

Interactivity and Narrative: A Discussion with Chris Crawford

by
[Mark Barrett](#)

In August, 1999, Chris Crawford moderated a multi-threaded online discussion titled “Games as Narrative” on the eyebeam.org/replay site. [The site has been updated and no longer seems to contain the content from that event.] In a thread titled “Interactivity and Narrative,” I attempted to post a message in reply to Chris’s opening salvo, but the form handler clipped my response. To clarify my truncated position I sent a copy of the response to Chris directly, and the following exchange of e-mails was the result. The first post is Chris’s original post from the “Interactivity and Narrative” thread. – *MB*

Chris Crawford
8/3/99

Interactivity and narrative

Perhaps I can foment some unrest here -- but with an assertion, not a question. I noted in your early definitions of the topic, Eric, a reference to the difficulty of reconciling interactivity with narrative. This is a commonly held belief, and one that I reject. Hence, explaining why I reject it should trigger some responses.

The basis of this falsehood is the belief that any purposeful action on the part of the user is likely to interfere with the pre-planned plot. What if our user decides, as Luke Skywalker, not to go after the missing droid and goof around at home instead? What if Macbeth decides that his wife is a nagging shrew and bumps HER off instead of the king? There went your best-laid plot.

The error here lies in identifying one particular plot with narrative in general. Yes, if Macbeth bumps off Lady Macbeth, then the result isn't Shakespeare's "Macbeth" -- but does that mean that it's ruined? There are countless variations on the basic storyline that remain true to the overall theme.

This does not mean that we must permit dramatically destructive behavior on the part of the user. Giving him choices doesn't require us to give him stupid or boring choices. We can still confine him to dramatically interesting options.

The general solution to the problem is to move the storytelling up to a higher level of abstraction. Come now, does anybody here believe that there really was a kid named Luke Skywalker who lived a long time ago in a galaxy far, far away? Who cares about the details of that story? What's important in it are the themes of a boy facing manhood, relationships with father, and so on -- and those themes don't specify any details.

My favorite analogy here is a reference to two kinds of religious belief. Most religions expound the principle of an omnipotent god -- but exactly how does that omnipotence manifest itself? One approach asserts god's direct and explicit control over every event in the universe. The motion of every atom, the path of every raindrop, the ruffling of every feather -- these things all take place only at the direct and explicit command of the deity. What a busybody he must be! What a boring and frenetic existence he must endure! The other approach declares that god rules the universe through the indirect application of certain universal laws. God declares, "Let there be physics!", and everything is thereafter handled automatically. God is the watchmaker, but the watch runs by itself.

Now, the first point of view runs afoul of free will. If god commands our every thought, then how can we accept responsibility for our actions? God made us do it! The second point of view doesn't completely resolve the question, but it at least allows us to argue that free will lies hidden somewhere in those laws of physics.

This analogy is a lot closer to our problem than you might at first think, because interactivity really depends on the making of choices by the user, which in turn requires the exercise of -- free will! In other words, the creator of an interactive storyworld is the omnipotent god of that storyworld, exercising complete control over its development. If, in your role as such a god, you insist upon controlling every little event, upon treating your user as a puppet dancing under your strings, then, yes, there won't be any interactivity -- and you'll be overwhelmed with a myriad of trivial details to decide. If, on the other hand, you step back a level of abstraction, and create the dramatic "laws of physics" that control your dramatic universe, then you can afford to grant your users some free will, and at the same time not be swamped with all those petty details. The cost of this, of course, is that you must think about the problem at a higher level of abstraction.

Are you wise enough to perceive drama in such abstract terms?

To: Chris Crawford
From: Mark Barrett
8/7/99

Chris, I'll see your unrest, and raise you a live hand grenade....

You reject Eric's reference to the difficulty of reconciling interactivity with narrative. That's fine, but we've been down this road too many times. Clearly, you and Eric do not

mean exactly the same thing when you use the terms ‘interactivity’ and ‘narrative’, and it’s equally clear that discussions based on shaky ground such as this cannot be, and have not been, fruitful. (To the extent that they have provided interesting intellectual pursuits, I have enjoyed them as well. But they have produced no demonstrations of craft. None.)

But I’m not blaming you, or Eric, or anybody for this. There are mindsets - entrenched almost to the point of genetic certainty - which are steering these issues, even after so much deliberation. Specifically, it seems impossible to discuss the idea of “interactive storytelling” (whatever that means) without the issue of linearity rearing its ugly head. But is linearity even really at issue when we’re talking about interactive narratives? Do we even need to address it head-on, voting up or down on its inclusion in our new medium?

I would argue that we do not. Passive narratives in film, theater and fiction are completely linear in construct, but that fact is not what should concern us. What should concern us is that in passive forms, the linearity of the narrative determined by the author is intended to match, exactly, the narrative experience of the audience. There is no leeway. But this implicit connection - that the narrative experience of an audience can only be determined by authorial control - is false, and demonstrably so.

If you and I get in a beat-up old Cadillac and start road-tripping through the Cascades, turning left, right, or plowing straight ahead at any intersection based on a roll of dice, we are engaging in an activity which has almost no script, and no authorial control. However, when we are done with the trip, it will be the case that each of us will be able to relate the sum total of our experiences in a narrative fashion. “We went here,” we will say, “and we did this, and then this happened to us, then we wrecked the Caddy, and it snowed, etc., etc.” We will, you and I, speak of our journey as a completely linear narrative experience, despite the fact that it springs from a completely unscripted process.

In my opinion, this is the way in to the medium of interactive storytelling, and I will expand on this momentarily. I want to be clear, though, that I believe all other attempts to adapt passive narrative forms to interactivity are probably doomed to failure. From the point of view of interactivity, debates revolving around the various strengths of the different passive mediums are pointless, because there is zero difference between these approaches. It doesn’t matter if you’re into theater, or fiction, or movies - if you’re adapting a passive form in any way to the interactive medium, you are enslaving yourself to obligations which you will not be able to meet.

A specific example here involves the Erasmatron, which I have told you I have doubts about, but which I am still not prepared to say is unworkable. In the Erasmatron you have made a specific decision which makes success as difficult as possible for you, and that decision is the use of written language as a central part of the player’s experience. This inclusion of written language is a direct connection with the passive medium of Literature, and it obligates you to meet all of the responsibilities of that medium as well. Because you are using on-screen words in a narrative context, you are obliged to provide the kind of nuance that the player would expect to find in an authorially-controlled

narrative. Yet at the same time you must allow opportunity for choice. But how to do this without preparing each path - and wouldn't that be branching by any other name?

In your opening piece you say, "If, in your role as such a god, you insist upon controlling every little event, upon treating your user as a puppet dancing under your strings, then, yes, there won't be any interactivity -- and you'll be overwhelmed with a myriad of trivial details to decide." I would agree with this. But I would also argue that your choice to use written language in the Erasmatron obligates your storytelling engine, by the very nature of language, and the audience's sophisticated use of it, to the handling of "myriad trivial details."

Now contrast your use of language in the Erasmatron with our imaginary road trip. What if we don't use any language at all? What if we never speak to each other, or to anyone else? Will this negate our potential retrospective narrative experience, which is simply our recitation of the sum total of events we experienced along the way? I don't think so. I think, in fact, that the unavailability of language will not damage our trip to any great extent (as long as we don't predicate its success on things like lively debate).

You also say, "If, on the other hand, you step back a level of abstraction, and create the dramatic 'laws of physics' that control your dramatic universe, then you can afford to grant your users some free will, and at the same time not be swamped with all those petty details. The cost of this, of course, is that you must think about the problem at a higher level of abstraction. Are you wise enough to perceive drama in such abstract terms?"

I agree with this as well, but my question to you is, are we wise enough to shed the trappings of passive mediums? Are we really ready to blow away - completely - this idea that the audience's experience must necessarily relate in a close way to orchestrations of plot and character? Do we recognize that pulling back to a higher level of abstraction means that we cannot do some of the most basic things we've done in the past, like use the written word to convey our interactive narratives to the player?

I said above that I'd expand on the idea that there is a way in. Simply put, I believe that the atomic matter of interactive stories is all around us, but that it has not yet been harnessed correctly. As pioneers, we need always to be looking for ways in which we can provide potential moments which the audience will themselves turn into a narrative experience. Examples of this, small though they may be, are everywhere: when you play Quake and make a tactical decision that saves your ass; when you dogfight in a flight sim; when you tinker with one of Will Wright's toys. In all cases you, the player, are going to relate your activity in a linear narrative form, even though the specifics of the experience were not scripted by the designers.

You may be wondering how this is this different from what you're attempting with the Erasmatron. In the Erasmatron, you are trying to keep track of, and make continuous, a narrative thread involving characters and plots. You are doing this on the fly, and in so doing trying very much to replicate a compelling passive narrative experience. In

contrast, my examples are about moments in which a set of conditions evokes an emotional response because of the context of those conditions. There is no expectation that a narrative thread will exist, or be maintained - and yet the player comes away with their own narrative experience when viewed after the fact.

These moments - these self-determined moments - are what we are looking for. Yes, we have to learn how to provide emotionally engaging contexts for the player's actions, and how to handle characters and language in this pursuit, but I am convinced that these are our building blocks. We must, as designers of interactive narratives, always have our eye on the idea of a narrative experience as something the player will tell in retrospect, and not on the idea of a linear narrative which the player will experience as it plays out.

A personal note: I'm using the Erasmatron to make these points because I have experienced it. I'm not trying to beat up on you, and I could just as easily reference a number of storytelling engines. I agree wholeheartedly with your summation of your latest conference, regarding the frustrating issue of fighting the same old battles again and again. Unlike you, however, I am too impatient to wait for others to wade through these swamps at their own speed. It's time to start swinging a hammer and break things....

Mark

To: Mark Barrett
From: Chris Crawford
8/8/99

Mark, that was a good essay. The reason you could not post it is that most web browsers can't handle large chunks of uploaded text from html. They warned us about that problem, telling us to keep our posts short. For some inexplicable reason they failed to mention this to the public. If you break your post up into parts, it will upload just fine.

I agree with most of what you say. I will respond on only the most interesting material: the parts where we disagree. First, I interpreted your comments on the use of text in a manner that left me agog at their implication. If I am not to use text, then how am I to communicate with my users? With a blank screen? I have to use *some* medium to tell the user how the experience is developing. What should that medium be? Animation? Video? Graphical imagery? I can assure you, each of those forms is even more difficult to implement than the text. What does that leave us?

Second, I inferred a tendency towards simulation in your reasoning. You seem to be saying, let's just set up a dramatic universe and let the user ramble through it. Yes, I agree wholeheartedly with that; indeed, I refer to the output of the Erasmatron as a "storyworld" rather than an "interactive story" or some such. I caution, however, that this storyworld

must be a ***dramatic*** simulation rather than a ***physical*** simulation. And that is what the Erasmatron is designed to build.

Lastly, I'm having trouble hoisting aboard your notion of a story that is perceived after the experience but not during the experience. I can't see what advantage retrospection would provide. I can certainly agree that we don't want to plan the story before the experience -- that's what creates conflict between narrative and interactivity. So perhaps some clarification on the temporal segregation of the story experience would help here.

Chris

To: Chris Crawford
From: Mark Barrett
8/10/99

Chris, your comments and questions are in italics, and my responses follow.

First, I interpreted your comments on the use of text in a manner that left me agog at their implication.

I agree that the implications are severe. As someone who's made his living creating emotional involvement principally through the use of text and language, I'm particularly unhappy at having reached this conclusion. I've tried every way I can to navigate around this dead-end, but I can find no way past what I believe is an essential truth: the audience's awareness of, and facility with, language, is better than anything we can replicate with a computer, no matter how clever we are in design and implementation.

The effect of this conclusion is that, in order to make our works support suspension of disbelief, we either have to wholly script the use of language, or we have to omit the use of language as part of the interactive process. I am aware that this assertion runs fully counter to the underpinnings of the Erasmatron, and any other story engine attempting to harness text to the process of interactivity. I'm not happy about *that*, either.

Having said that, I am still not ready to declare the Erasmatron and others engines of the kind unworkable. It may be that we can mold language - itself an incredibly adaptable medium of expression - to the process of interactivity. The current problem the Erasmatron has is that it essentially tries to replicate the passive literary experience of the novel by using text as the conduit for everything from plot to dialogue to mood. This immediately causes the audience to have an expectation that the Erasmatron will be able to deliver a rich linguistic experience while simultaneously providing interactive participation, and that is a combination I don't think anyone can pull off.

However, my doubts about the utility of text don't necessarily hold if the replication of a novelistic experience is abandoned. Perhaps a fundamental change in the conception of

the way in which language should be used to convey a narrative experience could lead to something akin to a poetic use of language, or even something more avant-garde - and who's to say that such an experience could not be compelling?

On another tack, maybe someone will figure out the right relationship between imagery, sound, and text, and they'll be able to come up with a set of techniques specific to the Erasmatron which does create a seamless narrative experience of some kind. It may be more like a comic book than a novel, but if it allows for interactivity then I would deem it a very real success.

If forced to choose I would favor this latter approach primarily because the Erasmatron is not a pure story simulator, and you have not held it out as such. You allow for a good deal of scripting in the text which is displayed, and you also allow the storyteller to limit the possible player choices, further constraining the burden on the engine. Because your design implicitly calls for this kind of authorial involvement it may be possible to come up with a strict set of techniques for the way text/language is handled (focusing on supportive points of view especially, as I noted in my comments on the Erasmatron some months ago) which allow you to successfully introduce interactivity. My greatest concern is that you may be forced to restrict so much of the engine's functionality, and/or be required to script so much of the text, as to essentially reduce the Erasmatron to a branching mechanism which then becomes apparent to the player.

If I am not to use text, then how am I to communicate with my users? With a blank screen?

I think it's important here to distinguish between the use of text as a means of communication with the user, and the use of text as the mechanism of interactivity. Suppose I make a graphical game in which the player explores a simulated expanse of fictional terrain in both time and distance. Not only can the player wander the map, but they can also travel forward and backward in time to see how the terrain formed, or what the terrain will look like in the future after heavy rains or a drought. In this instance I can use text to display the time of day and the date on-screen and there's no risk that the use of text will fail to provide all the information that the player expects, or that it will provide it in a manner which destroys the player's imaginative involvement.

Taking this a step further, I could also see how a game like chess, or something involving combat between two races of creatures, could be seamlessly commented with on-screen text, providing the player, again, with information tied directly to the events that are being depicted. Theoretically, you might even be able to use text to reliably comment upon the thoughts of an on-screen character, but I'm not certain of this. (Note again how this commenting via text is directly related to point of view. A mishandling of text in relation to the authorial or player point of view will be as damaging to the player's experience as anything else.)

In any case, the key in all this is that the text is simply delivering information about the state of the game, and the player has no expectation either that the text itself will become

the means by which the player engages in interactive play, or that the text is the vehicle through which the work is primarily experienced. This contrasts sharply with the Erasmatron in three important ways.

First, you use on-screen text as the mechanism of interactivity by which the player makes choices. This bi-directional use of text immediately brings with it a crushing obligation that the computational aspects of the engine (and any engine that I can imagine) simply cannot handle. Again, because the Erasmatron is replicating a literary experience, the user is going to approach the storyworlds expecting that same kind of seamless and powerful use of language. I can't imagine any way in which a computer can introduce interactivity via algorithms while maintaining this replicative illusion.

Second, you use on-screen text to express the thoughts and feelings of the characters within the story, both through interior monologue and through dialogue between characters. This use of text to convey dialogue is probably the most difficult thing I can imagine trying to do using language on a computer, because even the simplest dialogue is full of incredibly complex nuance and meaning, which even the most unread user is expecting, and will notice if it is missing.

Third, you use on-screen text for all of the author-to-player communication such as setting, mood, point of view and exposition. Again, that's a replication of a literary form - the novel - and anybody who's read a few books is going to feel that you are bound by that standard of craft. Even if you say, "Hey - I'm adding interactivity!" it does not release you from the audience's expectation regarding the use of text and language.

To tie all this together and come at it from another direction, I would simply say that the problem with the Erasmatron, and with all other approaches which essentially replicate a passive narrative form, is that while it takes the correct step of abstracting some parts of the process, it does not - and cannot, to my mind - abstract every part. The weak link in the chain for the Erasmatron is the use of text, which you have not abstracted. (One of the two hopes for the Erasmatron's eventual success which I mentioned above is directly tied to the idea of further abstracting the use of text and language.)

*I have to use *some* medium to tell the user how the experience is developing.*

When I read this sentence it brought two thoughts to mind. First, when you say "some medium" it sounds as if you already have a pre-defined list of choices you expect to choose from. Indeed, you mentioned several of these in the next sentence (which I address on another point below) as animation, video and graphical imagery.

In reply I would say we must push beyond even these forms, grappling instead with the most basic building blocks of communication: sound and image (which may include text). How can we use any of the various ways of communicating via sounds and images - both of which a computer can deliver - in furtherance of our goal of interactive storytelling? *That's* the level of abstraction I think we need to start from. And the greatest advantage in this one proposition is that it allows us to organically build *upon*

interactivity, instead of trying to fit narrative structures to it, like a façade.

Second, you say you want to “tell the user how the experience is developing.” That’s interesting to me because it echoes my point above, that text can reliably be used to report many states of many different imaginary interactive experiences. This is markedly different, however - as I also note - from making text the medium of interactivity itself.

What should that medium be? Animation? Video? Graphical imagery? I can assure you, each of those forms is even more difficult to implement than the text.

I agree that as fully-implemented mediums the task of bending these choices to interactivity is even more problematic than that faced with text, at least on a production level, if not on a design level as well. But I reject the idea of using any one of these singular approaches. My objective is not to adapt, or to do anything else which is remotely equivalent to a top-down process, but instead to build from the bottom up. My objective is to find bedrock, however deep I must go, upon which a new set of interconnected techniques can be sturdily planted.

A specific note about visuals also seems important here. The old saw that “A picture is worth a thousand words”, is important to us not because an image is going to save us a thousand words, but because the image can act as an abstraction of a thousand words. For every player who views that image, we get to substitute their own imaginative interpretation for our specific thousand words, and that seems of tremendous benefit. (Though this is the reverse of the process of abstracting language which I said above might be a possible salvation for the Erasmatron, the goal reached is the same. In each case text becomes less concrete and the player fills in the gaps with their own imagination.)

What does that leave us?

What it leaves us with is a clear indication that we must destroy all of our preconceived notions of what it is we’re trying to do relative to any other storytelling form. If we come from literary or cinematic or theatrical backgrounds we must slice through every connection between the techniques which make up our favored medium, until we are left only with atoms of craft.

We are not looking for ways of replicating known mediums, and that’s perhaps the severest charge I am leveling at the Erasmatron: it is an interactive engine which seeks to replicate a passive form of entertainment. I believe, instead, that we are looking for ways of replicating the *experience* of a story (as against the form of presentation), while allowing the user interactive choice in that experience.

Second, I inferred a tendency towards simulation in your reasoning. You seem to be saying, let's just set up a dramatic universe and let the user ramble through it.

In my first draft of my initial post I included the word “simulation”. I took that word out

when I realized it would detract from my message because simulation means too many concrete and specific things to too many people. I was also confident that you would know what I was talking about.

Simulation is the only answer to providing genuine interactivity. It always has been. For the storyteller the difficulty has been in simulating storytelling which mimics the literary, theatrical, or cinematic form - all of which rely on language, which I believe can never be simulated.

The question now is how to use simulation to create a narrative experience, and that is why my original post referenced *Quake*, Will's games, etc. What is it in those products, and in their use of simulation, that generates - however briefly, however erratically, however intermittently - a sense of emotional involvement? What is going on in those products, at the atomic level of technique, and how can we harness that process to create, after the fact, the sense that the player has experienced a narrative?

It is important to note that the key component of simulation from the point of view of the storyteller is that simulation provides for algorithmic consistency, which is what we are lacking when we attempt to replicate passive forms of storytelling. Once the rules of a simulation are in place, all of their combinative outcomes are implied, and available, given the right inputs by the player. That is exactly what we are looking for.

*Yes, I agree wholeheartedly with that; indeed, I refer to the output of the Erasmatron as a "storyworld" rather than an "interactive story" or some such. I caution, however, that this storyworld must be a ***dramatic*** simulation rather than a ***physical*** simulation. And that is what the Erasmatron is designed to build.*

My fear is not that you have not abstracted the process of storytelling; you have - and wonderfully so. It is that you have not abstracted the manner of telling the abstracted story. You are still chained to the obligation of using language interactively, even if it is scripted in part.

Also, your use of the words "dramatic simulation" implies an abstracted process relying on unabstracted techniques like plot and character. Drama is not about plot and character at the atomic level; those are just words we use to describe the convergence of events into meaning which *is* drama, and which is often played out in the human context. How to orchestrate the events of a simulation in order to maximize the possibility of dramatic experiences (through events and implicit meaning) is the obstacle we face.

To return to the road trip analogy, the designer's job is to stock the terrain we may be covering with interesting events and interactions, and to relate those as much as possible so that we, on our journey, can see the cause and effect between our choices and the outcomes around us. Maybe we're heading into buffalo country, or there's bandits loose in the hills - whatever - but things *can* be done to increase the dramatic potential of our trip without making them linear, and without crippling the interactive part of the experience.

Lastly, I'm having trouble hoisting aboard your notion of a story that is perceived after the experience but not during the experience. I can't see what advantage retrospection would provide. I can certainly agree that we don't want to plan the story before the experience -- that's what creates conflict between narrative and interactivity. So perhaps some clarification on the temporal segregation of the story experience would help here.

L. Rust Hills was the editor for Esquire's fiction for many moons. Late in his career he wrote a book based on the work he'd done with innumerable authors over several decades. The book was called *Writing in General and the Short Story in Particular* and it is the best book on fiction writing ever penned principally because it deals with the individual techniques that may be employed to tell any particular literary story. In a chapter called The Inevitability of Retrospect he shows a branching diagram like the veins of a leaf, starting with a "stem" at left labeled 'A', and flowing out into myriad branches. At the far right is one of many endpoints, labeled 'B'. About this diagram he says:

"Start at the left, at Point A, and trace the path to Point B. To get there you have to make at least twelve choices at forks in the road. The path you followed represents your life history. To get to Point B, where you are now, say, it seems to you that you've arrived there either by great determination in turning down other possible paths, or entirely by chance, depending on your attitude about such things. At any rate you are aware that each choice you made limited the possible or potential other ways you could have gone. But now trace your path from Point B from right to left to Point A. There are no choices. Looking back, you see the path taken was inevitable."

"A story should be like that. When you begin a story and while you're reading it, it should seem as if you're moving from left to right; alternatives to the character's fate and to the plots' action seem open, possible, available. But when you've finished the story and look back, the action should seem inevitable, as if you'd moved from right to left."

At this point it would be very easy to start drawing parallels between Hills' interest in retrospect and our interest in interactive storytelling, but that leads directly to branching. Instead, the connection I want to make is one between the inevitability of retrospect and the experience of interacting with a simulation.

I say now that the process of interacting with a simulation, when viewed after the fact, is exactly - and I mean *exactly* - the same as the inevitability of retrospect which Hills describes. And because these two processes are the same, I believe we should start our search for interactive stories not by replicating passive forms of storytelling, but instead by infusing simulations with as much dramatic potential and context as is possible, so as to generate narratives in retrospect.

For example, imagine placing the player in a dramatic context (the middle of a war zone, say), which implies meaning (people are getting killed) and purpose (get the hell out of there!), and at the same time making all of the player interactions consistent via the rules underpinning the simulation of the war. I believe this process, this focusing on the simulated experience first, and allowing the context-driven narrative to become concrete only in retrospective, is the bedrock upon which all of our techniques can and must stand.

This is in fact the incremental step which *Half-life* made in the action genre, and why it caused such a stir. Yes, it's far from what we want, but it as sure-footed an advance as I've seen in a long time, and many of the problems with the game itself were simply mistakes in design and implementation - not flaws in this approach.

Key advantages to this approach include the fact that we can relegate the storytelling fodder - the context, the occurrence of new dramatic events - to the backdrop of the simulation. We can also use time as an agent of the narrative experience by iris-ing in on the player's choices as the end of the experience nears, producing a feeling that the story is ending not by a wrapping up of narrative events, but by a culmination of simulated ones.

Do I know how to solve all the problems that this approach presents? No. I have some ideas about what to try, and some logical reasons backing up those ideas, but I have no proof of their eventual effectiveness, or even of their interest to an audience. I am simply convinced that if interactive stories are ever to become a reality, this is the path of development they must follow.

To: Mark Barrett
From: Chris Crawford
8/11/99

Mark, I'd like to begin by expressing my gratitude for your well-developed and elegantly expressed ideas. I have become so inured to reading the same old complaints that I was taken aback when I read your genuinely new ideas. Moreover, I find your reasoning persuasive enough to command serious consideration. There is definitely a lot of truth in your comments. I wouldn't be worth a rat's ass if I didn't find something to disagree with, but my overall reaction is that your ideas are exciting and demand thorough exploration.

Your first main theme, as I understand it, is that by adopting the means of expression of passive media, we create audience expectations inappropriate to interactive storytelling. I had long been aware of this problem with graphics and animation, but it had never occurred to me that text suffered from the same problem. You're absolutely right.

Fortunately, the second version of the Erasmatron (now under construction) disentangles the interface from the engine, so that the use of text is no longer required. People can put together whatever front end they want and attach it to the storytelling engine. This allows me to dodge your bullet, but it does nothing to solve the question. For that, I have another

idea: a front end using "sub-English". Each verb in the storyworld would have a short phrase attached to it, possibly including the values of the direct object or some other secondary objects incorporated within it. Thus, the verb listed in the Erasmatron as "ChallengeHot" might use the phrase "challenge <DirObjectName> hotly". The verb "AgreeToAccompany" might use the phrase "agree to accompany". Then we establish different points of view for this phrase by prepending the auxiliaries "did", "does", and "shall". The result is clumsy but understandable English that does not suggest literary merit. Whaddya think?

The other primary claim you make is more troubling, but less addressable. As I understand it, we should shift the higher level planning away from plot and towards simulation. In general, I am in agreement that a higher level of abstraction at this level is desirable -- I just can't think of how it might work.

A digression: my agreement extends only to the higher levels of storyworld design. I remain convinced that the lowest level -- the level closest to the user -- must remain the individual event expressed as subject:verb:object. The problem is that this means of expression is too clumsy for overall authorial purposes. We need a higher level of creation, and I agree that it should be more abstract.

What we're exploring with Erasmatron Version 2 is an abstraction based on top-down design. The storybuilder begins with four verbs: Introduction, Challenge, Struggle, and Resolution. Each of these four verbs can be broken down into subsidiary verbs, which can in turn be broken down even further, and so on until the storybuilder has fleshed out the storyworld to his/her satisfaction. This really isn't much of an abstraction, and, most troublingly, is squarely based on the notion of Plot -- which you argue against.

So, what kind of abstraction based on simulation can we concoct? Plot describes sequences of events, but simulation describes processes. What do we mean by a "dramatic process"? Here's one way to look at it, using Macbeth as our test case:

A -----> P -----> M -----> R -----> D

Where:

A means "ambition sneaks into Macbeth's mind"
P means "a plan is developed by Macbeth and Lady Macbeth"
M means "the murder is committed"
R means "the reaction develops"
D means "they all die for their sins"

Now, here's my point: we look at this plot as a sequence of events A, P, M, R, and D. But shouldn't we look at it this way instead:

x --p(x)--> y --p(y)--> z --p(z)--> u --p(u)--> v

In other words, we treat the events themselves as unknowns, but define the storyworld in terms of those processes p(something).

This all looks and sounds great, except for one little detail: what are those processes? How do we define them? Here we fall right back to the current Erasmatron model, because the basic components of those processes are 1) the nature of the event that leads to the process and 2) the result (choice) generated by the process. Sounds like an inclination equation to me.

At this point I throw up my hands in despair. I have not given up; I shall continue to wrestle with this line of thinking and hope that you can perhaps restart the line of thinking.

An exterior request: this correspondence between us has many useful ideas that could help others. What would you say to posting it on the Erasmateers mailing list?

Chris

To: Chris Crawford
From: Mark Barrett
8/17/99

Chris,

Again I've quoted you in italics, then replied in plain text.

Your first main theme, as I understand it, is that by adopting the means of expression of passive media, we create audience expectations inappropriate to interactive storytelling.

Yes, that's a good summation. *Why* it's inappropriate is clear when you make the simple shift in intent from replicating passive forms of storytelling to preserving, at all costs, the interactive experience. The only way to create, in the player's mind, a cohesive and self-regulated imaginary world (that mental "place" that all storytelling mediums seek to create), while at the same time simultaneously and seamlessly supporting player interaction, is to create a simulation. Unfortunately, we simply cannot simulate key aspects of the methodology of the passive forms of storytelling, of which the most important is language interaction between audience and application, and between characters in the story. On the other hand, if we start building a simulation out of dramatically-charged elements, we may be able to gather sufficient narrative mass so as to create the inherent potential for drama, without damaging interactivity.

A negative effect of this approach is that it will necessarily limit the stories we can tell to those which do not cause the audience to expect language interaction, but that's not necessarily the severe penalty it seems to be. In passive mediums all stories are not

appropriate for all storytelling forms. It is rare, for example, that an excellent novel will make an excellent film. Beyond the massive amount of change in narrative technique necessary during design (writing the script) and production, there is the more central point that what made the novel excellent was the fact that it was a great *literary* experience, which by definition cannot be translated to film.

Our successes, then, will come from creating great *interactive* experiences, and not from replicating other narrative mediums. But this won't happen if we're simply in the business of giving the player some puzzles to solve or critters to shoot while we tell them a story. We must instead recognize that interactivity is the sole reason for trying to create an interactive narrative experience in the first place, and that the interactivity itself must be felt by the audience on an emotional level.

I can imagine that some might argue here that what we need to do is simply change the expectations of the audience, but that only leads us in circles. We are not talking about the problem of expanding the storytelling techniques of a specific and mature medium like film, but are instead currently attempting to replicate that medium's known and expected techniques. The only way to change the interactive audience's expectations, then, would be to change the techniques of the underlying medium itself. Clearly, no medium is going to change or evolve simply to make our medium more palatable.

One a personal note I think it's important here to state my own goals regarding the creation of a narrative experience for the player. I am not interested in creating a system by which any author can make any story interactive. I am instead interested in creating a single interactive experience - a prototype - which causes the player/user to become emotionally involved while interacting. I believe an inevitable result of this experience is that it will be described by the player, in retrospect, *as* a narrative.

I had long been aware of this problem with graphics and animation, but it had never occurred to me that text suffered from the same problem. You're absolutely right.

I deal with the question of expectation more fully in a document on my website called "Transparency in Interactive Entertainment". If you're interested in reading it, you will find it at www.ditchwalk.com.

Fortunately, the second version of the Erasmatron (now under construction) disentangles the interface from the engine, so that the use of text is no longer required. People can put together whatever front end they want and attach it to the storytelling engine. This allows me to dodge your bullet, but it does nothing to solve the question.

I think this is the right move. Simply by loosening the need for language you offer the storybuilders more opportunity to use the player's imagination in concert with the output of the Erasmatron engine. A good example of this kind of narrative offloading in a passive medium occurs in *2001: A Space Odyssey*, during the space travel sequence which features rotating planes of colored light streaming past the camera's point of view. Whatever Kubrick wanted to "say" there he said in a wordless way which made the

audience responsible for coming to their own understanding, but he did not eject them from the story in the process. (For anyone ejected from *2001* during that scene, I can only quote Samuel Johnson: "Every author does not write for every reader.")

For that, I have another idea: a front end using "sub-English". Each verb in the storyworld would have a short phrase attached to it, possibly including the values of the direct object or some other secondary objects incorporated within it. Thus, the verb listed in the Erasmatron as "ChallengeHot" might use the phrase "challenge <DirObjectName> hotly". The verb "AgreeToAccompany" might use the phrase "agree to accompany". Then we establish different points of view for this phrase by prepending the auxiliaries "did", "does", and "shall". The result is clumsy but understandable English that does not suggest literary merit. Whaddya think?

I think this solves some of the mechanical problems, but there are other areas where the storybuilders will have to exercise care in order for this approach to support suspension of disbelief. Both the point of view of the player and the player's role will be critical - but then they always are. Deciding whether this method will apply to authorial messages to the player, character messages to the player, character interaction, and/or player interaction with the storyworld, is also a big issue. Beyond that, there's the risk that the text will redundantly echo, or pale in comparison with, other elements such as sound and graphics.

As for whether it will work or not, I'm not certain. My biggest concern, still, is that you need to find people who can figure out the specific techniques that will make the process work on your engine, as opposed to using replicative sets of techniques from other mediums. Authors having a pre-conceived idea of the story that is to be told, without first addressing the techniques which are available for telling that story, are inviting prolonged disaster. Beyond this caution, however, I'd have to actually see what was built before I knew whether it was working.

The other primary claim you make is more troubling, but less addressable. As I understand it, we should shift the higher level planning away from plot and towards simulation. In general, I am in agreement that a higher level of abstraction at this level is desirable -- I just can't think of how it might work.

Well, it's very easy to generate an interactive simulation, which sounds redundant, but isn't. Add to that a good measure of contextual drama, and it may be possible for the simulation to generate a narrative in retrospect. Even better, the essential ingredients of this kind of simulation-driven narrative experience are actually little different from passive narratives, except for the inclusion of the simulation itself. To explore this more closely, let's consider what's being transmitted from the teller to the audience, at the highest levels of abstraction, when a story is being told in a passive medium.

First, there are the fictional elements. These are the made up things - places, characters, dialogues, individual plot events - which may or may not be directly related to reality. It is assumed by the audience, however, that these fictional elements are referents of some

kind. Some of them may be representational referents, as in the case of a filmed actor representing a real human being, and some may be wildly abstract, as in Kubrick's use of colored lights mentioned above. As long as the players understand the referents, we can hang as many fictional elements on a sim as we want and it doesn't change the process of the simulation at all. It just changes the meaning.

Second, there is the duration of the fictional elements, which we'll call "story time". Story time is rarely defined exactly in terms of overall length, or in terms of the duration between the causal events we call plot points. Instead, story time is most commonly understood simply as the duration between the beginning of a story and its end. This slack is of tremendous benefit in a simulation as long as we do not attempt to compel the player forward in a linear fashion at any point. With this flexibility we can also ignore pacing issues and let the player interact in any way they see fit, without destroying the narrative context of the simulation (which is not the same as linear plotting).

Third, there are the causal relationships between individual fictional events, the sum of which is called the plot of a story in passive mediums. These causal relationships let the audience know how events relate to each other so the audience can perceive their meaning, and they also serve to foreshadow possible future events and relationships. Interestingly, in a simulation we also have causal events, but we don't have to force the player to follow a certain path in order to keep these causal events logically related: that's taken care of by the rules governing the choices offered by the simulation. Moreover, the sum of the player's choices over time yields a linear string of causal events, just like a plot. The only real difference is that the interactive string of causal events can only be seen in retrospect, and probably only in their most meaningful form by the individual who experienced them.

Fourth, there's the order in which the causal events are related. It is by far most common to relate causal events in chronological order, but it is not necessary to do so. *Catch-22*, for example, relates plot events in jumbled chronological order. The ordering of specific events in a linear plot, then, is not necessarily tied to the chronology of the causal relationships between those events. Like the slack in story time, this flexibility allows us to let the player roam freely, doing what they want, without worrying that we're not "steering" them in the right direction. As long as the player's choices in the sim are causally related to outcomes the player can perceive (either immediately, or later) the player will be able to derive meaning from them.

Fifth, there's the implicit promise in all forms of entertainment that the audience will find the experience worthwhile. This promise is in turn what motivates the audience to voluntarily invest real-world time and attention in the experience. This audience commitment is physical (sitting in the theater, turning the pages), intellectual (keeping track of the causal relationships) and emotional (suspending disbelief; sympathizing and empathizing). By offering this promise the creator of any work - including those using interactivity - is obligated to support the audience's involvement through the use of transparent techniques. This preserves the audience's investment.

All right: now let's look at how we can use all of these elements in creating a narrative experience around a simulation. For reasons I'll explain later, we'll skip simulations involving three-dimensional space, as well as those involving conflict between opponents.

Instead, let's simulate a logistical operation, in which the player is put in the role of clerk. Algorithms will determine when items are "shipped" to the player, and in what number, as well as which resources are in demand, and when they need to be "delivered". The player's job will simply be to try to make sure that all needs are met.

While that's simple enough, it's also incredibly boring in a narrative sense, so we need to dress it up with some non-interactive fictional elements. First, we'll nail a character onto the player's role: they're now going to play as Kwanju, quartermaster for an intergalactic supply company. We'll also provide a setting: an asteroid in deep space which is the supply depot for a number of small mining colonies on neighboring asteroids. It is these colonies which the player must keep supplied.

We'll also say that Kwanju is a life form of some kind, as are the miners, and that the supplies in question are directly related to the ability of these beings to survive. Lastly, we'll draw up a list of items that are shipped in and out of the supply depot, and we'll make every one of them either more or less critical to the health and wellbeing of the miners.

Okay, that's certainly better, yet all we've done is add a fictional context. Where before we had a simulated process, now we've got a dramatic situation inherent in the sim: if we don't get people what they need, they'll die. Next we need to look at story time, and decide what the beginning and ending points of the player's experience in this role will be.

Well, without adding anything else, it'll still be clear when the experience begins, because that'll be when the player starts playing with the sim. But as to when it ends, that's open-ended. The player will just be filling requests as best they can, forever. Clearly, we need some event or standard by which the player can determine that they've experienced everything we have to give them, and some way in which that knowledge will translate into a satisfying feeling that the "narrative experience" of the story is over.

Now, we could accomplish this with a numerical threshold: the player's experience is over after forty thousand items are sent to the various colonies. Beyond that we could also add some conditions: forty thousand items are sent *and* none of the miners die. Still, while there's a hint of drama in there, it's not very compelling. So let's go back and start dressing up our beginning and ending with some more fictional elements.

Let's make the beginning the start of a normal hum-drum shift at the supply depot. Orders are backed up, deliveries are late, but there's no crisis: plenty of everything everybody needs is in the pipeline. Now let's have something happen (accident, sabotage, pirate raid) to the massive supply ship which is bringing the next load of

supplies, and at the same time reveal that it'll be another seventy-two days before another ship can get there. This not only gives us our dramatic context, but we now we have our ending as well: the experience of being Kwanju will have run its dramatic course when the next supply ship docks and the shortages are relieved.

Double-checking, we can see that all of the fictional elements that we've added are non-interactive, and the player has no expectation that they will become so. The fictional elements are simply working in support of the context of the simulation as a dramatic backdrop for the interactivity. What's great about that is that we can make up more of these plot events and use them elsewhere, without worrying that it obligates us to let the player manipulate these events interactively.

The complaint here might be that we're scripting the events of "the story", but that assumes that the scripted events are the story we're trying to relate. They're not. It's the interactivity - the choices which determine outcomes - that we're after. Full-blown examples of this process are going to have multiple fictional layers that range from deep backgrounds which are completely non-interactive, to scripted but variable events that may be different from one player to the next, to a simulation which fully supports the player's own personal tactical and strategic view of how to solve the problems they face. It's not whether any elements are scripted that's important, it's whether those elements convincingly support the player's role in the unscripted interactivity offered by the sim.

(A related word here about replayability. There is an ever-present cloud hanging over the idea of interactive storytelling, which is that any demonstration of an interactive storytelling engine must inherently include replayability. This immediately seems to suggest that all interactive storytelling engines must be capable of telling pretty much all possible versions (plots) of a story - or even wholly different stories - in order to be successful. This is a false belief. For an interactive storytelling engine to be considered replayable, it need only provide equivalent *emotional involvement* with each pass, and not a separate plot. While the player may have knowledge of the fictional context on repeating their play, that says nothing about the engine's ability to create emotional involvement within that context.

The next question in the building of our simulation-driven narrative experience concerns how we can time the revelation of any scripted or unscripted (simulated) events that might add to the dramatic situation the player faces. Although we have considerable leeway within the story time as to when events occur, we do need to make sure that any events are related correctly to the chronology of events so far, and that their casual connections to other events are understood. Normally, this kind of timing relies on complete narrative control, but we've given that up in favor of a simulation. So the question is, what can we control about the sim that will help us in our dramatic efforts?

Actually, we can control and manipulate a good deal of the sim without the player ever becoming aware of our actions. We can control which items are going to be available to them, as well as which items are going to be requested, and we can do all of that with algorithms in a way that is delimited, but not scripted. From this we can track shortages

and surpluses, and tie the revelation of information to those states if we want to.

We can also track the results of the shortages - say, five miners dying from insufficient stores of breathable gas - and reveal scripted events in relation to those results when they occur. And of course we can also track multiple states and time events accordingly: fifty miners dead + rampant disease + shortage of medicine = a message that an error was made in inventory and there's less/more) medicine than previously thought.

As long as we make sure we don't let information out in an order that would damage the implied chronology of events, or confuse their logical relationships, then we're okay. And we should be able to do that with simple logic, since the possible events and outcomes of the sim will be known in advance.

Note also that scripting dramatic moments which are then triggered by a state reached in the simulation is not the same as scripting triggered plot points. In the former case the events have already transpired and the game is simply responding to the current state with some relevant information. In the latter the player is required to trigger the event for the story (and at times even the game) to continue. A flight sim, for example, may report on the immediate outcome of a player's action (pressing a trigger) by showing the target getting its wings blown off. Later a message might be delivered from "HQ" informing the player how many kills they were credited with in that engagement. This is completely different from requiring that the player down a specific plane in order to get to the next mission or cutscene.

The final step in outfitting our sim with the ability to convey an emotionally charged experience is the need to address the player's voluntary involvement in the work. How do we get them to care about this simulated experience, and to willingly invest their own time and emotional energy in participating?

Actually, we can get interest in several ways. To begin we'll assume the player isn't contrarian and actually intends to try to keep the miners alive as long as they can. Here we can add some fictional elements that flesh out the miners, giving the player some information and imagery which they can sympathize and empathize with. Without getting into language interaction we could provide dossiers of each miner, complete with photos and facts, and maybe even include short video snippets of their families, or images of other dramatically related personal items. We can let the player have access to this data any time they want, and if they look at it in advance of any deaths it only helps us motivate the player and prepare for the gravity of the first fatality. When a miner does die, we can pop their file up on the player's screen, or send them a message that it needs reviewing.

To further increase the player's interest we can also create canned messages which can be sent to the player when things are bad: some of which will be bureaucratic, and some of which will be recorded images of desperate pleas from dying miners. To raise the stakes even more, we can also make the player-character susceptible to the same environment, so that the player has to use precious resources to keep themselves alive at the expense of

others.

Finally, we can track the player's actions and determine if they're spending more time on one colony than another, or if they're sending one colony more supplies. This could imply that that colony has greater meaning for the player, perhaps as a result of the player's investment of time and energy in keeping those people alive. This kind of player-determined meaning is the greatest kind of interest we can generate because it's self-determined by the player. If we want to, we can even go from trying to interest the player in the welfare of the colonies to punishing colonies the player has interest in, simply because that's where the most meaning is for the player.

* * * * *

Okay, that's as far as I think we need to go with this example. We've got a sim-driven dramatic context which, when experienced by the player, should create a narrative in retrospect. We've got causality, fictional elements, story time and player investment. So - is that a great example? No, of course not. It is something I think we can reliably build upon however, for the following reasons.

I said at the beginning that we would omit examples using simulated three-dimensional space or opponents. The reason for doing so is that both of these elements inherently provide the player with a great deal of interest. Our example is little more involved with these things than is the Erasmatron, and yet it still provides the player with a dramatic narrative context.

However, if we do include virtual three-dimensional spaces and opponents in a sim, we get two huge advantages. First, opponents inherently create a dramatic context: there's just nothing more important for the player (and often more anticipated) than whether or not the player-character is going to be attacked. This may seem to lead right to hardcore gaming, but that's only a scorekeeper's perspective. Conflict *is* drama.

Second, travel in three-dimensional space is a seamless way in which the player can interact wholly within the narrative context of story time, but still have individual control of exploration. For example, in *Quake* it becomes obvious that after you've cleared an area you can wander around safely and look at things, thus suspending the movement of the "plot" (the level design) while still remaining within the context of the story world and story time. Similarly, when you want to get things moving again, all you have to do is open a new door and you'll soon find plenty of trouble. (If we want to increase the drama inherent in the three-dimensional space, we simply populate it with purpose-driven opponents that may appear in areas the player has already visited, thus making the space perpetually dangerous.)

Some might argue that this freedom of movement causes a weakness in the flow or pacing of the narrative experience, but again that's an opinion based on a linear view of what the player should be doing at any given point in time. This freedom should instead be seen as strengthening the player's *interactive* experience because it allows the player

to determine to a much greater extent how they are going to invest themselves in the work.

The point of all of this, again, is to hammer home that it's the gripping interactive moment that we're striving for - not the revelation of some narrative event. If we just want to tell a story, passive mediums do that better than interactivity ever will. Yet another way of seeing the difference is to focus on the fact that interactivity should be all about the *player's* experience (through role, sim, and narrative context), where passive forms are all about witnessing the experiences of characters.

A digression: my agreement extends only to the higher levels of storyworld design. I remain convinced that the lowest level -- the level closest to the user -- must remain the individual event expressed as subject:verb:object. The problem is that this means of expression is too clumsy for overall authorial purposes. We need a higher level of creation, and I agree that it should be more abstract.

I think I agree with your position here, as long as you're allowing for subject:verb:object to be non-linguistic events as well. We do need specific actions and events in order to get a user to feel emotional involvement, but we don't necessarily need to relate them in words. In fact, as stated elsewhere, there are good reasons to avoid words as much as possible.

What we're exploring with Erasmatron Version 2 is an abstraction based on top-down design. The storybuilder begins with four verbs: Introduction, Challenge, Struggle, and Resolution. Each of these four verbs can be broken down into subsidiary verbs, which can in turn be broken down even further, and so on until the storybuilder has fleshed out the storyworld to his/her satisfaction. This really isn't much of an abstraction, and, most troublingly, is squarely based on the notion of Plot -- which you argue against.

Right - you've abstracted the three-act structure into a methodology which works with the Erasmatron, but that's squarely focused on providing interaction by generating different plots. You still have the crushing overhead of making sure all those subsidiary verbs are communicating just the right thing at just the right time, and in a seamless way, but much of that work can't be abstracted at all.

Still, with your effort to disconnect the engine from the front end, you have made it possible for your audience to use their own imaginations in order to smooth over the transitions between the low-level verbs. On this level I could see how a graphical relationship between intensity of feeling and the Z-axis - where closer equals stronger - might be a simple first step in defining a set of visual techniques which could be used to further lessen the strain on the engine. That's a borrowed technique from film, of course, but at the atomic level at which we *do* want to adapt techniques.

So, what kind of abstraction based on simulation can we concoct? Plot describes sequences of events, but simulation describes processes.

Plot also describes events over time, as does simulation (process). From the point of view of time and retrospect, they're both the same, and that's where we can slip across the line from scripted narrative to narrative experience.

What do we mean by a "dramatic process"?

A dramatic process, then, would be any process which took place in a dramatic context. If the events of the drama were dictated by the player's interactions with the simulation - even if those dramatic events were scripted - there's no reason to believe that the player would not feel emotionally connected to those events. If the events are unscripted, we're home free.

By the way, I think it's important to keep in mind that the audience's experience with most stories in passive mediums is commonly *not* an emotional thrill ride from beginning to end. Most books and movies and stage plays are about delivering one, or maybe two, really compelling emotional moments to the audience. The whole of any work is simply preparation for those moments. Unfortunately there seems to be a feeling that interactive stories need to provide a greater and more constant emotional payoff than does passive storytelling. I reject that. If we can produce a sim which causes the player to experience one or two emotionally powerful interactive moments which the player has determined, I believe we will have been successful.

Here's one way to look at it, using Macbeth as our test case:

$A \text{ ----> } P \text{ ----> } M \text{ ----> } R \text{ ----> } D$

where A means "ambition sneaks into Macbeth's mind"

P means "a plan is developed by Macbeth and Lady Macbeth"

M means "the murder is committed"

R means "the reaction develops"

D means "they all die for their sins"

Now, here's my point: we look at this plot as a sequence of events A, P, M, R, and D. But shouldn't we look at it this way instead:

$x \text{ --}p(x)\text{--> } y \text{ --}p(y)\text{--> } z \text{ --}p(z)\text{--> } u \text{ --}p(u)\text{--> } v$

In other words, we treat the events themselves as unknowns, but define the storyworld in terms of those processes $p(\text{something})$.

I think both of these diagrams suffer from the same problem: they are descriptions of linear events, regardless of whether those events are specified or not. What I think we want is a model that diagrams the simulated process (which will also implicitly determine the player's role). Key for me is the idea of the simulation as a process which creates potential that the player can exploit on one hand, and be surprised by on the other.

So what if, instead of diagramming a linear process, we chuck a bunch of stuff in a bag, slap on some rules about how that stuff interrelates, and give it a shake? In that case we're saying that the drama is inherent in the elements themselves, and not in their ordering. It's fusion, in a way. For example:

role + simulated combat + narrative context = Potential Drama

That's the recipe for just about every first-person shooter, every third-person action game, and every military simulation, and I don't think it's an accident. The question for us is, how far beyond merely winning or losing a fight can we take this recipe? I think, with the addition of skillfully handled dramatic elements, and a host of other techniques, that we can actually go quite far.

A specific but limited example of this kind of dramatic fusion comes from my work on *Fighter Squadron: Screamin' Demons Over Europe* (SDOE). I was the mission designer for that game, and my feeling was, even before I began, that there was an opportunity to deliver the best in-cockpit dogfighting experience that anybody had ever had. Why? Because all of the necessary ingredients were finally available.

(For our purposes a WWII flight sim is a good sim to make for a number of reasons. The player is isolated in a machine, so they have little or no expectation of seeing other characters, or of interacting with them on any level except plane-to-plane combat. As well, the player's role is literally tied to the simulated process. And unlike sims involving radar, the player's point of view and situational awareness are restricted to only what is visible around them, which increases tension and anticipation.)

The key component that moved SDOE beyond all other flight sims, however, was simply the detail of the damage modeling. Even after only a few flights I could see that the experience I was having was capable of visually replicating the combat footage I'd seen from World War II. (Which is not the same thing as replicating a fictional motion picture narrative, which I've argued against). The first time I rolled in behind an enemy bomber in my P-51 and took out one of its engines, only to watch the wing fold up and the plane spin earthward, I was amazed. I had just experienced a simulated moment that put me exactly where I wanted to be imaginatively, and the resulting emotional reaction was powerful.

Because I knew that the SDOE engine was capable of providing that kind of realism and drama as an inherent part of its simulated processes, I knew that I was now free to design the missions not just in a purely scripted fashion, but also using the concept of potential. In fact, it was clear to me that the most engrossing aspects of playing the game would be experienced by chance, and not by anything I could script, because those moments would be purely determined by the player's choice of movement, action, and camera position (where the player was looking). In fact, I call these accidents "cinematic moments" because they have the same dramatic impact as does a similar moment in passive film - if not more so because the player's choices specifically caused them.

Consequently, I designed all of the missions for the game in just the way I described the logistical simulation above. I hung different narrative contexts (mission objectives) on the simulation, and I added different fictional elements such as text briefings and debriefings, but the core of the experience I left to the simulation itself, and to the promise of those player-determined dramatic accidents. In my opinion, and from the reactions of the players who commented on the game, this approach was a success. The following is my reply to one such post from that time:

In passing on their thoughts of this game, someone once said, "Sure it's a neat little sim. But, in my opinion, if you are absolutely turning flips over it, then you're just one of those people who don't really like the more intricate aspects of sims. "

My answer to this, however is that my excitement about playing *Fighter Squadron* doesn't come at all from the intricacy or lack of intricacy of the sim - which is an appraisal made at the features-list/comparative level of involvement. Rather, I "turn flips" over *Fighter Squadron* because it makes me feel like I'm actually in a dogfight - and actually at risk of getting killed - more than any flight sim I've ever flown. That feeling comes from the game's ability to imbue the mechanics of the sim with meaning, and its ability to connect with my imagination, and in my experience that's very rare. It is the strength and conviction of the fighter pilot role that the game provides which is critical to my enjoyment - not the intricacy of the sim.

It's my contention that this is why we're seeing some people go bananas over this game, and why others are just not that impressed. The people going bananas are hooking up with the game in a way that's rare for interactive products, and that's because it's connecting with them in an emotional way, instead of an intellectual one. Maybe for the first time they're actually feeling like they're IN the cockpit - which is something they've always dreamed of.

My fervent hope is that at some point the game will become polished enough for everyone to get into it, so they feel what I feel when I roll out at 20000 in my P-51 and bear down on a flight of German fighters below. Because when I do that, I'm not playing a game.

This all looks and sounds great, except for one little detail: what are those processes? How do we define them? Here we fall right back to the current Erasmatron model, because the basic components of those processes are 1) the nature of the event that leads to the process and 2) the result (choice) generated by the process. Sounds like an inclination equation to me.

[For the benefit of other readers, an inclination equation is terminology specific to Chris's

Erasmatron storytelling engine. The following definition was originally copied from his website at <http://www.erasmatazz.com/userdocs/inclination.html>. You can find more information about Chris's story engine – now called Storytron – at www.Storytron.com.

What is an Inclination?

An inclination is the likelihood that an actor will choose a particular option.

Each option has its own inclination equation. When the inclination equation is calculated, it gives a number. The option with the highest inclination is chosen by the actor. Thus, an inclination is not quite the same thing as a probability, because the actor will always choose the option with the highest inclination.

In the Erasmatron you've got a lot of things assumed that make an inclination equation almost essential - not the least of which are character and language interaction. Still, an inclination equation is only an example of AI, and it should be possible to use the inclination equation as a reactive process instead of a determinative one. Where above I suggested scripting events in response to predictable outcomes, you might also check inclination equations in the same manner. As long as the actor's resulting behavior is expressed within the simulated processes, I don't think it would cause any problems.

At this point I throw up my hands in despair. I have not given up; I shall continue to wrestle with this line of thinking and hope that you can perhaps restart the line of thinking.

I hope I've been able to move things along for you in some way. I agree it's a hard thing to get your mind around, and I lose my grasp frequently as well. My delay in responding to you in this instance was simply that I had not yet tried to express the totality of many of these ideas in a clear and convincing manner. The obligation not only to explain what I'm trying to do, but to make sure that I do not leave theoretical holes through which I can rightly be pummeled, is daunting.

An exterior request: this correspondence between us has many useful ideas that could help others. What would you say to posting it on the Erasmateers mailing list?

By all means. In the same vein I would like to compile these exchanges in a document and post it on my site for others with similar interests. Let me know if that's all right by you.

Mark

From: Chris Crawford
To: Mark Barrett
8/25/99

Mark, the week I have taken to consider your previous comments reflects not lethargy but the need to give them due mulling time. I printed out your document and settled down to read it comfortably; I have done so several times now. We are well past the stage of knee-jerk reactions; the material we consider is murky enough to require contemplation before responding.

First, you mentioned the possibility of "building a simulation out of dramatically charged elements". I have been independently considering much the same thing. I urge you to read Vladimir Propp, *The Morphology of the Russian Folktale*; he breaks folktales down into a formula composed of such dramatically charged elements. I don't think that his work goes far enough, but there may be later work that takes us far enough; I am currently exploring this avenue.

Second, you devote a lot of space to the problem of the means of communication to the user. I agree with your point that text carries the extra baggage of audience expectations of literary worthiness. The idea of using a primitive language may remain our best hope here, although I agree that it attaches an artificial feel to the experience. We might use a creole language; this would certainly be both computable and understandable. Yet it seems so artificial! Another possibility is to use something rather like comics. The frame-by-frame nature of comics is certainly amenable to our needs, and eliminates the expectation of continuous real-time narrative flow. Moreover, a simplified drawing style could be algorithmically handled, and the combination of simplified comics-style images with creole English just might get us over the communications hump. I re-read Scott Adams time and again, but just can't see the solution. It's somewhere in the upper regions of his pyramid, but I don't grasp it yet.

You write approvingly of 3D imagery, but I fear that it suffers from the problem of audience expectations, and much worse than text. As soon as you say "3D" to an audience, they're going to think "*Doom*" or "*Myst*".

You also suggested an approach akin to simulation, and I'll agree here, but I must caution that we must be very careful about what is being simulated. Basing the simulation on 3D space will yield something as sterile as the vrml efforts. Basing it on plot will surely yield linear results, as you point out. Basing it on agents is currently the rage, but I don't think

that works either. Sure, you can program your agents with conflicting goals, but conflict alone does not make for drama. Conflict is a wall of water bursting out of a disintegrating dam; it has power, but the drama comes from the shape of the hills and valleys that channel its flow. Conflict alone gives us nothing more than good guys versus bad guys. We need to simulate drama, not just agents.

I'm sorry, but I didn't like your mining-asteroid example. It seemed to add up to a resource-management game, not interactive storytelling.

On a more constructive front, I've come up with an idea that might get us off the ground. What if the audience plays as director rather than protagonist? I've already implemented the idea in the Erasmatron2. The storybuilder can declare that the audience will play as director, in which case all decisions are made by the audience, not the characters. Every time a character has a choice to make, he turns to the audience and asks for guidance. Thus, the audience plays the storyworld more like a toy than a game. I intend to improve it so that the characters will make the simple and obvious decisions for themselves, asking for direction only for the critical and important decisions, with the dividing line between "obvious" and "requiring guidance" being set by the storybuilder.

Lastly, I seem to have lost your earlier correspondence (other than the immediately previous essay). When I attempt to retrieve the files, Eudora insists that it doesn't have them anymore. Could you please re-send them? I'll then post the entire correspondence on my website.

Chris

From: Mark Barrett
To: Chris Crawford
10/5/99

Hi Chris,

As usual, comments from your last post are in italics. My sincerest apology for taking so long to get back to you. It seems only days ago that I was happily driving my team of horses in unison, and in the next moment the harnesses were in shreds and the horses - career, family, friends and pastimes - were all speeding off in opposite directions, threatening to quarter me if I held tight. That I had to drop the reins driving my e-mails to you is still aggravating to me, and I hope the silence implied no more than that I was otherwise engaged. I have enjoyed our dialogue immensely, and my latest reply is attached.

First, you mentioned the possibility of "building a simulation out of dramatically charged

*elements". I have been independently considering much the same thing. I urge you to read Vladimir Propp, *The Morphology of the Russian Folktale*; he breaks folktales down into a formula composed of such dramatically charged elements. I don't think that his work goes far enough, but there may be later work that takes us far enough; I am currently exploring this avenue.*

I have two concerns here. First there's the question of whether formulaic analysis of a passive form can teach us anything about structuring non-linear interactive narrative experiences. Dramatically charged elements which can be assembled into a Russian folk tale are inevitably going to be regulated by the medium of expression, which may omit elements that are important in interactive works, or include elements that cannot be made interactive. Moreover, the underlying linearity of the subject matter may mean that even though the tales have been broken down into formulas, the formulas themselves may yet still depend on linear expression.

Second, I'm always concerned with approaches where a number of specific examples are broken down into general parts. Yes, we might end up with some useful rules or formulas about those general parts, but it's the specificity of the individual works - the details - which is crucial to maintaining suspension of disbelief and promoting emotional involvement. This may not be an issue if we're making widgets, but it is *the* issue in crafting entertainment.

When I suggested trying to use "dramatically charged elements" I meant both that we should use elements which are not inherently tied to a formula, and that we should only begin to orchestrate these dramatic elements *after* we decide what it is that we're going to simulate. The most important thing to say at this point is to reiterate that I think any attempt to make *storytelling* the thing you're simulating is doomed to fail for the reasons I've mentioned in previous posts. This holds whether you try to simulate storytelling via text, or agents, or even with dramatically-charged elements taken from deconstructed passive forms.

Now, it's easy to make the assumption that what we're trying to do is replicate the narrative experiences of passive mediums, because that's essentially all we were exposed to until computers brought interactivity-as-entertainment to the table. But the goal of storytelling is not linearity, or the three act structure; those are just a means to an end in *passive* mediums. The goal of storytelling in *any* form is the creation of a fictional and causally-connected world inside the audience's imagination, which allows them to experience an emotional connection to that fictional world. It's the experience inside the audience's head that is, and should be, our only objective.

Second, you devote a lot of space to the problem of the means of communication to the user. I agree with your point that text carries the extra baggage of audience expectations of literary worthiness. The idea of using a primitive language may remain our best hope here, although I agree that it attaches an artificial feel to the experience.

For me it's very basic. Can we get text to express what we want to convey in a way that

is transparent to the audience? I don't think we can if the text itself is the method of interactivity. If we're trying to do real interactivity, where the player's choices are determining outcomes, I don't think we can use text to do that, because the rules which determine meaning (and, by extension, qualitative worth), are always in flux, and always relative to context. Again, though, this says nothing about using text to report various states within the fictional context of the program, which is something that I think can be profitably and transparently done.

In this basic dilemma - that we can't come up with a foolproof set of rules to govern the use of text in an interactive work - there is another nudge toward the pursuit of simulation as the only available answer. In order to provide meaningful interactivity, we need to be able to devise and implement clear rules that govern the processes working within our programs. This in turn will ensure that the player has a consistent framework within which they can voluntarily and seamlessly commit their imagination via suspension of disbelief. Simulations are, by definition, rules-based programs, which is, again, exactly what we need if our creations are to offer real interactivity to the player.

We might use a creole language; this would certainly be both computable and understandable. Yet it seems so artificial! Another possibility is to use something rather like comics. The frame-by-frame nature of comics is certainly amenable to our needs, and eliminates the expectation of continuous real-time narrative flow. Moreover, a simplified drawing style could be algorithmically handled, and the combination of simplified comics-style images with creole English just might get us over the communications hump. I re-read Scott Adams time and again, but just can't see the solution. It's somewhere in the upper regions of his pyramid, but I don't grasp it yet.

The questions you're mulling here - whether any kind of text will work, or whether we need some form of comic-like display - are dangerously seductive because these approaches again implicitly reference linear forms. As a result, it's very easy to start trying to adopt these methodologies in a replicative way, which is not what we want to do.

If you're saying we might be able to use a creole language, or a comic-book-like frame-by-frame display as output for some aspect of our simulation, then I'd agree. If you're saying that we should be making interactive creole-driven stories, or interactive comic books, then I disagree. Again, for me it all comes down to how we can provide an opportunity for real interactivity, and I see that leading inevitably to simulation.

You write approvingly of 3D imagery, but I fear that it suffers from the problem of audience expectations, and much worse than text. As soon as you say "3D" to an audience, they're going to think "Doom" or "Myst".

You sound unnecessarily dismissive here, as if 3D imagery is too much a part of the hardcore gaming market to touch. 3D imagery is no more determinant of subject matter in an interactive work than is the perspective used in a given painting.

Also, I disagree that 3D imagery (or even 2D) faces the same problem of audience expectation as does text. One of the hallmarks of imagery is that it can be very crude, yet still have a consistent “look” which supports suspension of disbelief. Even the earliest 3D games (Battlezone, for example) managed to put you in a specific and consistent fictional environment while you were playing the game. Sure, there was no story, and it was a bare-minimum wire-frame world, but it was consistent, and it was interactive. Both of those qualities are integral to our objective, and we can’t get either of them from text.

Desired Feature	3D Spaces/Objects	Text/Language
<i>can be simulated</i>	<i>yes</i>	<i>no</i>
<i>supports real interactivity</i>	<i>yes</i>	<i>no</i>
<i>supports transparency</i>	<i>yes</i>	<i>no</i>
<i>maintains consistency</i>	<i>yes</i>	<i>no</i>
<i>will improve over time</i>	<i>yes</i>	<i>no</i>

Clearly, the consistency and interactivity that we can derive from graphics points us again directly toward simulation, because we can simulate things using graphics (weather, seasons, natural events/disasters) which can also be emotionally and imaginatively meaningful. In fact, about the only negative I think you can throw at three dimensional virtual spaces is that they aren’t inherently dramatic, but so what? Given the right context for any virtual space, and the right simulation(s) taking place within that space, we should be able to create plenty of dramatic potential while supporting suspension of disbelief.

Think back to my original post, and the idea of how a road trip can turn into a narrative experience over time. Central to a road trip is the expanse of territory you have to roam around in, which is something we can duplicate in a simulated virtual space. Certainly we’ll have to make compromises here and there if we’re trying to do something representational, but I believe the audience (or most of it) will find a way to adapt to the “look” we create. I don’t think you can get an audience to adapt to text in this same way.

As for how this step alone - the use of three dimensional spaces - could emotionally impact a player’s experience, I think there are several opportunities. For starters, there’s simply the wonder and excitement of traveling to new places and seeing new things. Granted, these places and things might be as pre-designed as a passage of text, but their meaning will be much less designer-determined because the designer will not be “telling” the player specifically what to think.

It’s also easy to increase the dramatic tension of an environment simply by adding a threat, thus making those same wondrous places a bit dark and foreboding. Whether that threat is based on combat, or on the evil deeds of a mysterious stranger destroying the lives of others, or on a natural disaster threatening an entire planet, is up to the designer. The aim is simply to provide an inherent conflict between the player’s desire to go forth, and their desire to remain safe.

Bottom line: we can simulate all kinds of things in three dimensional space, some of which are directly applicable to the player's emotional involvement, and some of which only provide a context for that involvement. In either case, I see that as a plus. Also, 3D spaces and images are good at supporting and limiting the player's imagination - which is a very real problem when text is used as the method of interactivity.

You also suggested an approach akin to simulation, and I'll agree here, but I must caution that we must be very careful about what is being simulated. Basing the simulation on 3D space will yield something as sterile as the vml efforts. Basing it on plot will surely yield linear results, as you point out. Basing it on agents is currently the rage, but I don't think that works either.

Okay, I want to come at this again, but harder this time. All of the things you're talking about above are ways in which a dramatic story might be adapted to interactivity. My point is that you *cannot* adapt a passive dramatic structure to interactivity. Not only does this go back to one of my earliest observations about the basic schism between interactivity and storytelling - that interactivity and passive storytelling are mutually exclusive processes - but it puts forward the idea that the key component in interactive storytelling is the storytelling, which is simply not true.

The key component in interactive storytelling - the whole reason you and I are interested in this issue in the first place - is the interactivity. In order for our efforts to be worthwhile, we must make meaningful interactive choices available to the player, and I can only imagine being able to do that via simulation. That means what we're going to simulate must come first, and it cannot be the process of passive storytelling, no matter how well we disguise it.

Sure, you can program your agents with conflicting goals, but conflict alone does not make for drama. Conflict is a wall of water bursting out of a disintegrating dam; it has power, but the drama comes from the shape of the hills and valleys that channel its flow. Conflict alone gives us nothing more than good guys versus bad guys. We need to simulate drama, not just agents.

I know what you're going after here, but I'm not convinced by your argument. In almost any storytelling medium conflict *is* drama, but the audience's access to that conflict in any specific work is granted by point of view. If I say, "The Russians are counterattacking the Germans," there's little drama there, and it plays like a news report. But if I say, "The Germans fought vainly against our attacking armor, and I could smell their blood in the snow," then we're getting closer to drama.

The change, although expressed via a difference in word selection, is materially driven by a change in the implied point of view. We can make this kind of change just as easily without using language simply by moving our game from a hex-based over-the-board map view to one of third or first person.

With an interactive storytelling engine that replicates passive forms, the player's role

(and thus point of view) remains shackled to the designer's authorial task of revealing the story via choices. Again, that's a point of view removed from the experience of the story itself. Contrast this with a simulation, where the player has a specific role, the point of view of which is directly related to the simulation and the interactive choices being offered, and not to the unfolding of plot in a predetermined way.

This is where letting the player find their own "narrative experience" in retrospect is crucial, because it frees us from the obligation to chain the player to the point of view of the storyteller. We don't want the player standing back and observing the whole of the work - we want them inside it, interacting, and experiencing the results of their actions. By getting the player to adopt this point of view we can get them much closer to the events which will make up their own narrative experience, which in turn increases the player's emotional involvement with that experience.

I'm sorry, but I didn't like your mining-asteroid example. It seemed to add up to a resource-management game, not interactive storytelling.

Well, obviously, from the point of view of rational analysis it really does add up to a resource-management game. However, from the point of view of the player, I'm not so sure it couldn't achieve the goal of creating and sustaining emotional involvement.

Whether you agree or not, my main point was to try to show how we could work drama into a sim using only the most basic and boring elements I could think of. Swap out the logistical operation and put the player in the middle of a war, tasked with getting some refugees safely to a rear area: it's the same structure from a design point of view, but with a more dramatic context. In any case, it was simply my contention that if we could get a few small but real dramatic moments out of a dressed-up resource-management sim, we could justifiably assume that a great deal more was possible.

In the grand scheme of things, what we're trying to do is move the player's imaginative involvement with a work out of the rational and into the emotional. It doesn't matter what the make-up of our designs is, as long as we reach that goal. Movie audiences don't say, "Well, it's only short lengths of spliced celluloid flickering in front of a lamp," and in the same vein I think it's possible, if we do our jobs well, that users won't say "It's only a resource-management sim."

We are trying to get the player to care, and to believe that their actions determine the outcomes they're caring about. How we do that - how we rig the context, etc. - is of absolutely no concern from the player's point of view.

On a more constructive front, I've come up with an idea that might get us off the ground. What if the audience plays as director rather than protagonist? I've already implemented the idea in the Erasmatron2. The storybuilder can declare that the audience will play as director, in which case all decisions are made by the audience, not the characters. Every time a character has a choice to make, he turns to the audience and asks for guidance. Thus, the audience plays the storyworld more like a toy than a

game. I intend to improve it so that the characters will make the simple and obvious decisions for themselves, asking for direction only for the critical and important decisions, with the dividing line between "obvious" and "requiring guidance" being set by the storybuilder.

As you can no doubt guess, my problem with this is that you retain the replicative storytelling engine and simply shift the point of view of the player. Even more troubling, as I've just mentioned, you're actually moving the player away from the points of view that are most likely to involve them emotionally, creating further distance from the experiences they'll be witnessing and determining.

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In closing, I want to emphasize that what I'm talking about doing - this non-story storytelling - is not easy to grasp. If I didn't know as much about the actual process of storytelling as I do, and about the craft elements of fiction, I don't think I could have made the leap myself. I can only urge you and others to try to rid yourselves of notions of storytelling engines which make the storytelling itself the basis for interactivity.

It is the orchestration of simulated processes - some inherently dramatic, and some framed by a dramatic context - which will provide the emotional component we're looking for. I believe that this emotional component, experienced over time in an interactive setting, will yield, in retrospect, what the user will regard as a interactive narrative experience. If this experience is as compelling as that found in the passive storytelling mediums, we will have done our job.

Take care,

Mark