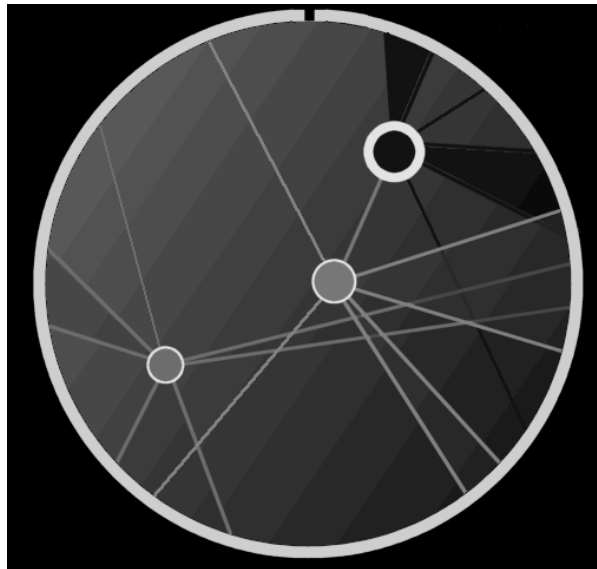


Ivanhoe Discourse Field Navigation

April 27 2004 - Doc 1.4 – Author: NL

1. Concept and Requirements

The Discourse Field of Ivanhoe is modeled as a circular area that encompasses the players, which themselves are circles. The surface of the circle represents the surfaces of the texts of the discourse field. The first letter of the first text is found at high noon, the last letter of the last text at a minute before midnight. Players perform actions on the text and as they do this, rays are drawn out from the players to the affected areas of the document. In modifying the text, the player is drawn to it and as the player moves about the text editing and annotating, so too does his or her avatar traverse the circular area.



Global discourse field with three players and multiple actions

The discourse field is in motion over time. The user can watch the timeline of the discourse field unfold by watching the players move about the field and perform actions. The user can rewind, fast forward, or pause the action at any time. This view of the discourse field is more than a visualization. It is a navigation system by which the user can find and inspect every state of every document for every player in the game.

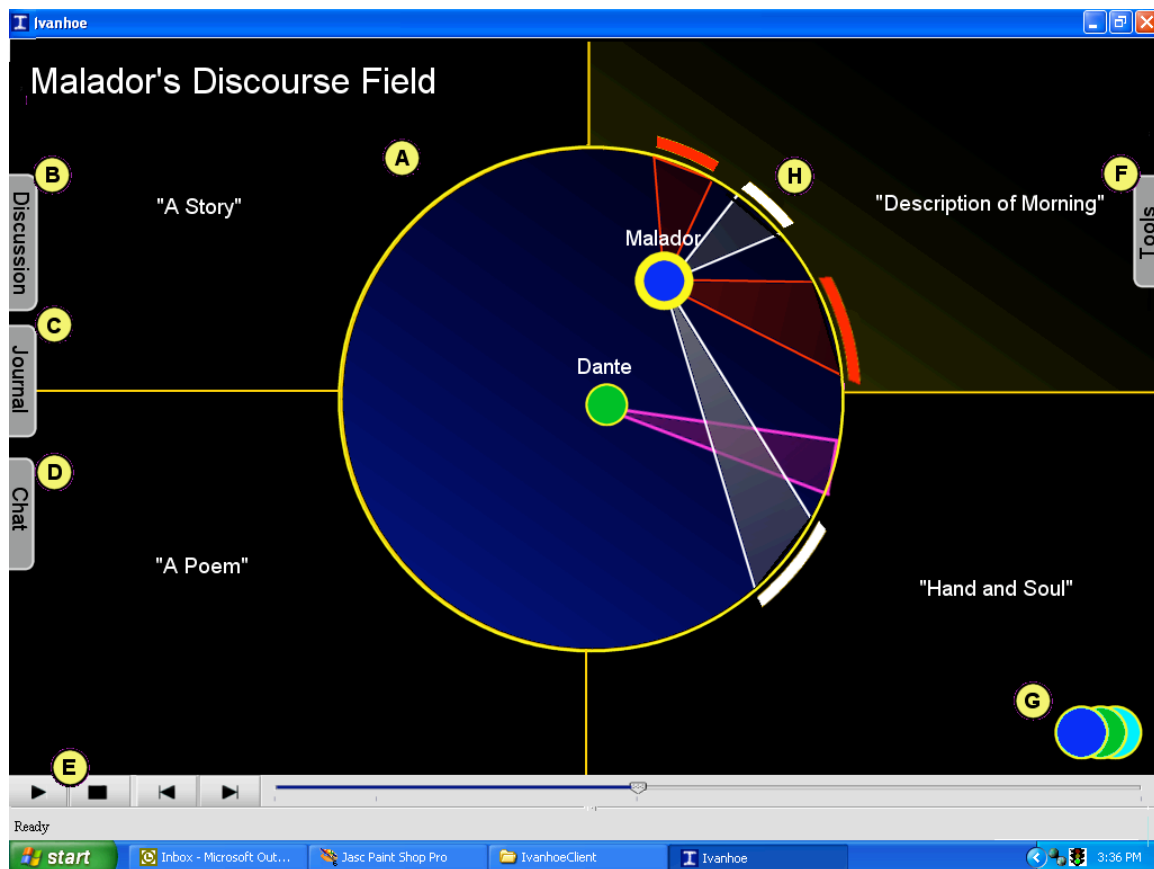
There are two levels of the navigation system. The first is the discourse field of which every player who has ever submitted a move is a member. This we call the “global discourse field”. All player actions are visible here, although they are not all on the screen at the same time. They are animated over time, revealing their patterns through motion.

The second level of the navigation system is the “player discourse field”. What is different about the player discourse field is that it is concerned only with a single player. Other players become visible in this discourse field when they annotate, link to, or borrow from the player’s text.

2. User Interface Specification

Ivanhoe Main Window

The Ivanhoe Main Window is where most of the action takes place in Ivanhoe. This window is an internal frame window, which means that it operates like a mini-desktop. Document windows can be opened over top of it and moved around within the confines of its frame. The background of the window contains the discourse field. Below the discourse field is a set of VCR style controls and a progress bar. These are used to animate the discourse field. To the left is a window that slides out to reveal meta-game communication tools such as the forum and journal. To the right is the discourse field toolbar, which contains tools that act on the discourse field and help manage the document windows. At the bottom of the screen is a chat area for typing with other players.



A mockup of an Ivanhoe game in progress

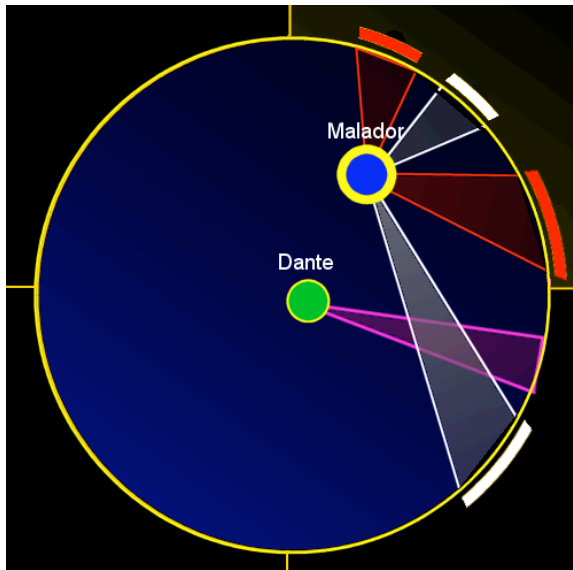
Ivanhoe Main Window Elements

- A. Discourse Field
- B. Discussion Panel
- C. Journal Panel
- D. Chat Panel
- E. Timeline Control
- F. Discourse Field Tools
- G. Navigation History

Discourse Field

The discourse field is comprised of the elements described below.

Discourse Field Circle



The discourse field circle is the primary object in the center of the window. Colors are selectable via the Custom Colors button in the Toolbar, but there are a few defaults. The color of the circle is green when the user is looking at his or her current move, yellow otherwise. The color of the interior of the circle is cyan for the global discourse field. For the player discourse fields the color matches the player's color.

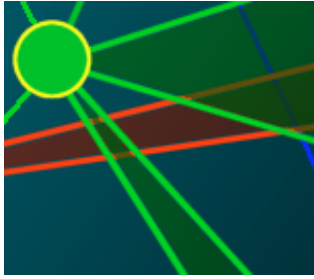
Player Circles



Each player is represented as a colored circle. The circle can also be textured with an icon to represent the individual player. As the player performs actions, the circle moves about the discourse field, drawn by the gravitational pull of the actions. Single clicking on an individual player makes the player's circle more prominent and also makes available the Document State Arcs, described below.

The user can navigate between the global and player discourse fields by double clicking on the player circles. Double clicking on a player circle in the global view brings up the player discourse field for that player. When in the player discourse field, clicking on another player brings up the other player's discourse field.

Action Lines and Arcs



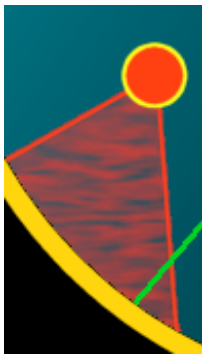
Actions are represented as lines or arcs that are cast out from the player to the discourse field surface. Arcs are used to mark spans of text. Lines are used to mark a single point in the text. Arcs are colored coded in the global discourse field according to who performed the action.

At the global discourse field level, actions that insert text into the document are displayed as **lines**. Insertion of text is considered to happen at the point of insertion. The length of the document changes according to amount of activity occurring. Markup actions such as annotation, links, paraphrasing and references are displayed as **arcs**. At the individual player's discourse field level, all actions are displayed as **arcs**.

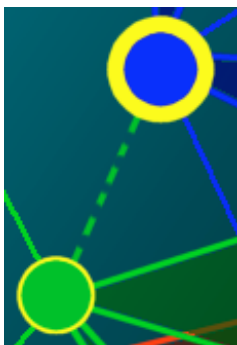
Action lines can be color coded by the user, but there is a default color mapping provided:

- **Red** – Deletion
- **White** – Insertion
- **Purple** – Annotation
- **Orange** – Paraphrase

The colors provided are just starting points; with the Custom Color Dialog users can configure an individual set of colors. Optionally, users can also specify textures as depicted below.

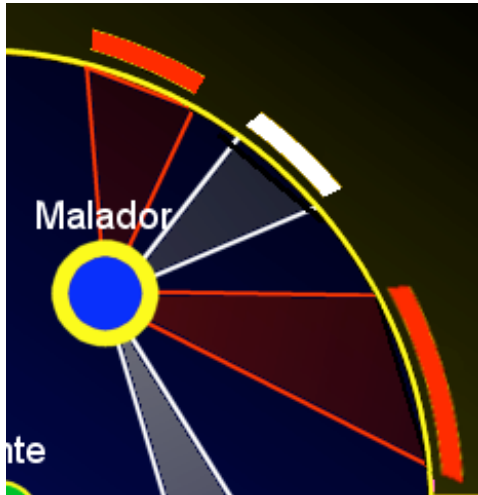


Inspiration Lines



When a player performs an action off another player's discourse field, a dashed line is drawn between the two players in the global discourse field. The line is the color of the player performing the action, just as with lines that are drawn to the discourse field itself. The angle at which it intersects the two circles is incidental to their current positions and carries no meaning. In addition, the line merely indicates that player A took inspiration from player B in this move, but it does not indicate how many actions occurred. Examining the player's discourse field will reveal this information to the user.

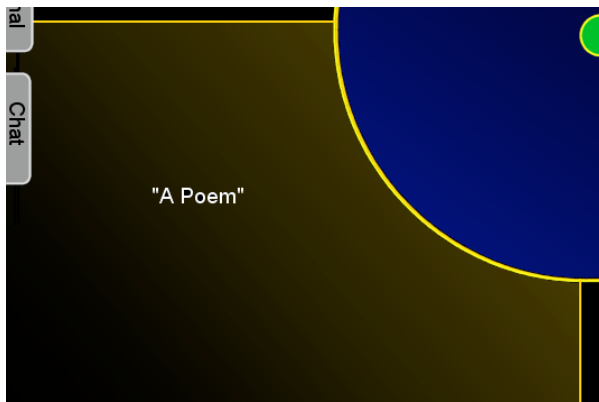
Document State Arcs



Each action in the discourse field creates a new document state. These are marked by the Document State Arcs. When the user clicks on a specific player, the Document State Arcs for all of that player's actions are displayed around the perimeter of the Discourse Field Circle. If the arcs come too close to one another they automatically stack. If the arc is representing a line, a pie slice is drawn. The arcs are colored to match the color of the action they represent.

Clicking on a Document State Arc selects that specific state. When the user is looking at the current move, the user can then click on the Remove Action Button to remove this action from the move. Double clicking on it brings up a read only document editor for the document in the specified state.

Document Area

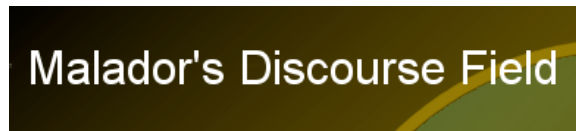


The discourse field is sub-divided into sections of equal size for each document in the discourse field. Tick marks are drawn on the Discourse Field Circle to indicate the ending of one document and the beginning of the next. From these tick marks, lines are cast out into the surrounding space. The Document Area for a given document lights up when it is rolled over. It is green for documents that have been added to the

current move but not yet published, yellow in all other cases. Each of these areas is labeled with the name of the document in quotes.

This area outside the circle is clickable. Double clicking on it summons a document editor containing the document in the state it was in at the end of the currently displayed move. If the currently displayed move is the player's current move, it will be editable, otherwise it will be read only.

Discourse Field Label



The Discourse Field Label displays the following text in the following states:

When viewing the Global Discourse Field... “Discourse Field”

When viewing the Player's Discourse Field... “<player name>'s Discourse Field”

When viewing the current move... “<player name>'s Current Move”

Discourse Field Timeline Control

The Discourse Field Timeline Control provides the expected facilities to allow the user to play back a sequence of moves, pause, rewind, or go to any arbitrary point in the discourse field timeline. It works much like a QuickTime movie player. These controls drive the animation of the discourse field.

The progress bar shows the linear sequence of moves through time. Moves from players are ordered by timestamp and evenly spaced along the timeline. The timeline gives a visual cue to the proximity of moves, showing gaps during inactivity and clusters of “ticks” during times of intense activity.

The far right position of the progress bar is reserved for the current move. This is the move that the user is in the midst of authoring and has not yet published to other players. The player can move the timeline manually to the end of the progress bar or press the current move button.

When inspecting the current move, actions are added to the discourse field as they are entered. Actions can also be deleted from the current move. When viewing the current move, the Remove Action, Remove All Actions, and Publish Move Buttons are enabled on Discourse Field Toolbar.

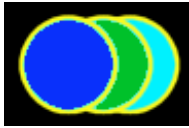
Discourse Field Toolbar

The Discourse Field Toolbar contains buttons that access functionality related to the discourse field and the management of the document editor windows. Like the Meta-Game Communication Panel, it can be minimized to a tab that hangs out from the right side of the screen. The following buttons are found on this toolbar:

- Add Document Button
- Remove Action Button
- Remove All Actions Button
- Publish Move Button
- Search Discourse Field Button
- Tiling Control
- Custom Colors Button
- Close All Windows Button

- Help Button
- Exit Button

Navigation History Control



The Navigation History Control is a set of horizontally arrayed circles that represent the discourse field that is currently on the screen and discourse fields that have been recently on the screen. As users navigate the discourse field, drilling down by clicking on the Player Circles, they may occasionally wish to go back to where they had just been. This control provides that facility. The leftmost circle represents the user's current location and the circles to the right represent previous locations. Clicking on the circles to the right returns the user to the respective location. When the mouse hovers over a circle, tool tip text appears with the text from the discourse field label.

Move Summary Popup

The Move Summary Popup appears when the user hovers the mouse over a player circle. The move summary is a narrative description for the currently displayed move for the currently selected player. The user enters the move summary in the process of publishing a move.

Discussion and Journal Panels

The Discussion Forum is an in game message board which allows players to communicate with each other even when they are not online at the same time. The journal area is a private note taking facility for the individual player. It is not visible to other players. These panels can be minimized to a tab that hangs out from the left side of the screen. Restoring the panel from this tab resizes in the discourse field view to accommodate it. When new unread messages are available in the discussion forum, the tab for the Discussion Panel is highlighted to reflect this.

Player Chat Area

The player chat area is used to display chat from other player's as well as system messages such as when a player enter or exits the game or submits a new move. The chat bar below the main text window allows the user to compose messages to type to other players.

Custom Color Dialog

The Custom Color Dialog appears when the user clicks on the custom colors button on the toolbar. This dialog allows the user to customize a set of coloring and texturing rules for the discourse field visualization. A sample rule may read like the following, "When {player} does {action} display it {color/texture}." There would be options to apply the rule for all players and all actions.

Appendix A: Known Issues Log

This appendix provides a place to track known issues with this design over the course of development. These include unresolved questions about the design, plans for future enhancements, technical issues, conflicting requirements, etc.

Current Known Issues

- The Document Area labels may get crowded when we start to have a large number of documents. We may need to make the labels only appear when they are moused over. For now we agreed to implement it as designed and see how it goes. - *NL*
- Currently we are using color to indicate player identity. There is a limit of about a half dozen contrasting colors, making color a non-unique identifier. Since player circles are always drawn with their names next to them, I don't think this will be a major problem. - *NL*