

# Agency Reconsidered

Noah Wardrip-Fruin\*, Michael Mateas\*,  
Steven Dow†, Serdar Sali\*

\* Expressive Intelligence Studio  
Department of Computer Science  
University of California, Santa Cruz  
1156 High St, MS:SOE3  
Santa Cruz, CA 95064 USA  
nwf, michaelm, sali @soe.ucsc.edu

†Human-Computer Interaction Group  
Department of Computer Science  
Stanford University  
353 Serra Mall, Gates 390  
Stanford, CA 94305 USA  
spdown@stanford.edu

## ABSTRACT

The concept of “agency” in games and other playable media (also referred to as “intention”) has been discussed as a player experience and a structural property of works. We shift focus, considering agency, instead, as a phenomenon involving both player and game, one that occurs when the actions players desire are among those they can take (and vice versa) as supported by an underlying computational model. This shifts attention away from questions such as whether agency is “free will” (it is not) and toward questions such as how works evoke the desires agency satisfies, employ computational models in the service of player action and ongoing dramatic probability, use interfaces and mediation to encourage appropriate audience expectation, shift from initial audience expectation to an understanding of the computational model, and can be shaped with recognition of the inherently improvisational nature of agency. We focus particularly on agency in relation to the fictional worlds of games and other playable media.

## Author Keywords

computer games, interactive drama, agency, intention, perceived consequence, affordances, Eliza effect, SimCity effect, augmented reality, human-computer interaction, improvisation

## INTRODUCTION

The goal of this paper is to deepen accounts of *agency*. While this term has many uses, we refer to a particular concept influential both in game scholarship and game design. This concept has been defined in terms of audience experience, most often in Janet Murray’s words as “the satisfying power to take meaningful action and see the results of our decisions and choices” [16]. It has also been defined in structural terms, in Michael Mateas’s argument, as caused by a balance in formal and material affordances [15]. We, instead, argue that agency is a phenomenon, involving both the game and the player, one that occurs

when the actions players desire are among those they can take (and vice versa) *as supported by an underlying computational model*. In particular, this paper’s focus is on agency in relation to the fictional worlds of games, interactive drama, and other forms of playable media.

While the phenomenon of agency waxes and wanes during gameplay, a design that supports agency is key to many successful games and other works of playable media. We argue that there are a number of major design issues for those who wish to encourage agency, including supporting the actions suggested by the world, helping players transition from their initial expectations to an understanding of how their actions have impact on the model, presenting an interface appropriate to the model, and design that acknowledges the improvisational nature of play.

## AGENCY IS INTRODUCED, TWICE

Our account of agency deepens those currently in wide use in game scholarship and game design. In scholarly circles the concept is generally attributed to Janet Murray’s 1997 book *Hamlet on the Holodeck*, cited above. In the field of game design the idea is often associated with Doug Church’s 1999 essay “Formal Abstract Design Tools,” in which he uses the terms “intention” and “perceivable consequence” to name a very similar concept [5]. The two fields’ conversations have often developed in isolation, as unintentionally revealed in amusing moments such as Mark Barrett, from the game design community, offering a 2004 critique of Murray for coining agency as a new term and suggesting that she is unaware that “Doug Church first attempted to advance the cause years ago” [1] — though Church’s essay was published two years after Murray’s book.

We outline Murray’s and Church’s contributions below, but it is also worth noting that a version of this concept can be seen from the earliest PhD dissertation on digital games and fictions of which we are aware: the dissertation of Mary Ann Buckles (1985). She describes this in relation to the

**Breaking New Ground: Innovation in Games, Play, Practice and Theory. Proceedings of DiGRA 2009**

© 2009 Authors & Digital Games Research Association (DiGRA). Personal and educational classroom use of this paper is allowed, commercial use requires specific permission from the author.

psychological concept of “effectance” as “the desire for competence and feeling effective in dealing with the surrounding environment” [2]. She discusses how the world of the early interactive fiction game *Adventure* works to build this experience in its audience. Buckles’s discussion, however, largely fell on deaf ears, while Murray and Church have been widely influential in their communities.

### **Murray’s Agency**

“Agency” is the title of the fifth chapter of Murray’s *Hamlet on the Holodeck*, in which she describes agency as “the satisfying power to take meaningful action and see the results of our decisions and choices” and “the thrill of exerting power over enticing and plastic materials” [16]. She positions agency as a common experience in computer use, as when “we double-click on a file and see it open before us or when we enter numbers in a spreadsheet and see the totals readjust.” These may not sound like thrilling experiences, but they are also not Murray’s real focus.

For those seeking a formulation of agency that might aid the design or interpretation of games, the most useful section of Murray’s chapter is that separating agency from “participation” and “activity.” Murray’s agency is not participation, not simply doing what we are expected to do without shaping the larger structure. Simple participation is the digital equivalent of singing along with a leader or dancing steps called by another. Murray also argues that activity alone is not agency:

For instance, in a tabletop game of chance, players may be kept busy spinning dials, moving game pieces, and exchanging money, but they may not have any true agency. The players’ actions have effect, but the actions are not chosen and the effects are not related to the players’ intentions.

Murray offers chess, instead, as a high-agency experience. This usefully distinguishes agency from generic interactivity, focusing attention on the user/player’s ability to take actions intentionally and see results — as exemplified by well-designed games.

This leads Murray to ask if compelling narrative can be built upon game structures. Unfortunately, from that moment forward, the rest of her chapter reads as more of a catalog than an explication. She points out that games and stories can be combined through navigation, puzzle solving, and a number of other approaches — and that they have certain shared qualities. But agency itself remains an enticing, underdeveloped concept.

### **Church’s Intention and Perceivable Consequence**

Murray’s overview — of ways that the agency enabled by games might be combined with the meaningful narratives of fiction — begins with a section titled “The Pleasures of Navigation.” Similarly, Church’s influential essay “Formal Abstract Design Tools” [5] begins its search for conceptual game design tools with the movement-oriented pleasures of

*Super Mario 64*. However Church’s focus is not on movement itself, but rather on how the simple and consistent controls offered for movement, combined with predictable physics, make it easy for players to have *intention*. He argues: “The key is that players know what to expect from the world and thus are made to feel in control of the situation.” This encourages them to form their own goals and act on them. Abstracting away from the actions and goals available in *Mario*, Church generalizes:

This process of accumulating goals, understanding the world, making a plan and then acting on it, is a powerful means to get the player invested and involved. We’ll call this “intention,” as it is, in essence, allowing and encouraging players to do things intentionally. Intention can operate at each level, from a quick plan to cross a river to a multi-step plan to solve a huge mystery.

Coupled with this, Church offers the concept of *perceivable consequence*: “A clear reaction from the game world to the action of the player.” While on the surface quite similar, this takes Murray’s conception (of which Church was likely unaware) one step further. It is not simply that players choose actions, related to their intentions, and these actions have effects (as outlined in Murray’s distinction between agency and activity). In addition, Church’s discussion makes explicit that the combination of intention and perceivable consequence in *Mario* is a way that players come to understand the game world.

Like Murray, Church’s next step is to connect these notions with that of story. He points out that in traditional console role-playing games intention and story alternate. Players are able to form intentions, take actions, and see clear consequences within the combat system, but unable to do so during story progression. He contrasts this with adventure games, which have little intention or perceived consequence at any point. Players plan to go everywhere, pick up everything, talk to everyone, and try everything in combination until they figure out the designer’s intentions. This, in turn, he compares with sports and fighting games, which have a much more limited story than RPG or adventure games (e.g., the trajectory of a match, team, or fighter) but the stories are defined by events during which the player was able to act intentionally. He argues that *story* is also a conceptual tool for game design, like intention and perceivable consequence, and a deeper understanding of such tools could help conversations about design move forward.

### **AGENCY AND DRAMA**

Murray and Church each pose the explicit question of how story can be combined with agency/intention, answering largely in the form of examples. Their discussions also open an important implicit question: Where do the desires come from that agency satisfies? Church suggests that simply understanding the world encourages players to form goals, while Murray leaves this topic untouched. Michael

Mateas's 2001 "A Preliminary Poetics for Interactive Drama and Games" offers direct responses to both questions [15].

Mateas begins by summarizing Murray's concept of agency and Brenda Laurel's adaptations of Aristotle [12, 13]. Laurel's work focuses on well-formed interactive experiences, including fictions, enabled by computers, for which she takes Aristotelian theory as one guide.<sup>1</sup> She lays out a hierarchy of Aristotle's six qualitative elements of drama, as well as the neo-Aristotelian suggestion of two forms of causality at work in this hierarchy. The bottom of this hierarchy is *spectacle* or *enactment* — what is actually seen by the audience. Above this are layered *pattern*, *language*, *thought*, and *character*, leading up to the *action*, which might be thought of as the well-formed whole, perhaps especially the plot.

Of the two forms of causality, one runs down the hierarchy while the other runs up. In the downward direction, each element is the *formal cause* of those below. So just as the idea of a chair is the formal cause of a chair coming into being (for Aristotle), the action of a drama is the formal cause of the characters, which are the formal cause of thoughts (e.g., emotion, cognition, intention) and so on. In the upward direction, each element is the *material cause* of those above. Just as the material cause of a chair may include wood, nails, padding, upholstery, and so on, so the enactment seen by the audience is the material cause of their perception of patterns, language, character thoughts, and so on.

Laurel outlines these ideas while working toward a poetics of interactive form. She argues that we can imagine human-computer interaction that is aesthetically strong, and that neo-Aristotelian models can be a guide (every element of the on-screen spectacle supporting the well-formed whole of the collaboratively-formed action).

---

<sup>1</sup> In fact, Laurel also discusses the importance of agency (which she describes simply as "the power to take action") and the problems that arise when its sources are obfuscated, though her take on the concept is not mentioned in Murray's chapter or Mateas's essay. Perhaps this is because agency became, in some ways, deemphasized in Laurel's discussions of interaction over time. Her initial formulations, in her dissertation work, stress the frequency of interaction, range of choices, and significance of choices. A flight simulator, or a game like *Star Raiders*, is a successful example. Later, in her book *Computers as Theatre*, she argues that her earlier criteria were only ways (among others) to get at the truly important issue, and that it is being enabled "to *act within a representation* that is important." She cites a virtual reality trip to the moon, allowing one only to walk around and look at things, as still being successful interaction.

Mateas begins his intervention by locating Murray's concept of agency at the point of character in Laurel's hierarchy. This is not simply a way of indicating that in interactive drama (the form that is the focus of Mateas's essay) a player takes the role of a character in the drama. It is also a means of indicating sets of constraints and affordances emerging from the existing chains of causation and two new ones.

The new chains of causation are specific to the player. One flows down from the character toward the spectacle (as the player controls character language and other actions) and the other from the spectacle toward the character (as these levels present material for action to the player). Together with the existing flows of causation, this provides constraints and affordances for the player.<sup>2</sup> Specifically, through being presented at the levels rising up from the spectacle, as "material affordances," certain actions cry out to be taken (and constrain action to those made available). At the same time, through the very shape of the drama, flowing down from the level of the complete action, the dramatic probabilities of the fiction strongly motivate certain actions through "formal affordances" (and constrain those that make sense in context). This leads Mateas to a structural definition of agency:

Players will experience agency when there is a balance between the material and formal constraints. When the actions motivated by the formal constraints (affordances) via dramatic probability in the plot are commensurate with the material constraints (affordances) made available from the levels of spectacle, pattern, language and thought, then players will experience agency. An imbalance results in a decrease in agency.

This definition allows Mateas to make a clearer diagnosis of adventure game problems than Church. In the adventure genre there are typically many more material affordances than formal affordances — so there are many things to do, but no clear sense of why one action would be preferable to another. He also demonstrates that his approach to agency works even in games with limited stories. For example, the simple proto-plots of the pure first-person shooter genre (Mateas's example is *Quake*) establish the dramatic probabilities that (a) everything that moves will try to kill the player character, (b) the player should try to kill everything, and (c) the player should move through as many levels as possible. The available actions perfectly balance this, allowing players to move swiftly and smoothly, pick up a variety of weapons, and use them to produce

---

<sup>2</sup> Mateas is using the term *affordance* in the sense common in human-computer interaction, in which certain objects or interfaces not only make actions available but "cry out" for certain actions through their design. A common example is the handle of a teapot, which affords grasping with a hand.

satisfying, gory deaths. Nothing suggests stopping to talk with the monsters — and this is also not an available action.

With this approach Mateas gets at the crucial question of the player desires that agency makes it possible to satisfy. Just as Church points out that players of *Mario* don't wish to hollow out a cave and cook fish, Mateas generally suggests that games themselves excite (through dramatic probability and presenting materials for action) the desires that, when well-designed, they can satisfy through agency. Mateas's approach also makes it clear that story and agency are not in conflict. Rather, they are closely tied. Their apparent conflict comes from consistent attempts to marry stories that suggest certain dramatic probabilities with materials for action that are not commensurate (and often not in the same domain).

Of course, this second point also raises the question of how one might build an experience that provides materials for action commensurate with the dramatic probabilities of a serious interpersonal story. The remainder of Mateas's essay provides an answer, outlining the requirements for *Façade*, the game he and Andrew Stern completed over the following four years. These requirements range from believable computer-controlled characters (capable of making their internal states interpretable through performance) to a new approach to natural language understanding (to allow the player to take linguistic action in a manner balanced with the rest of the spectacle).

#### AGENCY AND SOFTWARE MODELS

The technical agenda Mateas outlines for *Façade* is quite different from a reimplementation of Joseph Weizenbaum's famous *Eliza*. This is despite the fact that *Eliza*, running its *Doctor* script, excels at suggesting dramatic probability (via audience expectations of Rogerian therapy) and providing seemingly-commensurate material for action (players may say anything they like about "their problems" via *Eliza*'s natural language interface). At least, at first — sometimes.

In his 2009 book *Expressive Processing* Noah Wardrip-Fruin argues that leveraging the widely-discussed "*Eliza* effect" — despite praise for *Eliza/Doctor* from Murray and others — is a deeply problematic direction for digital media [18]. The term "*Eliza* effect" is commonly used to name the not-uncommon illusion that a computer system is much more "intelligent" (complex and capable) than it is in reality. *Eliza/Doctor* itself is a useful example of the phenomenon. At times the illusion can be quite powerful, as seen in the famous conversation published by Weizenbaum [19]:

Well, my boyfriend made me come here.

YOUR BOYFRIEND MADE YOU COME HERE

He says I'm depressed much of the time.

I AM SORRY TO HEAR YOU ARE DEPRESSED

It's true. I am unhappy.

DO YOU THINK COMING HERE WILL HELP YOU NOT TO BE UNHAPPY

I need some help, that much seems certain.

But the illusion is also fragile, even when the player stays within the dramatically probable. For example, the player may inquire:

Can I ask you for help

Causing *Eliza/Doctor* to respond:

DO YOU WANT TO BE ABLE TO ASK I FOR HELP

Such fragility causes two problems in relation to agency. First, breakdowns damage the sense of dramatic probability in the situation. Second, they make the audience member question whether the materials presented for action (the whole of the English language, as invited by the open text field) can actually be used intentionally. As play continues it is revealed (as Lucy Suchman and others have discussed) that the *Eliza* effect works, for however long it works, because of the power of the initial expectations of the player, which are eventually too greatly violated. The illusion of agency is short lived.

The result, for some audience members, is to stop playing with *Eliza*. But others feel invited to play in a new way, discovering more about the system, and eventually coming to dialogue like this:

You are going to repeat what I say in the form of a question

WHAT MAKES YOU THINK I AM GOING TO REPEAT WHAT YOU SAY IN THE FORM OF A QUESTION

These players have discovered that *Eliza* is, at heart, a textual transformation device, turning each audience statement into a reply (either through substitution of a rote response or through selective re-use of the player's language). This is an experience of agency in relation to *Eliza* as a software toy, but not in relation to the fictional world of *Eliza/Doctor*. In other words, for the sorts of experiences that interest Murray, Church, and the authors of this paper, it is a dead end.

To create the phenomenon of player agency in relation to a fictional world it is necessary to suggest dramatically probable events, make material affordances available for taking those actions, and provide underlying system support for both the interpretation of those actions and the perceivable system response to those actions (which should preserve dramatic probabilities or suggest coherent new ones). In other words, agency requires the construction of a playable software model of the domain of the fictional world. This is why *Façade* must create deep artificial intelligence subsystems in areas such as believable

characters and natural language understanding, rather than simply build upon the *Eliza* effect. Such models can be quite abstract, as they are inevitably in most board games, but they must have a fundamental representational fit with their domain (and, as discussed below, their audience and interface). The alternative is to severely restrict interaction, which prevents breakdown — imagine an *Eliza* that only accepts yes/no responses — but also discards the basic goals served by designing toward agency.

But saying that agency requires a software model opens a further question. How does agency happen in relation to a software model? We continually experience how agency happens in relation to the everyday, physical world. But even in relation to the simple act of movement in *Mario*, or Laurel's proposed virtual reality trip to the moon, our agency is not supported the way that it is in the everyday physical world. Paul Dourish points this out [6]:

Even in an immersive virtual-reality environment, users are disconnected observers of a world they do not inhabit directly. They peer out at it, figure out what's going on, decide on some course of action, and enact it through the narrow interface of the keyboard or the dataglove, carefully monitoring the result to see if it turns out the way they expected. Our experience of the everyday world is not of that sort. There is no homunculus sitting inside our heads, staring out at the world through our eyes, enacting some plan of action by manipulating our hands, and checking carefully to make sure we don't overshoot when reaching for the coffee cup. We inhabit our bodies and they in turn inhabit the world, with seamless connections back and forth.

Similarly, the physical and social world supports and shapes our conversations with others continually. But in a game we may not know how to speak with characters, what statements might have an impact, or even if it is possible to speak — on a purely functional, rather than social, level. Given this, agency cannot simply happen by players feeling motivated to take certain actions, based on dramatic probability, and then working to take the actions via their knowledge of the everyday world. They must take action through the available interface material and in terms of the underlying software model.

Wardrip-Fruin's analysis of what he calls the "*SimCity* effect" offers an account of how this takes place. Just as with the experience of *Eliza*, playing *SimCity* begins with audience expectations. Rather than expectations of Rogerian therapy (dramatic possibilities) and free-form textual input (material for action), *SimCity* begins with expectations of city planning and the graphical user interface (a palette of icons, maps for information and icon placement, status messages, etc). As play begins, initial stages of agency are supported. The player takes action and

the system responds. But, crucially, a deeper support for agency is also developing.

The system obviously does not enable all the ways the player might imagine a city planner could act. For example, mixed-use development is impossible in the original *SimCity*. But this break from expectation is quite different from that experienced with the *Eliza* effect. Playing with *Eliza*, the initial impression encouraged by the *Doctor* character is eventually revealed as utterly removed from the internal system model. As this happens, the system ceases to operate as a representation of a fictional world. *Eliza/Doctor* stops seeming like a simulated therapist and instead seems like a textual transformation device.

On the other hand, the underlying model in *SimCity* is designed as a representation of a dynamic city — inspired in part by Jay Forrester's work on urban dynamics. While initial engagement with *SimCity* is based on player expectation, the elements presented on the surface have analogues within the internal processes and data. Successful play requires understanding how initial expectation differs from system operation, incrementally building a model of the system's internal processes based on experimentation. This is how agency happens.

Movement — as in the examples of Murray, Church, and Laurel — is simply a very minimal instance of this transition from initial expectation to operating in terms of a software model. In more complex cases (e.g., *SimCity* or *Façade*) the learning process is often ongoing during play and rarely fully complete (few players could reimplement the systems they implicitly understand through play). In fact, many players actively misunderstand aspects of games they play and their experience oscillates between agency and the illusion of agency (and even moments of minor breakdown) in very successful games. But the phenomenon of agency, however partial, grounds the success of these experiences.

## AGENCY AND INTERFACES

Expectation is also central to Steven Dow's empirical study of players in three versions of Mateas and Stern's *Façade* system [7]. One was the original desktop version of the game, another was the desktop version with voice controlled (rather than keyboard controlled) player dialogue, and the third was a fully-realized augmented reality (AR) version. The last of these had a physically constructed set, including furniture and props, onto which the *Façade* characters were projected via a head-mounted display, and with support for both spoken and bodily interaction. In other words, the AR version was perhaps the closest possible approximation of a "Holodeck" version of *Façade*.

As one would expect, this resulted in a greatly increased sense of presence for the players. In fact, in interviews after playing the AR version many players related the experience

to a real-life situation, rather than to experiences with games or other forms of media. For example:

*When you are standing in the room with a headset on and you are interacting with [Façade's characters]... it didn't feel like a video game as much as it felt like real life.*

However, this increased presence had the effect of leading players to have higher expectations for the experience and for their involvement with the characters. It was more difficult for players to successfully transition from their initial expectations to acting in terms supported by the underlying software model. In addition, the feeling of greater realism and consequence of action led to some players feeling less free to play — they felt more able to experiment via the mediated experience of the desktop.

Dow and his collaborators reached the unexpected conclusion that an increased sense of presence and realism can actually act to *decrease* agency. In addition to issues with AR and system expectation, they also found that voice-based interface came naturally, but dissatisfied the audience. The possibilities for voice interaction seemed endless, however the real constraints of interaction were hidden. Players found the keyboard-based interface *easier* to learn and use than the voice-based interface, because expectations were based on everyday computer interaction, rather than everyday face-to-face conversation.

At a time when the game industry is celebrating the “naturalness” of camera-based and voice-based interfaces — and in the context of ongoing assumptions that games should strive toward greater realism and sense of presence — these are striking and important results. If agency is a priority, we should employ interfaces and types of media abstraction that are appropriate to the audience expectations we wish to create. Given that we have not solved the problems of true artificial intelligence (for characters, worlds, or stories), our interfaces should not work to approximate the Holodeck. The robotics community raises a very related theoretical phenomenon — the “uncanny valley” — where people could respond negatively to robots that are near facsimiles of humans, but not quite (Mori, 2005).

Beyond the interface, Dow was also able to study how agency, the illusion of agency, and the breakdown of agency took place for *Façade* players, pointing toward important design lessons. The early “affinity game” section of *Façade* does a clear job of presenting players with dramatic probabilities — including the characters repeatedly placing players in situations that exercise social pressure to give simple answers and even explicitly take sides between the two characters. *Façade* also does a good job of coherently responding both to responses of the invited sort and (dramatically probable) attempts to change the subject. Some players expressed explicit appreciation for these moments, while others wished they could open these situations to nuance.

In either case, this made the affinity game section an important precursor to the later “therapy game.” Here the dramatic probabilities are not nearly as clearly articulated — and players felt uncertain what they could do to influence the situation. But, crucially, with agency having been established during the affinity game, they believed it was possible to have an impact. For example:

*I felt that I could do a lot. I just didn't know what...*

This did not necessarily diminish the experience for some players. Many continued to console, provoke, and otherwise engage *Façade*'s characters during the therapy game, even when their actions were not having an impact on the underlying model and not resulting in a meaningful response from the game. One could say this confirms the power of the *Eliza* effect as a primary design approach. We disagree. Rather, it shows that audience expectation is still active even after system understanding begins to develop. Agency becomes part of the expectation, so that even when agency is not occurring, the audience seeks it and can be more fully engaged than if the experience did not support agency at all. *Façade* is also designed so that play continues even when player attempts to exercise agency fail, continuing the fictional world and providing new opportunities for action, allowing both story-focused players and meta-players (those explicitly pushing the bounds of the system) space for experimentation. This type of design decision is discussed further in the next section.

## AGENCY AND IMPROVISATION

Wardrip-Fruin's *Expressive Processing* briefly discusses another issue related to agency — *improvisation* — that is also usefully developed by game designer Clint Hocking. Improvisation goes unmentioned by Murray and finds little room in Church's characterization of “accumulating goals, understanding the world, making a plan and then acting on it.” In response, Wardrip-Fruin [18] notes that

discussions of agency can fall into potentially misleading formulations in which player goals and plans appear to determine player actions. As discussed [earlier], such formulations have been severely critiqued in cognitive science and artificial intelligence by researchers such as Lucy Suchman and Philip Agre. As outlined in that context, it is important to remember that goals and plans are *resources* for action — which is fundamentally situated and improvisational. Reflecting back on personal experiences of playing a challenging game, in which things rarely go exactly as one plans, is another good reminder. In this vein, perhaps the best antidote to such misleading constructions of agency is *Pilgrim in the Microworld* by David Sudnow (1983), an account of learning to play *Breakout* for the Atari VCS.

Particularly useful is Sudnow's discussion of his experienced play style with *Breakout*, responding to unexpected events by "planfully improvising a route by turning what looked like a mistake into an alternative way to go" [17]. Sudnow writes of trying to perfect an opening strategy that would always lead to a "breakout" in the minimum number of moves. But with experience he came to "using the quick breakthrough strategy as a guiding policy ... learning to see promising destinations." Sudnow's book makes a narrative of the realization that plans are only one resource for the improvisational, embodied act of gameplay. Agency doesn't take place through executing plans, but while playing in often unpredictable environments, drawing on resources that operate at timescales ranging from physical entrainment in control systems (which players exercise more quickly than conscious thought could intervene) to the short- and long-term plans Church suggests.

Hocking's discussion of improvisation comes in the form of a 2009 Game Developers Conference talk titled "Fault Tolerance: From Intentionality To Improvisation" [9]. Responding to Church, he describes how we see something like planful improvisation in modern, big-budget games — and how we can design to support it — using his project *Far Cry 2* as a case study. Hocking describes an original goal of the game as supporting Church's notion of intentional play. Hocking's earlier extension of this was to suggest designing toward a balance between the "composition phase" of intentional player actions and the "execution phase." Too much emphasis on composition leads to puzzle-style experiences, while too much emphasis on execution leads to ride-like experiences, neither of which Hocking considers game-like.

The original design of *Far Cry 2* involved a number of features that would encourage players to carefully plan assaults that would result in the overall weakening of the forces they were fighting. But those features were dropped in development. Meanwhile, the importance of other features was becoming apparent. These features had the tendency to interrupt players while they were taking actions (e.g., rules for weapon jamming and malarial disorientation) and also to limit the consequences of failed actions (especially "buddies" that would assist the player at dire moments). Overall, Hocking speaks of having the game move progressively further from his original conception — and becoming a stronger game in the process.

His diagnosis is not that the game was moving away from intentional play, or toward an imbalance between composition and execution, but that it was developing a much shorter cycle between composition and execution than he had originally envisioned. Things would go wrong with player plans — as they do in most games — but the manner in which this would happen was shaped and somewhat guaranteed by the design team. At the same time, rather than having player plan failure result in kicking the player out of the game's fictional world (and to a load

screen) or even "saving" the player but making them try again (as in the 2008 version of *Prince of Persia*) the approach of *Far Cry 2*'s buddy system keeps the gameplay and the game's fictional world moving forward. The player is invited to form intentions based on the new situation (a brief composition phase) and then attempt to act on them (a brief execution phase) rather than try to execute the same failed plan, or another one, from the same point in the game world, again.

It will be interesting to see if others adopt design strategies along the lines of Hocking's. More generally, we should design playable experiences as though things won't go according to plan — and as though planning is only one resource for intelligent action, one facet of agency's intentional play. Shaping the improvisational space of play into an ongoing one, rather than one of interruption and reset, does seem likely to lead to more satisfying play experiences, in which the understanding needed for agency is developed more through encouragement to experimentation than punishment.

## DISCUSSION

In this paper we discuss agency as a phenomenon, involving both the game and the player, that occurs when the actions players desire are among those they can take *as supported by an underlying computational model*. In the preceding sections we have unpacked this description and traced some of the reflection on agency in the game scholarship and game design communities over the last twelve years, particularly as it relates to fictional worlds. Our purpose is not to argue for our definition of agency on theoretical grounds, but to show that it focuses attention on a number of key issues for the design and interpretation of playable media. In particular:

- Agency is not simply "free will" or "being able to do anything." It is interacting with a system that suggests possibilities through the representation of a fictional world and the presentation of a set of materials for action. Designing experiences toward the satisfactions of agency involves balancing the dramatic probabilities of the world with the actions it supports. In other words, the design task is to entice players to desires the game can satisfy — whether this is traveling across space, managing resources, engaging in battle, or making conversational moves.
- Supporting agency requires employing or crafting a computational model of the play domain suggested by the work's dramatic probabilities. Depending on an inappropriate or overly-simplified model leaves the designer with two choices: extremely constrained input (so that players are effectively not able to play) or breakdown as the work is unable to continue coherently suggesting dramatic probabilities and players lose faith in the materials provided for action.

- Players come to games with assumptions about the domain of play. To play successfully they must transition from their initial assumptions about this domain (e.g., movement or conversation) to an understanding, often largely implicit, of how it is supported by the software model. Because we do not have a “Holodeck” this will inevitably be different from how it is supported in the everyday world, though it may be quite close to the support found in other games (which also contribute to many players’ initial assumptions).
- Despite widespread belief that more immersive and realistic games are desirable, players having a greater sense that they are present in a real situation can be detrimental to agency. Player expectations of computational models are incorrectly signaled, creating a gulf compared with the actions and responses that are possible.
- Agency waxes and wanes during play, but players respond differently if the possibility of agency has already been established earlier in the experience. Further, even when players understand the computational model (and have the ability to operate the controls) of a game, actual play will not go according to the “plans” suggested in some discussions of agency. Rather, these plans will be only one resource in fundamentally improvisational play. Given this, designers may wish to craft play toward certain types of plan failure and consequences that do not terminate play but allow for the expression of ongoing intention in a continuing fictional world.

Our perspective differs from previous presentations of agency as an audience experience or structural property of works. This is perhaps controversial, but it enables certain important distinctions. Consider the problems with defining agency as an audience experience. Most notably, this leads to questions such as, “If a good designer can anticipate the options players will want, isn’t it easier to hand-code them than to build a software model of the play domain?” There are many variations on this question, but the extreme position reduces to something along these lines:

Imagine you are watching a video of a pre-recorded gameplay session, but you have a controller in your hand, you believe you are playing, and the pre-recorded player is doing everything you wish to do at exactly the moment you believe you are taking the action through the controller. Isn’t that agency?

In general, our concern is with creation and understanding of playable media. We believe this sort of argument, which rests the weight of the experience on limited, hard-coded options and/or the shallow and fragile *Eliza* effect, points toward the wrong directions in the design space. It also elides the actual workings of the computational system, which we believe deserve more consideration from game

scholars, rather than less. For these reasons, we discuss agency as a phenomenon involving game and player, distinguishing it from the illusion of agency (for players) and a purely structural view (which elides audience expectation and understanding).<sup>3</sup>

In some ways our approach might be seen as related to work around concepts such as “actor-network theory,” which do not reserve agency for human beings, but suggest that things are also actors [3, 4, 11]. It might also be seen as compatible with work around “activity theory,” which makes a similar move but does not view human and object agency as symmetrical, placing emphasis on the intention behind human agency [10]. However, making such mappings meaningful would require careful consideration of how the agency theorized by these communities (and others) in the everyday world is related to agency in the fictional microworlds of games and other forms of playable media (our topic).<sup>4</sup>

The first stages of that project are undertaken in complementary work by Fox Harrell and Jichen Zhu [8]. Like us, they reject naïve definitions of agency as “free will” or its equivalents and stress the importance of seeing both audience and system in a view of agency. However, they are particularly interested in differentiating models of agency that focus on the player’s actions as a character in a dramatic situation from those that do not — and are also interested in how game playing exists in the wider cultural world of players — leading to relatively little overlap in our discussions.

Finally, while discussions of agency have been primarily driven by those who hope to see games move into more ambitious domains (particularly in terms of story) our approach to agency may also clarify some of the fundamentally conservative tendencies in game creation. Given the importance of agency, and the necessity of a

---

<sup>3</sup> What we refer to as the “illusion of agency” is related to Esther MacCallum-Stewart and Justin Parsler’s concept of “illusory agency” [14]. They discuss game design techniques used in *Vampire: The Masquerade – Bloodlines* to suggest meaningful choice, or even small variations in choice, that boil down to binaries or non-choices. They suggest these still contribute to the enjoyment of play, though subversive play “would destroy the engagement of the game experience.” What their game example lacks is any area of actual agency related to the larger fiction, which is fixed.

<sup>4</sup> For example, Victor Kaptelinin and Bonnie Nardi define human agency as “the ability and the need to act” [10] — and we submit that both the meaning of *ability* and *need* would be quite different if used in reference to game worlds. Though games are certainly also part of the larger material and social worlds in which humans feel the ability and need to act.

computational model for agency to take place, it makes sense to focus gameplay on areas for which well-developed computational models are available, such as spatial movement and combat. Until the vocabulary of playable computational models is convincingly broadened, both independent and mainstream games that seek to create experiences of agency are unlikely to stray far from the fundamentals of their current ground.

## REFERENCES

1. Barrett, M. "Academic intent." *Electronic Book Review* 2004. Available at [www.electronicbookreview.com/thread/firstperson/transient](http://www.electronicbookreview.com/thread/firstperson/transient)
2. Buckles, M. A. "Interactive Fiction: The Computer Storygame 'Adventure,'" PhD dissertation, University of California, San Diego, 1985.
3. Callon, M. "Some elements of a sociology of translation: Domestication of the scallops and the fishermen of St Brieuc Bay," in John Law, ed. *Power, Action and Belief*, Routledge & Kegan Paul, London, 1986.
4. Callon, M. "The sociology of an actor-network: The case of the electric vehicle," in M. Callon, J. Law, & A. Rip. Houndmills, eds. *Mapping the Dynamics of Science and Technology*, Macmillan, London, 1986.
5. Church, D. "Formal Abstract Design Tools." *Game Developer Magazine*, August 1999.
6. Dourish, P. *Where the Action Is*. MIT Press, Cambridge MA, 2001.
7. Dow, S. Understanding "User Engagement in Immersive and Interactive Stories," Ph.D. dissertation, Georgia Institute of Technology, 2008.
8. Harrell, D. F. and Zhu, J. "Agency Play: Dimensions of Agency for Interactive Narrative Design," in Proceedings of the AAAI 2008 Spring Symposium on Interactive Narrative Technologies II, Stanford, CA, 2008, pp. 156-162.
9. Hocking, C. "Fault Tolerance: From Intentionality To Improvisation," Game Developers Conference (San Francisco, March 2009), 2009.
10. Kaptelinin, V. and Nardi, B. *Acting with Technology*. MIT Press, Cambridge MA, 2006.
11. Latour, B. *Science in Action: How to Follow Scientists and Engineers through Society*. Milton Keynes: Open University Press, 1987.
12. Laurel, B. *Computers as Theatre*. Addison-Wesley, Reading MA, 1991.
13. Laurel, B. "Towards the design of a computer-based interactive fantasy system," PhD dissertation, The Ohio State University, 1986.
14. MacCallum-Stewart, E. and Parsler, J. "Illusory Agency in *Vampire: The Masquerade – Bloodlines*," *Dichtung Digital* 2007. Available at [www.dichtung-digital.org/2007/maccallumstewart\\_parsler.htm](http://www.dichtung-digital.org/2007/maccallumstewart_parsler.htm).
15. Mateas, M. "A preliminary poetics for interactive drama and games," in *Digital Creativity*, vol 12, no. 3, 2001, pp. 140-152.
16. Murray, J. *Hamlet on the Holodeck*. Free Press, New York, 1997.
17. Sudnow, D. *Pilgrim in the Microworld*. Warner Books, New York, 1983.
18. Wardrip-Fruin, N. *Expressive Processing*. MIT Press, Cambridge MA, 2009.
19. Weizenbaum, J. "ELIZA—a computer program for the study of natural language communication between man and machine," in *Commun. ACM* 9, 1, 1966, pp. 36-45.