Media Room Event
Revised Proposal

Created 8/15/83
Last revised 8/17/83

Laurel and Hulteen
Fischell-Turing Productions

Review of Original Proposal

Our initial proposal involved a production of an existing script, THE VELDT by Ray Bradbury, in the media room. The script was chosen because it features a futuristic children's playroom which is quite similar to the media room we are developing here at ASR. The production was to provide motivation and direction for "bringing up" certain aspects of the media room and especially to give us the occasion to work with video and animation on the walls of the space. We were also interested in using the project to attract the attention of Bradbury, in hopes of persuading him to collaborate with us on other interactive projects.

The primary shortcoming of the original project was the lack of opportunities for real-time interaction due to the presence of a "closed" dramatic script. While the design and realization of the media and environment were directly in line with our common research goals, the dearth of interactivity made those efforts less generalizable to other projects. The temptation to revise the script in order to create a more interactive environment was strong, and would have resulted in complicated negotiations with Bradbury's agent. It would also have involved a great deal of script-writing, with a high cost in time and energy. Finally, the purely theatrical aspects of the production were largely "extracurricular" and difficult to justify in terms of person-hours required to do the job.

An alternative project we will propose can meet some of the same goals as the Veldt production:

1. Provide a focused activity to stimulate and integrate development of the media room environment and media design and production.

2. Provide a demonstration of the technical and interactive capabilities of the media room that will stimulate creative collaboration with theatrical and performance artists.

3. Create an occasion for group collaboration and celebration.

Our new, improved project will also meet some specific research goals more directly and will provide more generative results.

The First Eischell-Turing Production: Overview
(In collaboration with Arthur Fischell and Alan Turing)

The central goal of the F.T. Project is to see how a first-person, interactive fantasy system implemented in the media room might work. We envision meeting that goal by creating (in the fine tradition of the Architecture Machine Group) a simulation of a single-user interaction with such a system. The project represents a convergence of the theories and techniques being developed in the media room project (Hulteen and others) and in the interactive story project (Marion, Laurel, et. al.). The actual event will have the flavor of a planned improvisation, using operational technical elements where they exist and human improvisation for portions of the system that are still in the conceptual hacking stage.

The project will utilize a structure which is based on the interactive story idea, with a playwriting expert system (PLAY-RIGHT) which enables first-person participation of the user (INTERACTOR) in the development of the story or plot, and which orchestrates system-controlled events and characters so as to move that collectively generated story forward in a dramatically interesting way. The media room environment may be seen as the interface for the interactive story experience.

The operational elements of the system will include some interactive devices, video, graphics, and animation, sound, and some other environmental effects. We will employ portions of the design (if not the actual code) of Meehan's story generation program, Tale-Spin, as well as the design of the PLAY-RIGHT and other elements of the interactive fantasy version of that system (SEE attached system diagram and "Explanation of I.F. System" below).

Again, our purpose is to study the design of a system, major portions of which have yet to be implemented, by simulating its operation. The exercise will be improvisational in the sense that humans will enact roles that will, hopefully, later be automated -- much like "enacting" a machine which has some working parts, with humans filling in for the parts that are yet to be built. Such human participation is necessary simply because machines are not available that can perform these tasks, and yet we need to see how the system works before we can build those machines. One of our jobs will be to observe how well humans perform at a task which we hope to program computers to do later. We suspect that a person may not, for example, be able to

perform the PLAY-RIGHT task in real time. By identifying the nature of both the difficulties and successes that our human PLAY-RIGHT encounters, we can use the information gathered to continue design of the I.F. system.

The F.T. project will address the research goals mentioned in the first section of this paper, and it will also allow us to:

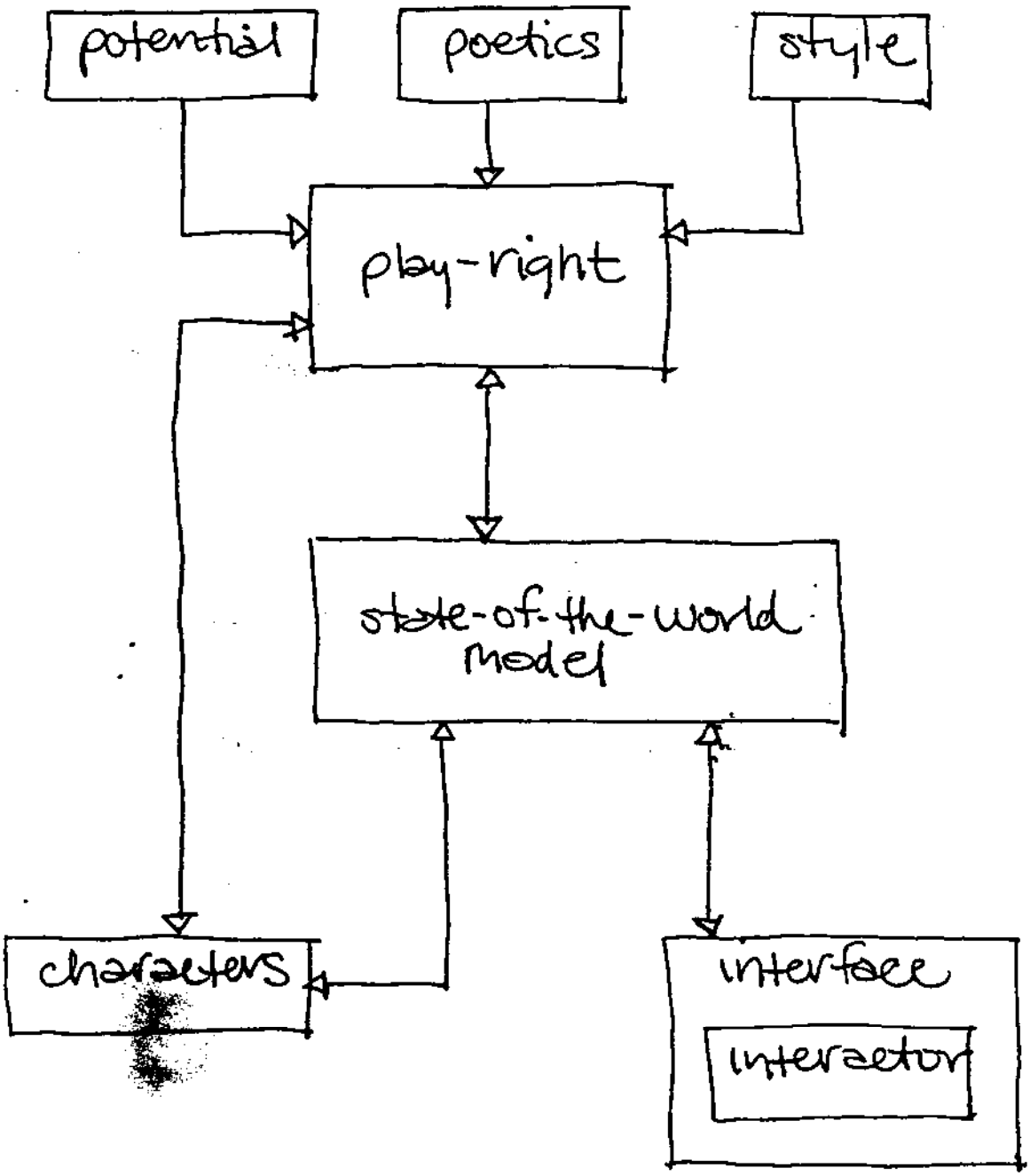
1. Involve theatrical or perfomance artists (like Ray Bradbury or Chris Hardman) in the position of the PLAY-RIGHT, whose actions and heuristics may later be modeled in the creation of the expert system.

2. Incorporate and make extensive use of many interactive devices and strategies.

3. Create visual, auditory, and other sensory materials (relevant to our chosen subject domain) and design techniques for accessing and integrating those materials in real time.

4. Refine the design of an interactive fantasy system, which may be implemented with a variety of interfaces, including the media room.

5. Further sharpen our image of the media room by exploring an interesting sample "application."



Proposed Structure of Interactive Fantasy System.

Explanation of the Interactive Fantasy (I.F.) System

(Refer to diagram, "Proposed Structure of Interactive Fantasy System.")

PLAY-RIGHT: Plans and orchestrates plot development. Material resources include the Potential, the Characters, and the Play-right's model of the Interactor. Formal (heuristic) resources include the Poetics and rules pertaining to Style (or genre).

STATE-OF-THE-WORLD MODEL: A passive element of the system which contains a computer model of the dramatic environment, including the history of the world as well as the current state of affairs, which is read from and written to by the Play-right, the Characters, and the Interface.

CHARACTERS: Computational personalities that know their own nature and can make choices and perform actions in the context of the State-of-the-World Model. They are also capable of accepting new orders (psychotherapy or enlightenment) from the Play-right as the plot develops. In effect, their traits and predispositions are continually formulated by the Play-right.

INTERFACE: Implemented in the media room for this project. The Interface is an active system which consults the State-of-the-World Model and provides a dynamic, sensory representation of the action. Conversely, it reads the interactor's outputs and transmits them to the State-of-the-World Model for inclusion in the current environment.

POETICS: The dramatic rules and heuristics utilized by the Play-right in the construction of the plot. These include notions of dramatic form and structure, causal relations among the elements of the drama, methods for creating various types of incidents (suffering, discovery, and reversal), and means for creating and maintaining lines of dramatic probability.

POTENTIAL: Literally, all the materials of the story world, which are defined by a human author before the system is placed in motion. Only characters, objects, and events which are formulated from these materials can be included in the plot. Potential may be described to the system in various states of formulation; for example, it may include general descriptions of the traits of beings which may inhabit the world and/or formulations of specific characters, depending upon the desires of the author.

STYLE: This "box" may actually contain notions of form or genre (e.g., tragedy, comedy, or melodrama) as well as functional descriptions of styles (e.g., expressionism, realism, or neo-classicism). It is unlikely that these functions will be

differentiated from the operations of the Play-right in the F.T. version of the system.

INTERACTOR: The (human) user of the system. He/she is allowed to interact with the system through the Interface, which controls access to all forms of human input and output. The Play-right generates a predictive model of the Interactor for the purposes of orchestrating the plot. Each Character also creates a unique model of the Interactor as part of his/her knowledge about the world.

What It Will Be Like

Successive Approximation: We envision several iterations of the F.T. experience, allowing us both to tweak the system design and to fill in obvious holes in areas like video and sound. Here is a rough outline of steps in the "pre-production" phase of the process:

1. Meet with interested parties to discuss the overall project, then zero in on technical and creative needs. The theatrically-oriented task assignments from the Veldt project can be largely eliminated, but we hope that the technical and creative commitments made by various researchers to the previous project can be carried over into this one.

2. Person associated with each area of responsibility creates a cost estimate, which we will roll up and present to Kristina for analysis and approval. This will include equipment, person-hours, media, and consulting (primarily the PLAY-RIGHT person).

3. Second group meeting with PLAY-RIGHT in attendance. Attempt to make a decision on the content of the story world. Based on both project goals and resource requirements, create a schedule for the entire project.

4. Design and development of story world, media, and environment.

Here is a proposed version of the "running" phase of the project:

1. Meet with PLAY-RIGHT person to discuss story and review media developed to date.

2. FIRST RUN: This will be the most improvisational session. It should allow us to create a version

of the story that we will use in future runs. It will also serve to identify obvious flaws in the system design and holes in the media which we can repair. We should begin videotaping with this session.

3. SUCCESSIVE RUNS: We envision a finite number of successive runs, with the intention of creating a version which is exemplary enough of our system that we may combine the videotape and some comments to create a viable concept presentation or "demo." This demo will stand as documentation of the I.F. project-in-progress and may also be used as an example of the media room in operation (it may also be used as an adjunct to Laurel's thesis).

4. Future use: At the conclusion of the last scheduled run, the project may be torn down or run again with different artists and/or story worlds. In any case, such future uses should be considered new projects.

Unique Qualities of This Application: Beyond the technical characteristics of the project are some more subjective or artistic qualities which are equally valuable to our research. One of the objectives of the Veldt project was to employ the media room environment in an activity that was centered around the arousal and purgation of emotions, as opposed to the rational or objective representation of knowledge. The F.T. project, operating as it will within a fantasy domain and employing dramatic techniques, preserves this focus. Such "dramatic" usage of the environment has as its outcome a kind of pleasurable experience that is associated with drama, fantasy, and imagination, as distinct from the pleasure that results from the satisfaction of curiosity or the acquisition of knowledge.

Currently, it is productive to distinguish between these two types of outcomes, especially on the levels of context and functionality. The end cause of an interactive fantasy experience is presently conceived as distinct from that of a session with an encyclopedia, and it seems necessary to explore the emotional and artistic dimensions of interactive media in a context where the existence or relevance of those dimensions is not a subject of debate. The interactive fantasy world provides that context. Of course, as we continue to work on both ends of the interactive spectrum, our understanding of the uses of emotion and aesthetics in the representation of knowledge will grow. As our thinking moves in that direction, it is not unreasonable to propose that the I.F. system be used as an interface to various knowledge domains. This is how a convergence of these two currently distinct lines of inquiry may occur.

****SECOND DRAFT FOR YOUR REVIEW****

Research Proposal
Simulation of an Interactive Fantasy System

Created 8/15/83
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Project Description and Research Goals

The central goal of the proposed project is to see how a first-person, interactive fantasy system implemented in the media room might work. We envision meeting that goal by creating a simulation of a single-user interaction with such a system.

By "interactive fantasy" we mean a first-person encounter with a fantasy world, in which the user may create and portray a character whose choices and actions affect the course of events just as they might in real life. The structure of the Interactive Fantasy system, described in detail below, utilizes a playwriting expert system (PLAYWRIGHT) which enables first-person participation of the user in the development of the story or plot, and which orchestrates system-controlled events and characters so as to move the action forward in a dramatically interesting way.

The Media Room, the proposed environment for the project, is a prototypical human interface which is intended to include all available forms of person/machine communication. Current capabilities include speech recognition, speech synthesis, touch sensitive displays, rear screen projection, videodisc, videotape, computer graphics, body tracking, four channel audio, music synthesis, and a LISP machine computer. Planned additions to the room are eye tracking, additional body tracking, a real-time animation system, and digital audio capabilities. Olfactory and thermal effects may also be employed in the Interactive Fantasy simulation.

The project represents a convergence of the theories and techniques being developed in the media room project (Hulteen and others) and in the interactive story project (Marion, Laurel, et. al.). The actual event will have the flavor of a planned improvisation, using operational technical elements where they exist and human improvisation for portions of the system that

have yet to be fully designed or implemented.

Again, our purpose is to study the design of a system, major portions of which have yet to be implemented, by simulating its operation. The exercise will be improvisational in the sense that humans will enact roles, portions of which may later be automated -- much like "enacting" a machine which has some working parts, with humans filling in for the parts that are yet to be built. Such human participation is necessary simply because machines are not available that can perform these tasks, and we need to see how the system might work before we can build those machines.

One of our jobs will be to observe how well humans perform at a task which we hope to program computers to do later. We suspect that a person may not, for example, be able to perform the functions of the PLAYWRIGHT task in real time. Other functions in the system, such as the creation (authoring) of the fantasy world, may always be more elegantly and appropriately performed by humans than by machines. By identifying the nature of both the difficulties and successes that our human participants encounter, we can use the information gathered to continue design of both the human and machine elements of the Interactive Fantasy system.

The Interactive Fantasy (IF) simulation project is designed to meet the following research goals:

1. Involve literary, theatrical, or performance artists in the position of PLAYWRIGHT, whose working methods and heuristics may be modeled in the creation of the PLAYWRIGHT and POETICS portions of the system.

2. Employ the talents of those same artists as authors or creators of the fantasy world itself, observing the problems encountered in order to design authoring techniques and aids that will facilitate such creative contributions. We also hope that the experience will provide generative liaisons with such artists which can contribute to a variety of projects in the lab.

3. Provide the opportunity for observation and analysis of the overall design of the IF system.

4. Incorporate and make innovative use of various interactive devices and strategies.

5. Create visual, auditory, and other sensory materials (relevant to our chosen story domain) and experiment with techniques for accessing

and integrating those materials in real time. These results should be generalizable to other projects (e.g., the encyclopedia project) which may utilize the Media Room as an interface.

5. Further sharpen our image of the Media Room by exploring an interesting sample application.

Explanation of the Interactive Fantasy (IF) System

(Refer to diagram, "Proposed Structure of Interactive Fantasy System.")

PLAYWRIGHT: Plans and orchestrates plot development. Material resources include the POTENTIAL, the CHARACTERS, and the PLAYWRIGHT's model of the INTERACTOR. Formal (heuristic) resources include the POETICS and rules pertaining to STYLE (or genre). In the IF simulation, we expect that the same person who performs the PLAYWRIGHT function will also act as author of the fantasy world, a distinctly and permanently human task (see POTENTIAL, below).

INTERACTOR: The human user of the system. He/she is allowed to interact with the system through the INTERFACE, which controls access to all forms of human input and output. The PLAYWRIGHT generates a predictive model of the INTERACTOR for the purposes of orchestrating the plot. Each CHARACTER also creates a unique model of the INTERACTOR as part of his/her knowledge about the world.

STATE-OF-THE-WORLD MODEL: A passive element of the system which contains a computer model of the dramatic environment, including the history of the world as well as the current state of affairs, which is read from and written to by the PLAYWRIGHT, the CHARACTERS, and the INTERFACE.

CHARACTERS: Computational personalities that know their own nature and can make choices and perform actions in the context of the STATE-OF-THE-WORLD MODEL. They are also capable of accepting new orders (psychotherapy or enlightenment) from the PLAYWRIGHT as the plot develops. In effect, their traits and predispositions are continually formulated by the PLAYWRIGHT. In the IF simulation, the CHARACTERS may be represented variously by human actors and machine-simulated personalities.

INTERFACE: Implemented in the media room for this project. The INTERFACE is an active system which consults the STATE-OF-THE-WORLD MODEL and provides a dynamic, multi-media representation of the action. Conversely, it reads the INTERACTOR's outputs and transmits them to the STATE-OF-THE-WORLD MODEL for inclusion in

the current environment.

POETICS: The dramatic rules and heuristics utilized by the PLAYWRIGHT in the construction of the plot. These include notions of dramatic form and structure, causal relations among the elements of the drama, methods for creating various types of incidents (suffering, discovery, and reversal), and means for creating and maintaining lines of dramatic probability.

POTENTIAL: Literally, all the materials of the story world, which are defined by a human author before the system is placed in motion. Only characters, objects, and events which are formulated from those materials can be included in the plot. POTENTIAL may be described to the system in various states of formulation; for example, it may include either general descriptions of the traits of beings which may inhabit the world or formulations of specific characters (or both), depending upon the desires of the author.

STYLE: This portion of the system might contain notions of form or genre (e.g., tragedy, comedy, or melodrama) as well as functional descriptions of styles (e.g., expressionism, realism, or neo-classicism). It is unlikely that these functions will be differentiated from the operations of the PLAYWRIGHT and author in the IF simulation project.

Description of Project Phases

We envision several iterations of the IF simulation, which will allow us both to successively modify the system design and to fill in obvious holes in areas like video and sound. Here is a rough outline of steps in the pre-production phase of the process:

1. Meet with interested parties to discuss the overall project, then zero in on technical and creative needs.

2. Create and present for approval a cost estimate for all aspects of the project, including equipment, person-hours, media, and consulting.

3. Discuss the project with selected artists and identify PLAYWRIGHT for first round of simulations.

4. Meet with project team and PLAYWRIGHT. Select story domain. Based on both project goals and resource requirements, create a schedule for the entire project.

5. Design and develop story world (POTENTIAL), media, and interactive environment.

The running phase of the project will include the following steps:

1. Meet with PLAYWRIGHT to discuss story and review media and environmental features developed to date. Refine and augment materials as necessary.

2. Produce first run of the simulation. This will be the most improvisational session. It should allow us to create a version of the story that we will use as an example and for fine-tuning future runs. It will also serve to identify obvious flaws in the system design and holes in the media which we can repair. We should begin videotaping with this session.

3. Produce successive runs of the simulation, with the intention of creating a version which is exemplary enough of our system that we may combine the videotape and some comments to create a viable concept presentation or "demo." The demo will stand as documentation of the IF project-in-progress and may also be used as an example of the Media Room in operation.

4. Analyze and evaluate results. At this point we may want to consider future runs with modified system design and/or different artists participating in the simulation.

Meta-Outcomes: Exploring the Uses of Emotion

In addition to its scientific value, the IF simulation is intended to explore some subjective and artistic issues which are equally relevant to our research. One of the our objectives is to employ the Media Room environment in an activity which emphasizes emotional response. The IF system is intended to create for the user a kind of pleasurable experience that is associated with drama, fantasy, and imagination, as distinct from the pleasures that result from the achievement of functional goals or the acquisition of knowledge.

Currently, it is productive to distinguish among these various outcomes, especially as they reflect the assumed relations between context and functionality. The end cause of an interactive fantasy experience is presently conceived as distinct from that of a session with an encyclopedia, and it seems necessary to explore the emotional and artistic dimensions of

interactive media in a context where the existence or relevance of those dimensions is not a subject of debate. The interactive fantasy world provides that context. Of course, as we continue to work within the entire spectrum of interactive forms, our understanding of the uses of emotion and aesthetics in the representation of knowledge will grow. It is not unreasonable to propose that the IF system may someday be used as an interface to various knowledge domains. This is how a convergence of these two currently distinct lines of inquiry may occur.