Improvisation and Performance as Models for Interacting with Stories

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Abstract. One common metaphor for Interactive Storytelling has been the notion of Interactive Dramas, in which players assume the first-person role of the main character in a digitally mediated narrative. In this paper we explore the model of improvisation as a means of understanding the relationship between the author/designer and the reader/player of such narratives. This model allows for a new formulation of the notion of agency, by shifting the concept of the reader from a player-centric model to a performer-centric model. We also show how we can conceive of interactions between performers and authors as being governed by the same rules that are in play between multiple performers in a piece of improvisational theatre. We connect this idea to a phenomenological theory of human computer interaction and cognition which foregrounds the role of communication and commitment between interactors.

Keywords: Agency, Improvisational Theatre, Drama, Performance, Interactive Narrative.

1 Introduction

One common metaphor for Interactive Storytelling has been the notion of Interactive Dramas, in which players assume the first-person role of the main character in a digitally mediated narrative. One of the earliest scholarly explorations of digitally mediated narratives is Laurel's *Computers as Theater,* in which she outlines a model for Interactive Narrative based on theatrical performance. [1] In this paper we explore the implications of using the model of improvisational theatre as a way to understand the relationship between the author/designer and the reader/player of such narratives. This model allows for a new formulation of the notion of agency, by shifting the concept of the reader from a player-centric model to a performer-centric model. We conceive of interactions between readers and authors as being a co-performance mediated by the computational system, and governed by some of the same rules that are in play between multiple performers in a piece of improvisational theatre. We connect this idea to a phenomenological theory of human computer interaction and cognition which foregrounds the role of communication and commitment between interactors.

2   Players and Performers

There are two distinct, and occasionally conflicting, notions about the interactor in Interactive Storytelling and Games research. The first is the notion of the interactor as a *Performer*. This view is evident in early theoretical works, as when Murray likened an interactor's participation in digital environments to improvisational theatre, folk dancing, and jazz in *Hamlet on the Holodeck.* [2] It is found in the work of Laurel and later in the work of Mateas, both of whom used theatre and drama as models for theories and prototypes of interactive stories that place the player in the first-person role of *performing* the main character [1, 3]. In this notion, there is an expectation that the interactor assume a role, engage in the narrative as a character, and *act* in what might be described as a *narratively salient* way. *Performers* in interactive drama are engaged in the act of constructing a story in collaboration with the designer of the system, and with any other performers, be they AI agents or other human participants.

The second is the notion of the interactor as *Player*. This framing of the role of the interactor figures prominently in the arguments surrounding ludology. Espen Aarseth writes:

> "In the adventure games where there is a conflict between narrative and ludic aesthetics, it is typically the simulation that, on its own, allows actions that the story prohibits, or which make the story break down. Players exploit this to invent strategies that make a mockery of the author's intentions."[4]

The idea of players "making a mockery" of an author's intentions is rooted in a common assumption about ludic play that presumes that players will place the pleasures associated with winning over the pleasure of story. An interactor behaving as a *Player* in this context is more interested in what he can **do to** the game world, rather than what he can **do with** the game world. In this notion, there is an expectation that the interactor will behave in a self-gratifying, pleasure-centric manner, subverting the story in his own quest to satisfy his desire for *Agency*.

2.1   Agency

Agency is a term that has been much used and abused in game studies. Murray describes it as one of the "core pleasures" of digital systems, defining it as the "satisfying power to take meaningful action and see the results of our decisions and choices". [2] It is around this notion that much of the debate surrounding the tension between the actions of the player and the control of the author has centred. In contemporary game design, agency is often interpreted to mean giving users the power to act without limitation or restriction. This notion might be better described as *unrestricted* or *true agency.* One of the goals of interactive narrative research is the quest to facilitate this *true agency* in a computational narrative environment, without sacrificing narrative coherence or quality. As a result, the extent to which an interactive narrative facilitates user agency is often one of the primary criteria for evaluating its success or failure. For all that discussion of agency and control has become commonplace in the field, Murray maintained that agency was *not* in conflict with authorial control, saying:

"There is a distinction between playing a creative role within an authored environment and having authorship of the environment itself. Certainly interactors can create aspects of digital stories in all these formats, with the greatest degree of creative authorship being over those environments that reflect the least amount of prescripting. But interactors can only act within the possibilities that have been established by the writing and programming."[2]

This suggests that the agency advocated by Murray is a *limited agency,* where the designer defines the parameters in which the user can take meaningful actions. One of the key ideas in the above quote is the idea that moving away from pre-scripted choices allows a greater degree of creative freedom. This idea has taken root in the Interactive Storytelling community, manifesting as systems designed to adapt and respond to user actions procedurally [5-10].

It can safely be said that the range of possible interactions with Interactive Narrative and Games is broad enough to encompass both of these approaches. We argue that there is equal pleasure to be had in either the performance of a role in an interactive story, or in the expression of agency in a virtual environment. These two modes of behaviour are not mutually exclusive, and most players of games oscillate between them as they play. That being said, evidence in both scholarly research and games would suggest that most designers create systems with the expectation that interactors will approach them from the perspective of *Players*, rather than *Performers*. There is an assumption that most players want unrestricted agency, and are willing to sacrifice narrative coherence in order to get it. The common corollary assumption about the player is that if given a choice between free exploration and structured (narratively salient) performance, she will inevitably tend toward free exploration. Many games are even designed to reinforce this notion, by rewarding actions such as breaking open every crate or destructible object in a room to get power-ups and other ludic incentives. As a result, we have created a *culture of players* in games, which makes constructing interactive dramas that rely on *performers* difficult. One solution that commonly occurs in Interactive Narrative systems is to develop a guidance strategy which finds a way to creatively limit the player's agency, while attempting to preserve the illusion of free will.

2.2 Expectations and Guidance Strategies

Guidance strategies manifest as the "rails" upon which players are steered in order to advance the story and are often sophisticated means of limiting the very player agency that designers assume will generate problematic situations in the narrative in the first place. Different theorists have proposed various approaches to this problem. Crawford argues that in order to balance the player's inclination to act without narrative intent and the designer's desire to tell a coherent story, the possible choices available to the player should be limited to only those choices which are narratively salient. He writes: "The storybuilder's most important task is creating and harmonizing a large set of dramatically significant, closely balanced choices for the player."[11] Other designers include various narrative "tricks" that enforce the author's intent without violating the rules of the fictive world or directly denying the player action. Riedl, Saretto, and Young describe this as a tension between *control* and *coherence*. Their *Mimesis* architecture uses a technique they describe as

Narrative Mediation to respond to unanticipated user activity in two possible ways: *accommodation* or *intervention*. *Accommodation* allows the user to act freely, and attempts to "re-plan" the narrative structure around the unexpected action. *Intervention* alters the user's action by "surreptitiously substituting an alternate set of effects". The example they provide is of a user placing a coin in a Soda Machine and ordering a soda. The coin is necessary for a later piece of the narrative, and so the machine refunds the coin and declares the soda to be "out of stock". [12] This is a form of *soft guidance*, in that it occurs within the fictive reality of the virtual world.

An alternative approach is to employ *hard guidance*. In the Soda Machine example, a hard guidance tactic might just prevent the player from interacting with the machine at all, perhaps including a piece of internal monologue from the character, such as "Nah, I'm not thirsty right now." Regardless of which form of guidance is used, the result is the same: limitation of player agency. The hard guidance example that we have given, however, goes even further in that it denies the possibility of the player and the character occupying the same conceptual space. By suggesting that the player's actions and the desires of the character are not in agreement, it enforces the notion that the player is merely *manipulating* an avatar, rather than *performing* a role.

The tendency to treat the interactor as a *Player* rather than a performer is quite common, especially in videogames, where play is the dominant interaction paradigm, but we contend that this is as much a result of the expectations and intentions of the *designers* of interactive experiences as it is the desires of *players*. While there is nothing inherently wrong with play as an interaction paradigm, it does place digital storytellers in a position where they must design *in spite* of the actions of their audience, rather than *in harmony* with them. In order to design an Interactive Narrative experience in which the goals of the player and the goals of the author are in harmony, it is useful to examine this other conception of the interactor: the interactor as *Performer*. There is some precedent for this approach: one of the most successful systems to emerge from scholarly research into Interactive Narrative, *Façade,* is built around Mateas's notion of Interactive Drama, in which the player assumes the role of one of the main characters in the story. [7] Mateas and Stern argue for the incorporation of natural language recognition into the interaction paradigm of games in order to diversify the palette of possible experiences available to players. Implicit in this argument is the notion of players being able to communicate with the system the way they would communicate with other players – a notion which is borne out in *Façade,* which rewards players for "being proactive and acting dramatically".[7]

3   Communication and Computational Systems

Winograd and Flores, in their 1986 book *Computers & Cognition,* discuss a new way of understanding both human and artificial intelligence[1]. Their central contention is that the goal of creating human-like artificial intelligence is hopelessly mired in a

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[1] The book is quite wide-ranging and thus it is hard to do justice in such a small space to the ideas it presents or the conclusions it reaches. We hope here to present a few salient ideas from the work without doing it a disservice by oversimplifying too much.

rationalistic worldview that reduces the complexities of lived experience to a set of objects, rules, and situations to be formalized and represented symbolically. They argue that this is not how people actually experience or act in the world, and put forth a phenomenological, Heideggerian notion of *being-in-the-world,* in which the majority of human action happens in a state of *throwness* which has no stable representation and is not amenable to logical reflection and symbolic manipulation.

> "[Computers designed based on rationalistic misconceptions] are restricted to representing knowledge as the acquisition and manipulation of facts, and communication as the transferring of information…[However,] computers are not only designed in language but are themselves equipment for language. They will not just reflect our understanding of language, but will at the same time create new possibilities for the speaking and listening that we do—for creating ourselves in language"[13]

They propose an alternative conception of artificial intelligence in which we recognize that all computational systems can truly do is reflect the intelligence of the people who designed them. Thus, the true potential for computers lies not in the mimicry or duplication of human intelligence but in the facilitation of human-to-human communication. To understand human communication and to expand on the idea of "creating ourselves in language", the authors turn to Speech Act Theory, which classifies "what people can do with language" by identifying the illocutionary point of speech acts, such as to make a request, to promise something, or to declare a fact Accomplishing such a dialogue relies on the idea of *commitment:* in the sense that both participants commit to enter into the conversation in good faith and also in the sense that they agree not to renege on any commitments made during the conversation. Crucially, these are commitments which are not just verbal and mental, but rather commitments to actions, positions and beliefs. Winograd and Flores hold that the ability to negotiate and commit to action via language is a key characteristic of humanity, and one which we cannot replicate via computers.

> "Once we recognize the machine as an intermediary, it becomes clear that the commitment inherent in the use of language is made by those who produce the system. In the absence of this perspective it becomes all too easy to make the dangerous mistake of interpreting the machine as making commitments, thereby concealing the source of the responsibility for what it does." [13]

To bring this notion of commitment and communication into the realm of Interactive Storytelling, the first step is to stop thinking about *the player* engaging with *the system*, and instead to focus on how *the author* and *the reader* communicate with each other via a computational medium. In addition to being a philosophical point, this has very basic, practical implications for how we discuss computational systems. The common use of language like "the computer decides to…" or "the system responds…" obscures the crucial fact that the system is not truly deciding or responding to anything; it is simply acting out the decisions and responses coded into it by the author or designer of the system. This may seem like sophistry, and it could be argued that such statements are simply shorthand for the intended meaning of "the system responds as it has been programmed to…" Winograd and Flores, however, argue persuasively for the power of language to shape, at a very basic level, how we

understand and experience the world, in which case the persistent use of language that over-attributes intelligence and commitment to computational systems can lead to people acting as if these characteristics actually applied. By talking about Interactive Narratives as a way for authors and readers to tell stories together, we can come to a different understanding of how to design such experiences.

4 Improvisation and Performative Knowledge

To accomplish this goal, we propose that the notion of player as Performer be explored more rigorously. This requires an investigation of the frameworks that have arisen in the performing arts, especially where improvisation is concerned. As is discussed in [1] and [14], improvisational theatre can be used as a metaphor for what Interactive Narrative designers would like to one day accomplish. Drama theorists Lockford and Pelias provide a good overview of performers and improvisers in their paper on *Bodily Poeticizing in Theatrical Improvisation: a Typology of Performative Knowledge*.

> "Improvisational moments are engaged through an ongoing process of negotiation and coordination, through a positioning and repositioning of performers and their characters...Adapting to emergent circumstances, these performers are called to be aware communicators who can draw upon their cognitive, affective, and intuitive abilities...in order to absorb interaction details, create characters, and establish relationships. Establishing a communicative connection they must listen to each other and adjust their thinking and behaviour accordingly. They must incorporate new information spontaneously while also keeping an eye on producing a coherent narrative."[15]

This description of improvisation incorporates vocabulary which should be familiar to researchers of Interactive Narrative. The highly contingent and emergent human process of improvisation is one which is done well only after years of training. It is not something that we have a clear formula for, even in human-to-human communication. Improvisation is a dialogue in which both participants must actively work to support and challenge each other, and if we are to take it as a model for Interactive Narrative systems, it is necessary that we recognise exactly how difficult a task it is. In the remainder of this paper, we examine how we might take the first steps in thinking about the design of Interactive Narrative from a performative standpoint.

4.1 Five Types of Performative Activities

Lockford and Pelias present what they describe as a "typology of performative knowledge". They identify five different types of knowledge that live performers draw on in improvisation: communication, playfulness, sedimentation, sensuality, and vulnerability. Lockford and Pelias consider knowledge to arise from the body as well as the mind, and this framework treats improvisation as both an aesthetic and an *epistemic* act. Their term for this process is *bodily poeticizing*, and they use it to encompass knowledge that is "intuitive, somatic, affective, and cognitive".[15] In Table 1 we present the key questions that they ask around each of the five types of performative knowledge.

Table 1. A Typology of Performative Knowledge [15]

Questions Asked of Performers
Communication
"Are the actors engaged in an ongoing process of negotiating and coordinating their characters and themselves through interaction? Do the actors seem connected, listening to and incorporating what each other is saying? Are they adjusting their thinking and action according to what they are hearing? Are they producing a coherent story?"
Playfulness
"Are the actors open to possibilities? Are they functioning with spontaneity and imagination? Are they playing with language? Are they recognizing linguistic and social constraints? Are they working within the limits of the given circumstances? Have the actors moved beyond established patterns to the 'intricacies' of the scene?"
Sedimentation
"Are the actors relying upon lifetime structures of learning? Are they trusting their bodies, following their impulses, paying attention to what feels right? Have they become reflective about their hidden, tacit knowledge? Have they considered the degree to which their sedimented behaviours match those of their characters?"
Sensuality
"Are the actors' senses alive, ready, actively engaged? Are the actors taking in what they need? Are the actors feeling with their bodies? Are they open to the pleasures of sensory response?"
Vulnerability
"Are the actors willing to put themselves at risk? Are they willing to make difficult situations work? When feeling vulnerable, do they have the ability to keep focus on what needs to be accomplished? Are the actors willing to trust one another?"

The questions asked in this model give rise to a number of related questions that can be asked of Interactive Narrative, since the concerns that Lockford and Pelias express around improvisation are also present in the discourse of Interactive Narrative studies. For example, the questions asked above about *communication* are similar to how the field discusses *interaction*. Crawford's model of interaction treats the phenomenon as a "dialog between two or more participants in which they alternately listen, think, and speak". [11] This type of formalized dialectical interaction is very similar to the improvisational process of making and receiving "offers" that occurs between two or more actors in a scene. It is also congruent with Winograd and Flores's treatment of communication between the designers of intelligent systems and their users.[13]

Similarly, the questions surrounding *playfulness* relate to the notion of working within constraints and limitations. Lockford and Pelias elaborate:

"To accomplish this playfulness, performers depend in part upon their ability to work within the inexhaustibility of language and to welcome its slippery excess...They know that even when choices are made, they are not the only choices available...At the same time, improvised moments also have boundaries to which the performer must be sensitive. Performers must follow linguistic rules, recognize theatrical conventions, and enact the given circumstances."[15]

This treatment of playfulness recalls Zimmerman's definition of play, which he describes as the "free space of movement with a more rigid structure". [16] Within improvisational theatre, a number of rules and formal systems exist to help structure the play between actors. These rules facilitate creativity, communication, and play within the scene rather than limiting it.

The questions surrounding *sedimentation* can help address the extent to which the performer's behaviours and the character's behaviours align. This is an important issue for Interactive Narrative as there is a delicate balance to be maintained between designing a character with a distinctive set of behaviours and personality traits and designing a character that gives players the opportunity to express themselves within the narrative. Pearce discusses how game characters have identities that are very different from the characters created in traditional linear narratives.

> "In typical narrative texts, both literary and cinematic, characters are central to the conflict. You cannot really imagine a story without characters. In a game, on the other hand, it is quite possible, and often desirable, to have a narrative with no 'characters' whatsoever…Games tend to favor abstracted personas over 'developed' characters with clear personalities and motivations. More abstracted characters leave more room for the player, and are therefore better suited to support a play-centric model." [17]

Presenting a player with an incomplete character invites her to fill in the gaps and allows her to perform the identity of the character however she sees fit. While this is one way to get character and player behaviour to align, it can also leave the player feeling at sea, without anything to base actions and decisions on aside from ludic concerns. Thinking about sedimentation can help in two ways: first, at the start of a narrative, playable characters can be incomplete but still contain sedimented clues about the character's imagined history. Second, sedimentation can occur over the course of the narrative arc. As the reader shares experiences with the characters, she begins to accumulate reasons for emotional attachment to them and investment in their story; this accumulation is the narrative equivalent to the lived process of sedimentation.

The idea of *sensuality* is perhaps the most difficult one to map onto Interactive Narrative. Until recently, Interactive Narrative systems and games were limited in their capacity to engage the interactor at a bodily level, and while recent phenomena such as the Nintendo Wii and the Sony EyeToy begin to show the potential of bodily interactions, the vast majority of interactive stories operate via more constrained interfaces. While many modern games are visually and even aurally engaging, the other senses are decidedly unused and in most cases the physicality of the interaction is limited to the fine motor skills involved in typing and button pushing. The exploration of alternative sensory experiences is an open and important research question. Finally, there is a connection between the notion of *vulnerability* and the simple process of "losing" or "dying". When a player fails a challenge in a game in a particularly irrevocable way, there is a moment of breakage: time must reset, a savegame must be loaded, the character must be resurrected, and the player must begin the task again. In this moment there is the possibility for learning and growth, but there is also possibility for frustration that might lead to the player putting the game down entirely.

5   Implementing the Performative Approach

The ideas of Lockford and Pelias provide a roadmap to follow when thinking about performative interaction, and in the next section we discuss how their questions can be adapted to specifically deal with the design of Interactive Narrative experiences. We believe that designing with these questions in mind will have a couple key effects on the experience of narrative. One is that designers will have to think critically about what it means to have a player *perform* in the story and what might be entailed in training players to do so. Second, a performative approach allows us to reconsider the notion of agency. Considering Lockford & Pelias's questions from a perspective of Interactive Narrative research, they highlight an aspect of interaction that often goes overlooked. This is the notion of trust between actors (or interactors), or what Winograd and Flores term *commitment*. In improvisation there is an explicit *social contract* between the participants in a scene. Each actor knows that she is responsible for making the other actors in the scene look good, or not. In order to improvise freely she must trust her partners to not make her look bad, and she must endeavour not to damage them in turn. In a computationally mediated interaction, there is less of an understanding of this social contract but it does not make it any less necessary. Designers of Interactive Narratives need to be able to trust their readers to engage with the experience in a manner that is friendly to the creation of a shared story, and readers of Interactive Narratives need to trust the storyteller to provide them with opportunities to express themselves within the context of narratively appropriate actions. The lack of discussion of this contract between performers in the field has resulted in narratives and games which are designed to "correct" for "unwanted" interactor behaviours rather than ones that encourage interactors to learn to participate in narratively salient ways.

We discussed above a few of the connections between Lockford and Pelias's typology and the discourse surrounding Interactive Narrative. Much of their model remains inaccessible to designers of Interactive Narratives; it is rooted in bodily experiences that don't readily translate into Interactive Narrative and Games. Moreover, theories of improvisation between human participants are able to assume approximately similar capabilities between all participants, whereas Interactive Narrative designers must consider the capabilities of the human interactors versus the level of responsive interaction that can be programmed into the system. In Table 2 we propose a number of questions that might be asked of the participants in an Interactive Narrative system, should we chose to regard it as a performance co-produced by an author and an interactor, mediated by a computational system. Lockford and Pelias's model is designed to diagnose improvisational scenes in order to determine whether or not the performers are succeeding at achieving a *known* correct state. Where their questions are *prescriptive*, and lead to a desired ideal performance, our questions are *analytical*, and are intended to explore issues of performance and improvisation in Interactive Narrative systems.

Table 2. Performative Knowledge for Interactive Narrative

Author	Interactor
Communication	
Does the author communicate narrative information clearly to the interactor? Does the author provide the interactor incentive to behave in a meaningful way? Does the author provide tools for clear and consistent communication? Does the author adjust the story in response to the actions of the interactor?	Does the interactor communicate clearly and consistently? Does the interactor behave in a way that is meaningful? Does the interactor understand the impact of her behaviour on the story? Does the interactor feel any sense of ownership or responsibility to the story?
Playfulness	
Does the author provide a range of meaningful possibilities to the interactor? Is there a coherent framework to restrict interactor actions?	Does the interactor explore various approaches to different situations? Does the interactor test the limits of provided boundaries?
Sedimentation	
Does the author allow the system to learn about the interactor over time? Does the story develop emergent behaviours and characteristics as a result of its history?	Does the interactor grow attached to the narrative over time? Does the interactor's personal history affect her experience and behaviour in the story?
Sensuality	
What "senses" does the author have available to tell their story? What role do these senses play in the response to the interactor?	How many of the interactor's senses might be employed to engage with the story? Does interaction trigger visceral or instinctive responses in the interactor?
Vulnerability	
What happens when the story "breaks"? Can it break in interesting ways? Is there potential for unexpected behaviour? Does the author expect the interactor to attempt to break it? How does the story recover from unexpected occurrences?	Does the interactor attempt to break the story? Is breaking the story a way for the interactor to achieve strategic gain, or enhance the quality of the narrative? Does the interactor receive any incentive for *not* breaking the story, or for performing within the expectations of the author?

5.1   Training Players as Performers

The example of improvisational theatre provides designers and theorists of Interactive Narratives with a valuable perspective for thinking about the identity of the interactor and the role of the author. If we think about Interactive Narratives as *computationally mediated performances,* we can begin to consider how to build narrative experiences that support the interactor in her role as a performer. This perspective also demands that we think about the way we manage the expectations of the interactor at a conceptual level. As discussed earlier, many existing works sidestep this issue by assuming that interactors are *not* going to treat the experience as a performance. This

is the equivalent of expecting one of the performers in an improvised scene to run around knocking over the scenery and throwing things at the audience. While that one actor may have an enjoyable time, she is not engaging in the project of creating a story with other actors.

It is not enough to simply say that interactors are now performers; we must take a cue from the explicit contract between actors in improvisation and design experiences that facilitate and encourage interactive performance as its own form of play. This does not necessarily come at the cost of ludic play—one of the five types of performative knowledge is playfulness, after all—however, it does require a shift in the relationship between play and agency. It also requires a transformation of techniques from improvisation and performance into techniques that can function in a computationally mediated performance. In order to treat the interactor as a performer, it is necessary to recognize that performing in any context is a specialized skill that is learned over time, and not an intuitive ability that every interactor may draw upon. In fact, Winograd and Flores say that even within everyday conversation, which most humans are perfectly adept at, there is still an advantage to be gained from explicitly studying and understanding the mechanisms governing the interaction in order to gain "communicative competence".

> "Communicative competence means the capacity to express one's intentions and take responsibilities in the networks of commitments that utterances and their interpretations bring to the world. In their day-to-day being, people are generally not aware of what they are doing….Consequently, there exists a domain for education in communicative competence: the fundamental relationships between language and successful action. People's conscious knowledge of their participation in the network of commitment can be reinforced and developed, improving their capacity to act in the domain of language. [13]"

Within improvisational theatre this notion of communicative competence is critical to the construction of a scene; actors spend years learning to clearly communicate with each other. While we do not propose that interactors within an Interactive Narrative should spend years training in improvisational theatre before they are allowed to enjoy a good interactive story, we do believe that it would be valuable to incorporate certain ideas from improvisational theatre into the culture of interaction with digital stories and into the design of these same experiences. Certain notions from improvisational theatre have value for designers and participants in interactive narratives: the notion of giving and accepting improvisational offers, the notion of an explicit contract between the participants, and the idea that every participant is responsible for the ultimate quality of the scene. These can all be used to inform Interactive Narrative design.

In order to design an interactive story that emerges out the contributions of both the author and the interactor it is necessary to imagine new ways of training the interactor in how to perform within the system. To a certain extent, many games already do this via extensive training levels, or ongoing training throughout the game. In the same way that we do not expect players of games to arrive knowing the specifics of the control scheme, or the game mechanics, we should not expect them to know how to communicate narrative meaning within the story. Instead of expecting interactors to

perform in a way that instinctively expresses narrative desire, or attempting to infer narrative desire from any and all interactor choices, we should explore techniques for training interactors in the specifics of a given narrative. In order for player's actions within a game to be of narrative significance, there needs to be a clear schema in place that maps interactor choices to story meaning. This schema needs to be explicit; it needs to be clearly communicated to the interactor so that she may master the manipulation of it in the same way that she masters the navigation of the space. In other words, it is necessary for interactors to build a communicative competence in their interactions with digitally mediated narratives. This need for communicative competence is equally important in the authoring and design of these narrative experiences; if the author is unable to communicate clearly with the interactor via the medium of the system, then the system requires reconsideration.

5.2   Reframing Agency

Re-framing of the identity of both the author and the interactor as performers engaged in co-creating a story helps us take a new perspective on the tension between narrative coherence (often described in terms of authorial control) and player agency. This tension can be traced to an implied hierarchy in the relationship between the designer of the story and the interactor. There is a sense that when a designer asserts something about the narrative, this assertion must come at the expense of the freedom of the interactor to choose for herself how the narrative should play out. In improvisational theatre, on the other hand, both actors are making assertions about the story in the form of dramatic offers. It is considered a violation of the rules of improvisational theatre to deny a dramatic offer, thus preventing either participant from denying the actions of the other. For instance, if Alan says to Barry "I heard about your dog's death...I'm so sorry," it would be a violation of the rules, and of Alan's trust, if Barry were to reply: "What are you talking about? I don't have a dog." By denying Alan's offer, Barry has not only made his co-actor look bad, he has also broken the narrative momentum of the scene. This denial of an offer is the improvisational equivalent of the guidance strategies described above in which the player attempts to buy a soda from a vending machine, only to be told (in one way or another) that she cannot get a soda from the machine.

If we can conceive of the relationship between the author and the interactor as one of equal participants in an improvisation, then the issue of interactor *agency* becomes one of performer *responsibilities*. From this perspective, each participant has a responsibility to accept the dramatic offers given by the other, and each has equal responsibility to the ultimate meaning of the narrative. In order for this performative dialogue to work, the author must design the system to be able to co-perform with the interactor. In improvisational theatre it is each actor's responsibility to make the others look good for the audience. The unfortunate corollary to this is that any one actor can easily make the other performers look bad. The contract between actors in this situation recognises the fact that all of the performers have a responsibility to the overall quality of the experience. This is similar to the notion of shared responsibility to the quality of a conversation described by Chris Crawford in his discussion of interactivity. [11]

6 Conclusion

Presently, very few games succeed at engaging the player in interactions at the narrative level. The current paradigm of interactive experiences has an implicit bias towards ludic exploration, rather than dramatic performance. One consequence of this is that a disproportionate value has been placed on *player agency*, with little attention given to how agency operates in improvisational performance. Given that improvisation and drama are both commonly used as models for Interactive Narrative, it seems only reasonable that contemporary theory from theater and drama be explored for its relevance to the task of designing Interactive Narrative systems. To this end we have adapted a model from improvisational theater to demonstrate how performance might be used as a lens for the design of Interactive Dramas. Implementation of this new model requires several significant conceptual shifts away from current theory and practice surrounding games. First, it is necessary to design systems that can train and guide interactors in how to perform within them. Second, it is necessary to reframe *agency* as a shared property of all participants in an interactive drama.

Central to this argument is the notion of the system as an *intermediary* between the author and the interactor, rather than as an autonomous entity. This idea has its roots in foundational work on cognition and intelligent systems. By considering storytelling systems as *communication channels* between authors/designers and performers, rather than as artifacts, it becomes possible to consider interactive narrative as a co-performance. This is a significant conceptual shift away from current theories of interaction and narrative that hold them to be in tension with each other. Winograd and Flores hold that the choice of language used to describe a phenomenon has an impact on our understanding of that phenomenon. We contend that this is true for the theory surrounding interaction with digital stories. In this paper we argue for a shift in the language surrounding Interactive Narratives, and a corollary shift in the underlying conceptual frameworks that guide the efforts of designers and theorists. While many of the challenges facing the field remain technological ones, we see much to be gained by clarifying and explicating the conceptual territory from which these artifacts and experiences will emerge.

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