# Badis as Theatre
## -putting the drama perspective to the test

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**Abstract**

In this paper, an application designed for use as a pedagogical resource in a distance education course is evaluated following the framework of dramatic theory for design of human-computer experiences, which is developed by Brenda Laurel based on Aristotelian aesthetics and includes concepts such as direct engagement, first-personness, mimesis and catharsis. This framework is then critically studied regarding, among other things, the choice between linearity and interaction, and problem connected to free interaction. Finally a proposal for a reformulation of Laurel's model is presented that tries to paint a richer picture, based partly on styles of interaction found in three different computer game archetypes, and connect them to different criteria for design. The paper emphasises that we should design for experience and that the human-computer interaction community would benefit from taking influences from other areas, such as theatre, film and computer games, where there exists advanced knowledge in this area.

# 1 Applying dramatic theory to software design

This paper discusses the use of a framework of dramatic theory in the design and evaluation of an educational software application. The discussion does not concern the pedagogical aspects of the program. Instead, it centres on the experience of using the program which makes this study of interest for design and evaluation of non educational software as well. The program is a simulation, but the framework presented is wider and also applicable to other types of software.

To begin with, I will discuss the decision to use and evaluate the framework of dramatic theory for the design of human-computer experiences developed by Brenda Laurel (see Laurel, 1986; Laurel, 1993). Then I will describe and evaluate a software application that I have been involved in the design of, and finally, in part two, I will take a critical look at the dramatic theory framework itself and make a reformulation of it.

## 1.1 Computers as theatre. What makes the metaphor fruitful?

To design is to be creative, to make something from nothing. It is a cumbersome but rewarding task. There are many theories to choose from to assist the designer in trying to understand what to reach for. This is my attempt to make a case for choosing a framework of dramatic theory for the design of a computer simulated case study. This framework is based on Aristotelian dramatic theory which contrasts to other schools like e.g. Brecht (Willett, The argumentation is derived from Laurel (1993). Historically, it is possible to draw parallels between the evolution of computers

viewed as media and other media, e.g. film, where it can be noted that it was not before the control of the medium moved from the engineers to people who mastered the art of communicating, that the true potential of the new medium was revealed. This evolution can be seen in the development of human-computer interaction in the work of Norman (1988), where his analysis, according to Laurel, supports the view that the interface should represent whole actions with multiple agents, which also is a possible definition of theatre. And in Schneiderman's (1987) concept of *direct manipulation* that according to him can "...generate a glowing enthusiasm among the users", compared to the term *catharsis* in Aristotle (1987) which is a pleasurable sensation which arises from representation and is the function of tragedy, epic and comedy.

Laurel (1986) explains how *direct engagement*, which is the feeling of direct interaction with objects, is created by the use of techniques well known and used within the theatre. The focus should always be on the action. Objects, environments and characters are used to enable the action to take place. The action should be structured with a beginning, middle and end. There should be a build-up of suspense with peaks and valleys, a release in a climax and an ending in the form of a graceful conclusion. The action must be possible to be viewed as a whole. All events should be understandable with respect to some underlying theme or motif and the beginning must still be remembered when the end is reached. In reference to this last criterion Laurel makes the following remark (Laurel, 1993, p. 64):

> This criterion is most immediately observable in computer games, which may require you to be hunched over a keyboard for days on end if you are to perceive the whole at one sitting, a feat of which only teenagers are capable.

There is, however, no total consensus that direct engagement always is appropriate. Andersen (1990) discusses the need to sometimes step outside the interaction to see its technical and organisational preconditions. Thus the application should not only support direct engagement but also supply possibilities for detached reflection, so the user can think about using the program as well as actually using it. Otherwise there is a risk that the user is hindered from evoking changes in the usage situation and possibly in the application. This second mode is not supported by Laurel's model. Andersen suggests that the dramaturgy of Brecht could be an appropriate base for this. Laurel's (1986) claim is, however, that the switch from being in direct engagement is in itself distracting and should be avoided.

There is also a link between the pedagogic method used in the application that will be studied here and theatre. Problem based learning strategies stress the need for a purpose for learning. If a student feel the need for acquiring information from a book, it is more likely that the information will be successfully obtained. One way to accomplish this is to present a problem that feels real to the student, and provide the information needed to solve the problem on demand. Realistic presentation of a problem can, however, lead to undesired effects if you educate e.g. bomb disarming experts and do not want them to jeopardise their health in their training. One possible solution to this problem is to simulate the training on a computer, and in order to do that successfully we must remember the initial imperative, not to spell out the solution to the students but to let them find the answers by themselves through solving an actual, although virtual, problem. Just as theatre, as an unwritten rule with very few

exceptions, never spells out its message to the audience explicitly, but tries to show or demonstrate something that gives the audience the possibility to gain new insights (Andersen, 1990).

Computer mediated simulations can be seen as a way to extend our ability to perform formal operations, i.e. formulating chains of events in the mind instead of acting them out in the real world (cf. Kaptelinin, 1996). The design of simulations has a strong resemblance to the way theatre represents something that *might* go on in the real world. Both are *mimetic*, which Laurel (1986, p 45f) describes as follows:

> A mimesis is a made thing, not an accidental or arbitrary one: using a pebble to represent a man is not mimetic; making a doll to represent him is.

Finally Laurel (1993) makes a redefinition of the purpose of computer applications from being solely to perform what it is intended to do to also include the experience it gives the user, thus stating that the experience has a value of its own.

## 1.2 Description of Badis

*Badis* is a Swedish slang expression for a public bath, but it is also the name of a computer based educational simulation application. It is meant to be used as a support for studies in an undergraduate distance education course in organisational change. The program simulates a case study where the student acts as a consultant appointed the task of trying to find out what has made the working climate in the town's public bath organisation deteriorate. To accomplish this, the student must conduct interviews, distribute questionnaires and collect other kinds of data from the personnel at the public bath, the union officials and the administration at the city hall. The time for collecting data is restricted. To avoid getting meaningless or redundant information the methods for gathering data presented in the course literature should be applied. When the information collection phase is concluded the students write a paper describing their results and proposals for changes in the organisation to solve the conflict. The learning theory applied in the program is presented in Söderström et al. (unpublished). It emphasises in-depth and problem based learning by creating a virtual space[1], referred to as a practicum (see Schön, 1987), where real world practices can be simulated.

I took over the development of *Badis*, which at the time was nameless, in the middle of June -95. At that time there only existed a short description of the different functions that the program should have. The idea was to have a menu structure where the student on the first screen could choose what to do and then new menus to specify the actions more closely. For instance, if the student wanted to conduct an interview, he would begin by choosing the interview option, then decide what group of people to interview, then exactly which person to interview and finally what questions to ask. It would have been fairly similar to conducting an information search in a hierarchical database system.

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[1]This term is used in its most unpretentious sense, and does not imply that the application is some kind of virtual reality extravaganza. Because it really is not!

Since the students should be able to run the program on their own personal computer or by some other similar alternative, the constraints on the hardware requirements were tight. It should not require more than 4 MB RAM or take up more than 10 MB of disk space, and it should be distributable on a few floppy disks. These restrictions severely limited the possibilities to use graphics, sounds and animations. Another restriction was that the programming had to be done in approximately 300 hours due to the financial conditions. It should also run on both Macintosh and IBM compatible computers. The development was done with *Authorware* from *Macromedia*.

Influenced by Laurel (1993) and by a general interest in the area of drama and games I introduced the idea that the application should be designed from a dramatic theory perspective. As a consequence the simulation should be oriented both in space and time rather than just time, so that the student would be able to move around in the practicum, thus enabling for what Laurel (1986) calls *first-personness* which is important for the direct engagement. It can be described as the feeling of being a direct participant of what takes place on the screen rather than having things happening in the computer mediated through the interface and being outside the action. In *Badis* different places offers different actions, so if you are at the city hall you can make interviews with the people that work there, and if you want to send out a questionnaire you can do that from your hotel room, but you cannot talk to someone that resides on a location different from your own current position.[2]

In an early stage of the development there was a place called home, but we[3] realised that it would seem strange to the students to have a home in a town that was not their home town, so we substituted it with a hotel room. This is where the consultant, played by a student, ends up after an introduction sequence. We thought that the actual arrival to the city would be a good starting point, so the first thing that happens is that the consultant gets off a bus and tears a map out of a phone book. The consultant then takes a stroll around town and checks out the places which he later will encounter on his assignment. There is an option that takes the student directly from the title screen to the hotel room so that the introduction can be bypassed when the program is run repeatedly. The purpose of the introduction is to acquaint the student, as a computer user, to how the program behaves and, in the role of the consultant, to the different settings that can be visited later. The first purpose is important in order to make the operation of the computer as transparent as possible so that it does not become a source of frustration later on. The second purpose is to plant the different visual structures of the different settings in the mind of the student so that they later on can work as visual cues to where the student is. Both purposes ultimately aims at creating direct engagement.

When the consultant arrives at the hotel he receives a visit by a person who gives him the actual assignment together with some background information. Then the interactive part of the simulation begins. The student performs actions by clicking

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[2]I have included four screen shots from the application in appendix II.

[3]Although I alone am responsible for the programming and all, thereby included, technical flaws in the program, we were a group of four people, Tor Söderström and Mats Klingvall from the Department of Education, and Mikael Söderström and me at Informatics who regularly exchanged ideas and made design decisions. When I use the term ‘we’ I refer to this group.

buttons located in the control panel at the top of the screen for actions that always are available e.g. quit, or clicking buttons somewhere else on the screen for actions that are situation specific. Interviews and questionnaires are assembled by clicking at the appropriate questions. The control panel also displays information on where the consultant is and how many days he[4] has left for information retrieval. Every time an interview is conducted or a questionnaire is sent out, the consultant spends a part of his available time. If he wants to save a result for future reference additional time is deducted. To move between the different locations the consultant has a map where he can click on e.g. the hotel to go there. In order to be able to look at different documents that are gathered, as the events progress, at any time during the simulation without destroying the space/time continuity we gave the consultant a briefcase. The briefcase can be opened by pushing a button in the control panel. The briefcase is an attempt to follow Laurel's (1993) advise to merge functions of the system into the drama.

The student can quit the application at any time. The next time the interaction is resumed all the documents that have been saved are available in the briefcase and there are as many days left as when the student left the application the last time. Documents that have been put in the briefcase are saved as ordinary text files and can be accessed by any word processor or text editor.

## 1.3 The evaluation

The first unpolished but working development version of *Badis*, called *Badis 0.10d*, was used by The Department of Education in a first semester course called *Learning and Media* as an example of a computer based educational software. Their assignment was to evaluate the program from an educational viewpoint. I was, however, more interested in their *experience* of using the program. To try to catch some of their thoughts about the program a questionnaire was designed and distributed among the students. It was kept short to ensure that it would be filled out and returned by as many students as possible. 24 out of 27 students returned the form. The questions were aimed at trying to show how the program was perceived in reference to some more established media, what they thought about the design, how they thought it could be improved and if an improvement of the experience would lead to an improvement of the educational aspect of the program. As it turned out, some of the students got very engaged in these questions and wrote long comments that were perhaps the most interesting feedback. For a compilation of the questions and answers, see the appendix.

To begin with, it seemed clear that the intended feeling of always being somewhere was fairly weak. The graphical backgrounds that were supposed to work as contextual tags did not have the intended effect. Assuming that the different contexts were successfully planted, this would imply that the graphics was not enough. The solution to this problem could possibly be to extend the context tag to another sensory modality such as hearing. According to Laurel (1993, p. 117), "... the experience of first person participation tends to be related to the number, variety and

[4]The student/consultant will here be referred to as a male in lack of more accurate terms.

integration of sensory modalities involved in the representation", sound could be an important factor in bringing the human actors into the drama. Another key issue in involving the student is interactivity and again the answers implied that there was not enough of it. The problem is of course that if you give the student freedom to roam around freely you will need an application that can handle an almost infinite amount of possible events.

Given the dramatic theory approach it seems natural to search among other branches of dramatic presentation for guidance in the design process. For instance, Laurel (1993) makes use of computer games as examples applications with good direct engagement. My idea was to turn a data collection exercise into something that had some properties of a game but was not really a game. In the end you did not win or lose, but success could be measured indirectly through the quality of the reports. The questionnaire implies that this also was how the application was perceived. A few students answered that they had viewed it as an exercise in information retrieval, but almost all of them saw it as something that was played. This was the intention and my assumption is that this can be contributed to the design of the application as a virtual space where the students could move to different locations and interact with different persons, rather than just retrieving information.

Although it did not show in the questionnaire it was evident that the function of the briefcase was not very well understood. The students asked where their documents had disappeared, when they had been put in the briefcase and some documents that were put there during the introduction was never found by the students. This confusion appeared in spite of the fact that there was a text that in detail explained the briefcase concept every time it was used. Our conclusion is that the explanatory text was simply too long. It seemed that all instructions that popped up on the screen that was longer than a few lines was more or less ignored by the students, especially when they recognised the message. We concluded that the usage of the briefcase should be made more explicit so instead of just having a text on the screen saying "You put the documents in your briefcase..." there should also be an image of the briefcase, preferably accompanied by an appropriate sound. We also agreed that the link between situations where the program put documents in the briefcase and when the user opened it to read these documents should be made stronger by using a sound cue in both instances. Finally we came to the conclusion that all longer text parts should be thrown out of the program. If we could not make it shorter it was better to give it to the students on paper, to be read in advance when it concerned the usage of the program, or to interrupt the simulation and instruct the student to read a specific paper before resuming the simulation when it was a part of the case study. Reading a longer text on the screen with an OK button beneath it is very stressing and it seems that the students think that if it can be passed this easily, it is probably not that important anyway.

We also discovered some other flaws in the representation. One idea was to use a first person point of view, meaning that the things displayed on the screen was what the consultant was seeing. This was in line with the notion of first-personness but we had not been totally consistent. In one scene you can actually see the consultant (yourself), taking papers from another person. This particularly disturbs the student's capacity to personify with the consultant if the student is a female, since the picture

distinctively depicts a male. Another thing that disturbs the first-personness is that short instructions pops up from nowhere, i.e. there is no specified character responsible for uttering the words. We were aware of this problem all along but found it difficult to avoid.

When it came to giving advice on how the program could be made more exciting the favourite suggestion was to introduce unexpected events. This made us realise that the simulation was very mechanical in the sense that if you go to the same place more than once it will always look the same. There will be the same people there and they will always give the same answers to your questions. This contrasts heavily with the real world and also with good computer game simulations. A possible solution that we discussed was to change the conditions by sending out new data to the students during the run of the course, but this was not implemented due to technical constraints.

There were two female students, both in the 30 to 40 age category, who had some interesting comments. They both thought that the excitement in the program should not be increased. Their reasons were that this was an educational program for adults and not a game. Letting the student play a role was childish and applying too much ”make-up” was described as a “risk”. Embedding humorous remarks into descriptions in the program was also a bad idea. It gave the program a whimsical appearance that was unsuitable and there was a risk that students could get offended by jokes that seemed harmless to the designer. This led to the following reflection. All of us who had contributed to the design of the program were men between the ages of 25 and 40, and this had obviously influenced the program. We were probably thinking in terms of how we would like the program to be if we were students when we made the design decisions, and when we *did* think of the students we probably thought of them as males in their twenties.

# 2 A reformulation of Laurel’s model

In this part I will describe three computer game archetypes in order to use them as examples of different types of human-computer experiences with different interaction styles. I will also discuss problems related to so called free interaction. Then follows an attempt to expand Laurels model to make it more generally applicable to software development and criticism.

## 2.1 A quick look at computer game archetypes

Based on the form of interaction and dramatic structure computer games can be classified in the following manner.

### 2.1.1 Adventures

In an adventure game there is essentially only one right way to solve the game. Some things may be done in different order or be completely omitted (often leading to lower scores) but there is a story that you are supposed to follow. These games started out with text based interfaces, e.g. *Adventure* and *Dungeon*, and have since then evolved

into immense multimedia applications, e.g. *Daedalus Encounter*, that still, however, basically use the same narrative structure.

I have chosen to categorise role-playing games as a specific instance of adventure games since they are so similar. The difference in dramatic structure is mainly that the task is clearer and the success is more dependant on *how* the task is accomplished in role-playing games. The difference can also be described as similar to that between trying to find the right way, like in orienteering, and trying to make the best effort in each separate stage, as in decathlon.

### 2.1.2 Simulations

Probably the most known game in this genre is *Sim City*. It serves well as an example of the typical properties of this archetype. There exists a plot, but it is not very detailed. The uncontrollable parameters of the simulation, the environment in Churchman's (1971) terminology, will change as the game progresses. Disasters will occur for instance, to make it more unpredictable, but basically the user decides by himself how the simulation will evolve by building artefacts and making decisions in how to proceed. So the drama consists of an evolving setting and what we could call a set of rule-based event tools. Using a tool alters the setting according to the rules associated to that tool. If you use a spade you will dig a hole regardless of when and where you use it, which contrasts to the adventure games where you only can use the spade for one specific purpose. You are constrained by the tools available and the setting that you start with. The focus of attention is no longer as strongly centred on the *goal* of the activity, to make it to the end of the game. It seems to have shifted to focus more on the current activity. To see this point more clearly, I suggest that you try to remember when you as a child was playing in a sand-pit[5] and your mother called you in for dinner, and compare that feeling with what you felt if you were reading a book in the same situation. It is quite possible that you did not want to be interrupted in any of the situations, but in the sand-pit you did not have to sacrifice the completion of an event. You did not have to wonder how it would end, because the ending of the sand-pit session was not the goal. The process of creating sand artefacts was what was important.

There is, however, another type of simulations that more directly engages the user by putting him/her in the driving seat of a racing car, or in another high interaction, real-time, or close to real-time, situation. An important difference between the two types of simulations is that you are outside, in a controlling position in the first type, and inside, taking active part in the action in the second type. This second type of games have much in common with action games, but typically it is very important to feel that the game realistically depicts the real situation that it tries to simulate. Sometimes the two types are combined in the same game. You can e.g. be a football manager and put together a team, and then act as one of the players during the game.

[5]I realise that my gender flavour this paper in the same way that it did the application.

### 2.1.3 Action games

When you buy for instance a break-out[6] game there is, for some obscure reason, always a story included that explains why you have to hit the bricks with the ball to save the universe. The game in itself, however, has no narrative structure. The drama is created by the struggle to stay alive as long as possible, beating your opponents and/or eventually winning the game. The difference between this category and the second type of simulations is that there is no demand for realistic accuracy here.[7] Sometimes, as in *Break-out*, the action has no similarity with any real situation but even when it has, like in *Street Fighter*, introducing objects or agents that are unrealistic is no problem. People who play these games usually do not have a special interest in beating people up. They play it for the action, not the context. The context plays a role in these games too, but not as much by depicting reality as by providing a setting that offers possibilities for action.

## 2.2 The free interaction smoke screen

Free interaction with a computer system is often proposed as a possible solution to the problems investigated in human-computer interaction (HCI) literature. The discussion of a method for implementation is often limited to mentioning that there would have to be some kind of system of artificial intelligence (AI) involved. To me, these proposals are indications that the author is describing things that "...computers (still) can't do" (Dreyfus, 1992). An example of how troublesome this problem is, is *The Daedalus Encounter* which is a computer game distributed on three compact discs that in spite of its size and interactive intentions actually leaves very little choices to the player. Most of the time is spent watching the digitised actors talking to each other and to you (but you cannot answer back). There are games where the interaction is less limited but it is never far to the threshold where the different possibilities become almost infinite, for instance, when the application allows for free text input, as in the early adventure games from *Sierra On-Line*. You can make the computer answer very intelligently as long as the input follows the plan assumed by the designer of the application. But, as Suchman (1987) points out, people tend to act more in terms of situated actions rather than to follow plans which makes it very difficult to make a system that reacts intelligently to free input. The free interface becomes a smoke screen hiding an inherently constrained mechanism.

To avoid this situation we must first put some thought into what free interaction really entails. The underlying mechanism decides what can be done, but given a certain system the order in which different interactions are approached could be left to the user. Instead of moving from one situation of choosing between a fixed set of alternatives to the next in an predetermined order, the student could be given the freedom for choosing. Again, this is by no means a new concept in the computer game

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[6] In this type of games a ball moves horizontally over the screen. On the left side, there is a paddle controlled by the user. On the right side there is a brick wall. The objective of the game is to make the bricks disappear by hitting them with the ball. The ball must be stopped from exiting the screen to the left, since that will cost you a "life". When the bricks are gone, the ball can proceed to the next level.

[7] Please note the similarity in structure, but difference in experience, between e.g. *break-out* and a tennis simulation game.

construction guild. So called adventure games have distinctively moved towards opening up the strict structure of events and acknowledging the time dimension. An example of this is a game called *Lure of the Temptress* that uses a system called *virtual theatre* which allows the computer driven characters to move around in a way similar to the character controlled by the player. This means that the game will never be exactly the same for two different players. There is, however, a catch. When we approach the task at hand as a set of events that can be acted out in any order (some events may be acted out more than once or not at all), we more or less ruin the possibility to design for a good dramatic structure.

## 2.3 Expanding Laurel's view on software interaction

The interaction aspect of a computer application is similar to having one actor improvising while all the other actors follow a script. This constitutes a situation where the script has to allow for different turns of events, but where the improvisations also has to be limited to those events that are covered by the script. Based on this the interaction between user and system should be like a jazz improvisation where the system constitutes an environment that supports the user without getting in his way. Whenever possible the system should take a more active roll that can enrich the sum of the combined effort and try to make passes that can lead the user beyond preconceived conceptions of the action. Laurel (1993) mentions the idea of having an AI-playwright-agent that can "direct" the interaction in real time. This, to me, is dangerously close to saying that the designer has to anticipate all possible actions in advance which Suchman (1987) has proven to be very difficult.

As a designer you can never predict separate actions of the user but you do know the goal of the actions, so you can design the arena accordingly. Let us take a supermarket as an example, we do not know what a specific customer will buy, but we know that there is a strong possibility that there is some item from the dairy products section on the list. So when we design a supermarket we put that section so that the customer has to pass the other sections in order to get there and maybe pick up some other items on the way. We know that our customer will pass the cash desk so we put things that probably are not on the customer's list but may be difficult to resist, like candy, there. This way of predicting actions by studying objectives can be related to activity theory as described by Nardi (1996).

We have seen that the possibility for a plot has to be sacrificed gradually in exchange for increased interaction. Actually, in most programs there is not much room to subject the user to a complication/resolution scheme, like in theatre. Programs more typically consists of short reoccurring and interleaved themes and patterns. When we slide across the span of the interaction/linearity gauge different concepts will vary in importance, so viewing computers as theatre may be a somewhat constraining metaphor for the purpose of creating some types of computer applications. Maybe a richer picture of different types of programs positioned on a interaction/linearity scale matched with a similarly positioned set of metaphors would be a step in the right direction. At the high linearity end a program could be compared to a film or an adventure game and the design effort should then be concentrated on the development of the plot. At the other end the metaphor could be a game of chess

or an action game. In the absence of a plot the interaction should be made to consist of harmonious patterns. Between these extremes we find the two types of simulations as possible sources for inspiration. I do not wish to propagate for an excessive use of metaphors, my point is that much effort has been invested in making the experience of using computers pleasurable so if this is as important as Laurel claims we should make use of these experiences. This relativistic attitude is supported by Andersen (1990) who mentions control (interaction/linearity) and realism/alienation (direct engagement/detached reflection) as two key elements in stylistic considerations.

I mentioned film as a possible source of influence in building software applications. The reason for this is that film can be viewed as the ancestor of theatre in technical progression, where the next step could be computer applications. Laurel (1993) begins her book by reflecting on the influence of theatre on the evolution of film. Now we can see that film experts are hired to make better computer applications. The difference between these media can be described as one of increasing freedom. Compared to reality, theatre is free in time, but restricted in space. Things can happen in any order suitable, but they must happen at that location. In a movie things can happen anywhere, so the space restriction is looser. With the introduction of computers a new freedom in physical manifestation has been added. This historical perspective implies that to make good computer applications we should rely on some basics that has been known since Aristotle[8] and to this add some insights from film theory. We must also learn how to make use of the new possibilities introduced by the new medium.

Finally, it will not always be enough to position a whole application within this richer picture since different parts of the application can vary in interaction style. There will also be times when one specific section ideally is presented in different fashions to different users.

## 2.4 Conclusions

I think that Laurel's basic ideas can be an appropriate framework for this richer picture of different types of human-computer experiences. The evaluation of the program implies that sound and graphics is not merely there to excite the "audience", but that it is a crucial part of the dramatic structure, and that this structure is of great importance of how the program is conceived. It proved disturbing to have comments come from nowhere, interpreted to come from the programmer. Would these opinionated comments have been accepted if they came from a well defined character within the action? These assumptions will be tested by making some adjustments to the program and then iterating the evaluation process. Then it may be possible to form a stronger opinion regarding the strength of the dramatic theory framework as a guide to the design and evaluation process. The framework should also be tested on other types of applications to further assess its qualities.

The possibility that we inadvertedly design for a specific group of students, males in their early twenties, will also have to be considered. The second semi-public

[8]Even drama theorists like Brecht who rejects the Aristotelian aesthetics use his ideas and concepts as a starting point (Willett, 1990).

version of Badis has already been constructed and evaluated on the same course but by other students during the spring of 1996. This evaluation will be analysed and presented in a forthcoming report.[9]

Once the HCI community of researchers have discovered the usefulness of knowledge from studies of other areas of designing and evaluating experiences, we will probably be in a much better position to continue the work of revealing the true potential of this new medium.

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[9]The latest version of Badis is available through my home page. Both the application and the documentation are in Swedish. Point your browser to: <URL: http://www.informatik.umu.se/~mjson/>

# Appendix I: The questionnaire

The questions were of the multiple choice type but there was room to elaborate on the answer wherever there was a “something else” alternative. Some of the students also used the margins and the back of the paper to express their views more thoroughly. The compilation below only shows the distribution among the given set of choices.

1. Sex.
   Male: 12
   Female: 14

2. Age.
   <20: 2
   20-30: 7
   30-40: 9
   >40: 8

3. Do you think that the program steered what you were supposed to do...
   ...too much: 10
   ...too little: 1
   ...enough: 14
   Did not answer: 1

4. What do you associate the program with?
   A movie: 1
   A game: 13
   Something else: 12

5. How strong was the feeling of being at a certain place at a certain point of time?
   Very weak: 10
   Weak: 13
   Strong: 2
   Did not answer: 1

6. How can the “excitement” of the program be increased? (Choose as many alternatives as you please.)
   Stronger feeling of space and time: 14
   Unexpected events: 15
   Sound effects: 12
   Better graphics (animations): 7
   More distinct descriptions of the characters: 10
   More (?) humour: 6
   Something else: 4

7. Do you think that the student's results on the assignment could be improved by increasing the “excitement” of the program?
   Yes: 11
   No: 10

Maybe: 5

# Appendix II: Screen shots

In the application the images cover a 14 inch screen and have 256 colours.


Fig. 1. This is a picture from the introduction. Notice that the text was too long to fit on the screen all at once.

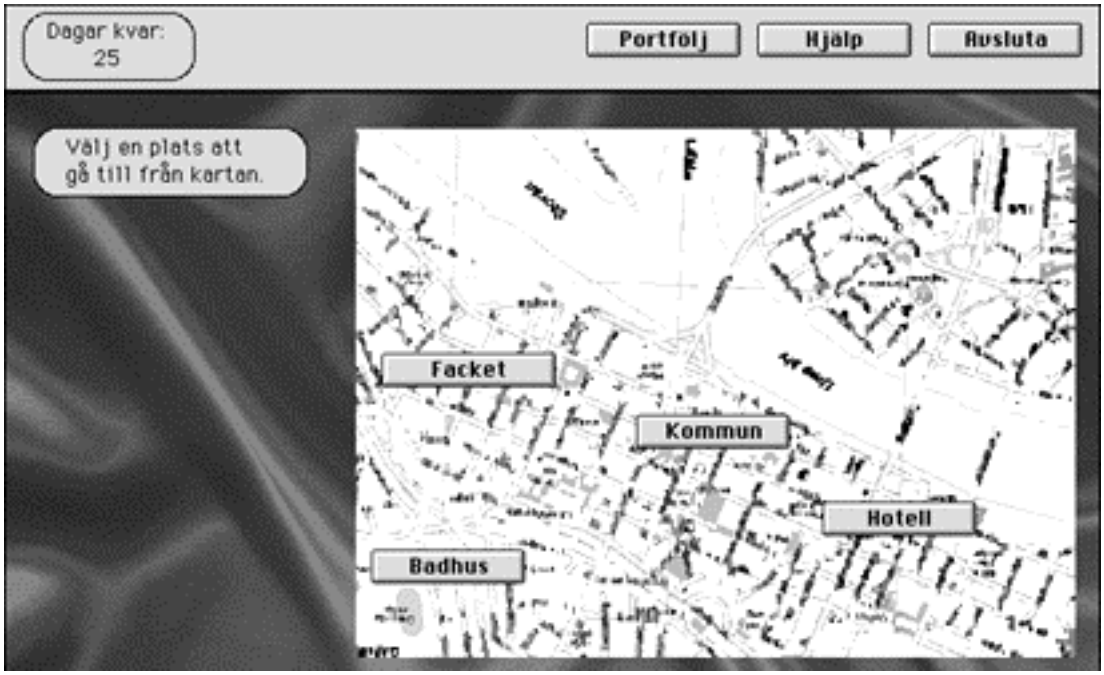


Fig 2. This is the map. The background (red satin sheets) tells us that the consultant is at the hotel.

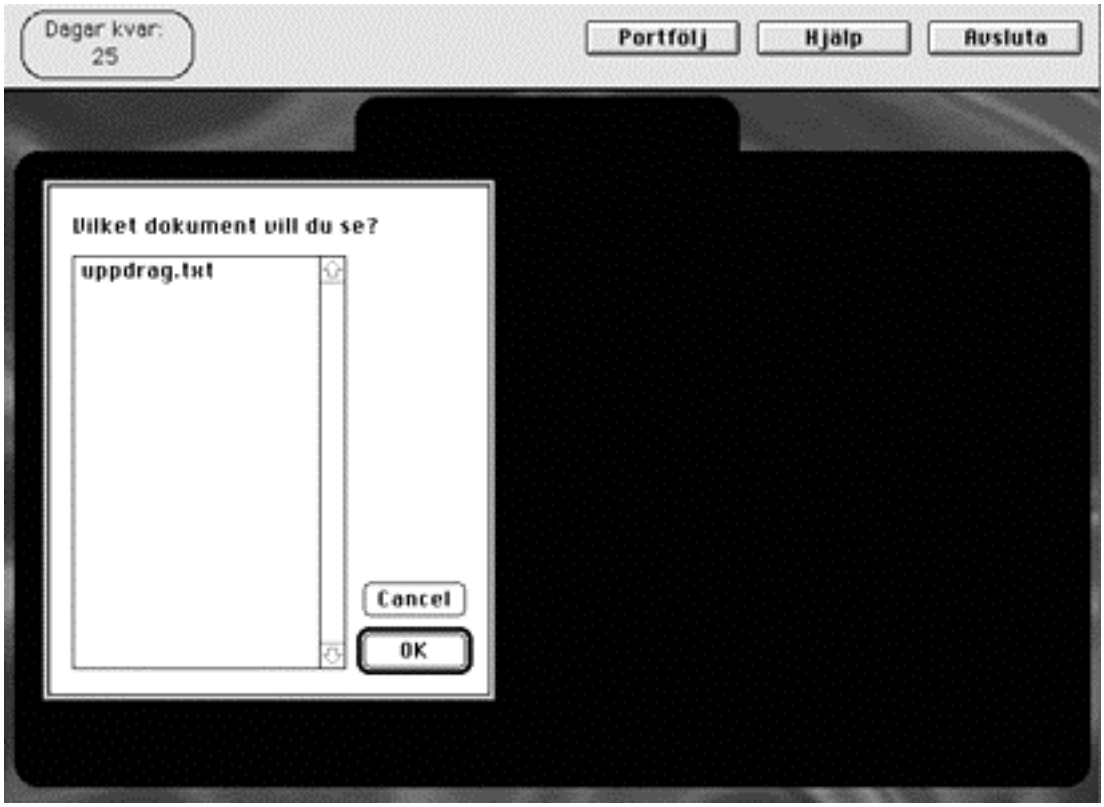


Fig. 4. The briefcase is open. Opening the briefcase or looking at the map does not affect the background.

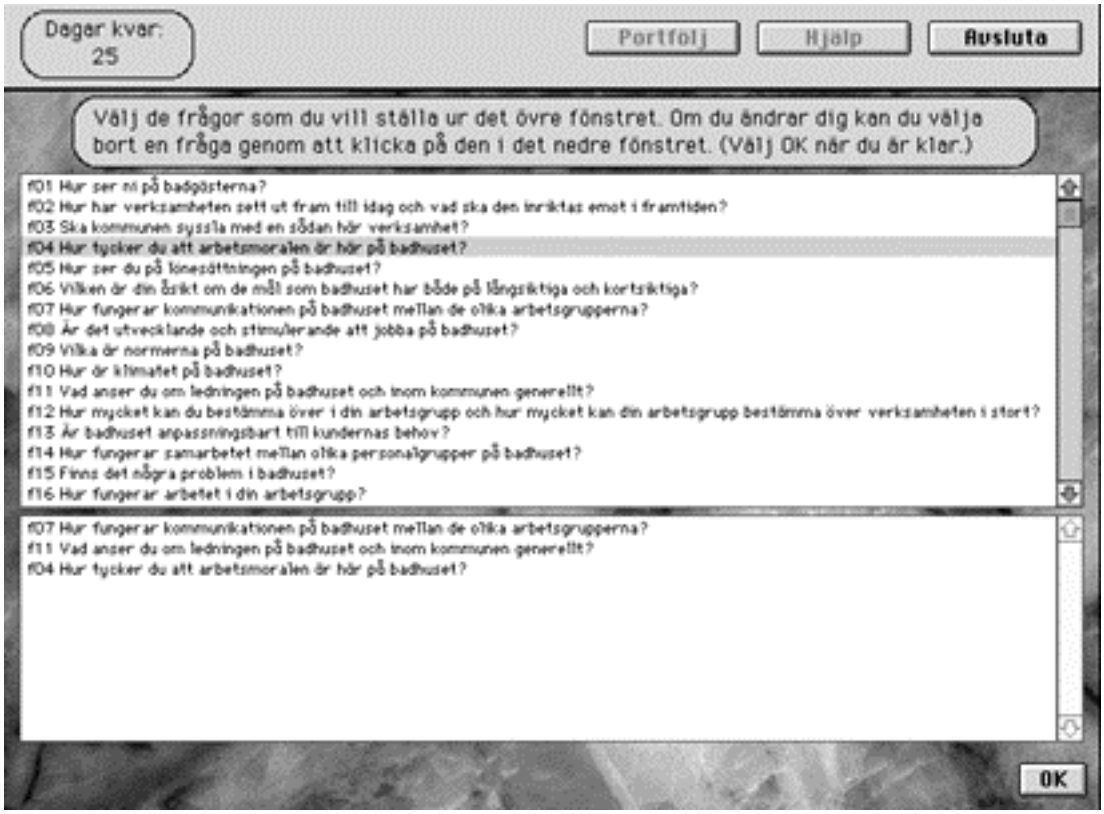


Fig. 4. An interview is conducted at the public bath (marble background).