one small part, as it allows us to look at the ways these new media objects exist at the intersection of her four sites. New media studies already draw upon multiple fields, but could better integrate these approaches into a more explicitly politicized project. As D’Acci writes, ‘such a grappling allows for precise analyses of the articulations that build hegemony and for the ways to uncouple and recouple them’ (p. 440). A cultural studies–informed new media studies would necessarily have to be conscious of the stakes of its research questions and findings, to take as Hall (1990) writes, ‘responsibility for how the knowledge they produce is then transmitted to society’ (p. 18). Thus, even as our fields, departments, and funding agencies turn toward new topics, the age-old question of why we are doing this work stays central to our methodologies. Critical cultural new media studies should not simply point to how power is operating, but work toward subverting existing hierarchies and finding the hidden affordances of hegemonic processes.

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