

Monolithic } Intermedia
 Note Cards
 KAS

Open Hypertext - Chimera

ca: - application integration

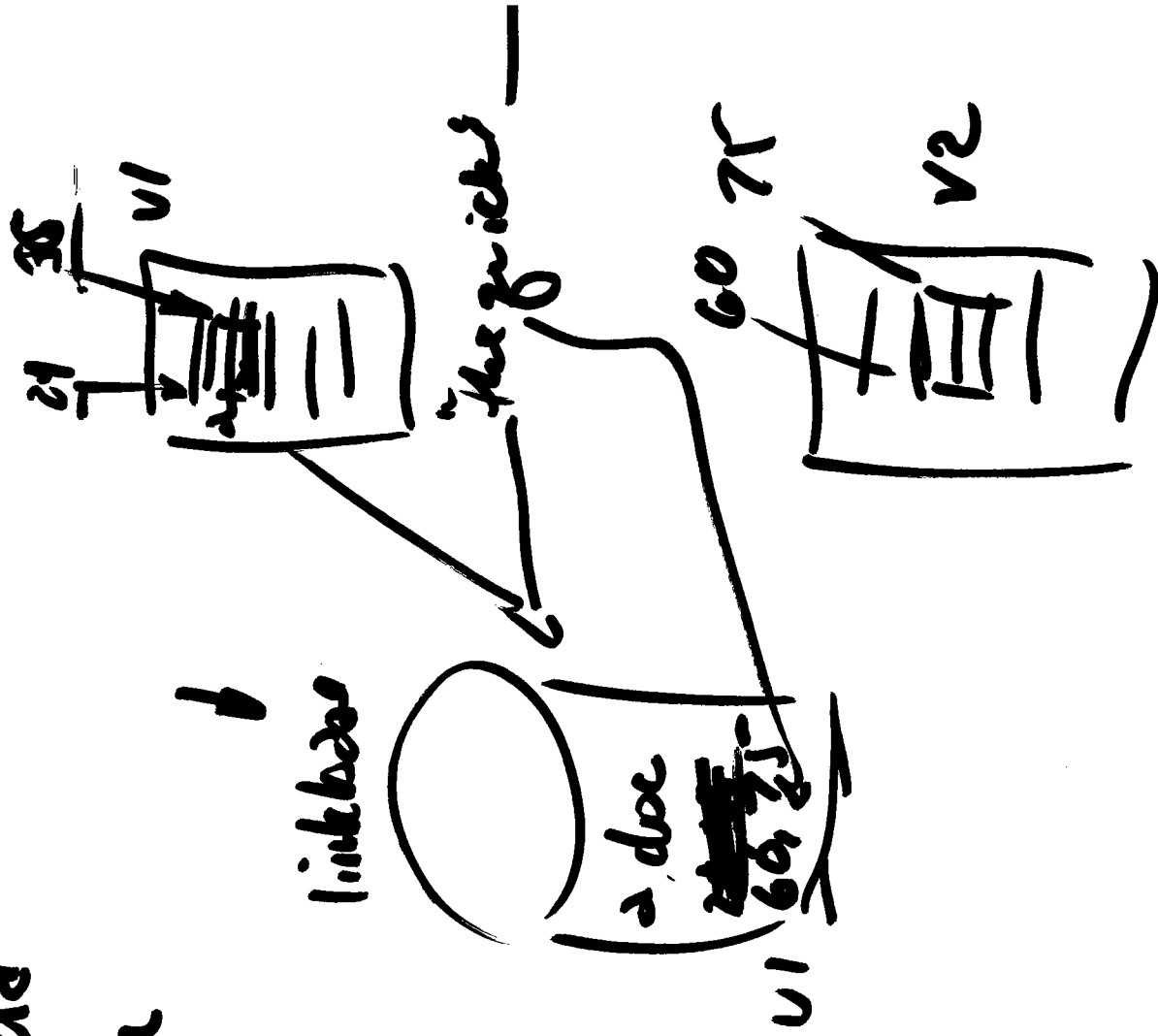
- poor UI control

- versioning

- loss of links when
 xfer of file

- system - manual
 editing

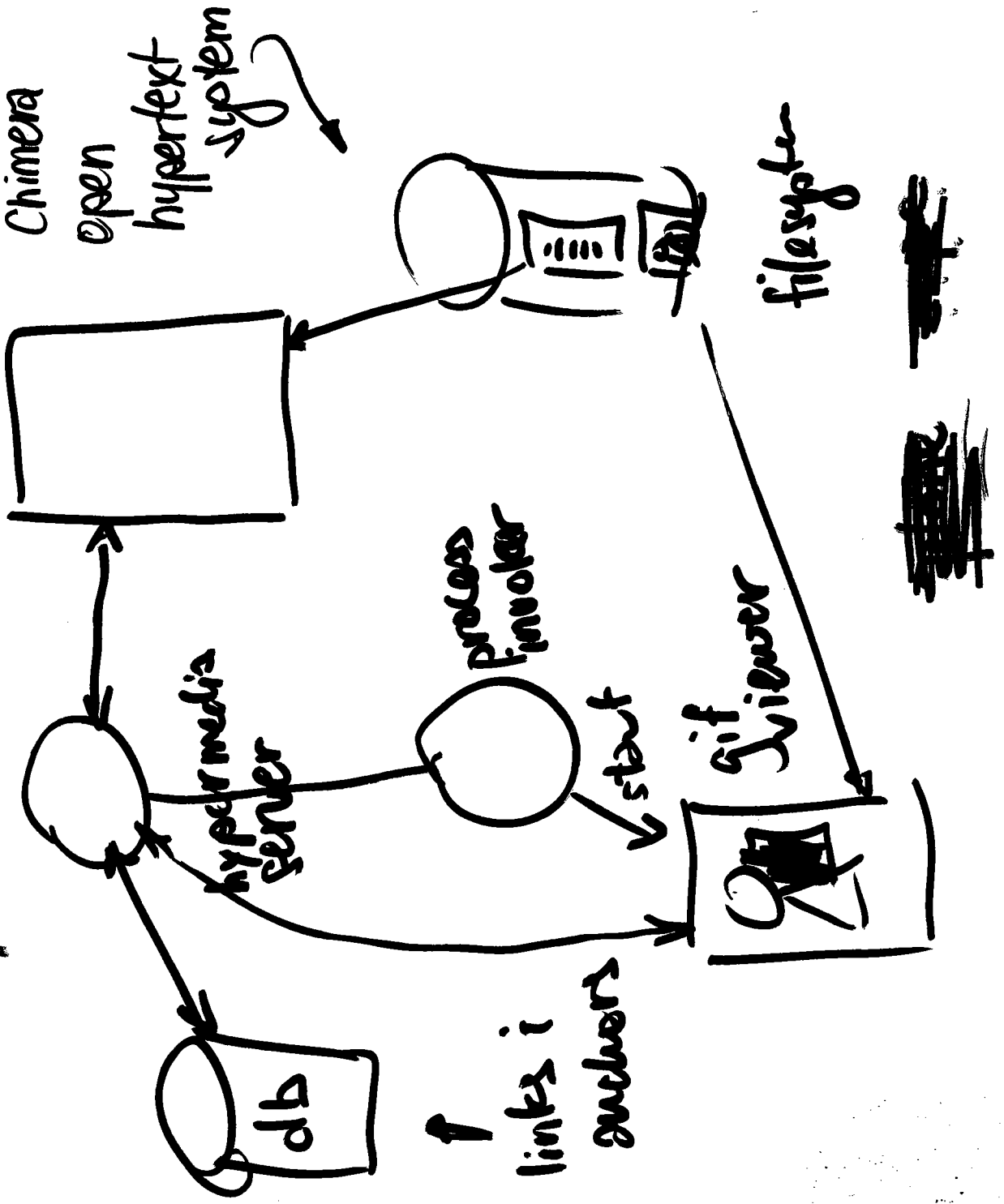
open hypertext:



Monolithic

Open Hypertext Systems

Architecture
of
Chimera
open
hypertext
system



Spatial

- using spatial layout on-screen to represent relationships

- Aquanet - Cathy Marshall, PARC

- VIKI ↙

- VKB - Frank Shipmen, TAMU
↳ downloadable

Adaptive

Notecards (monolithic)

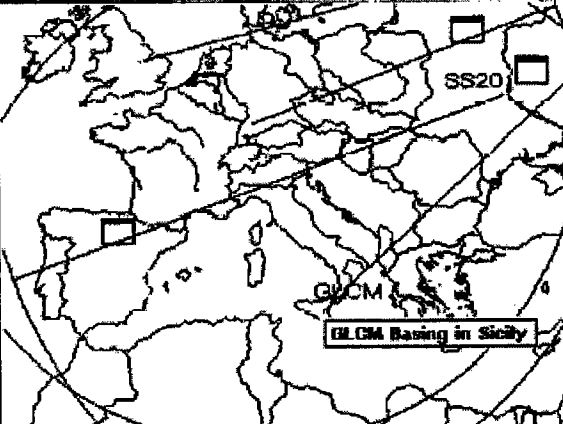
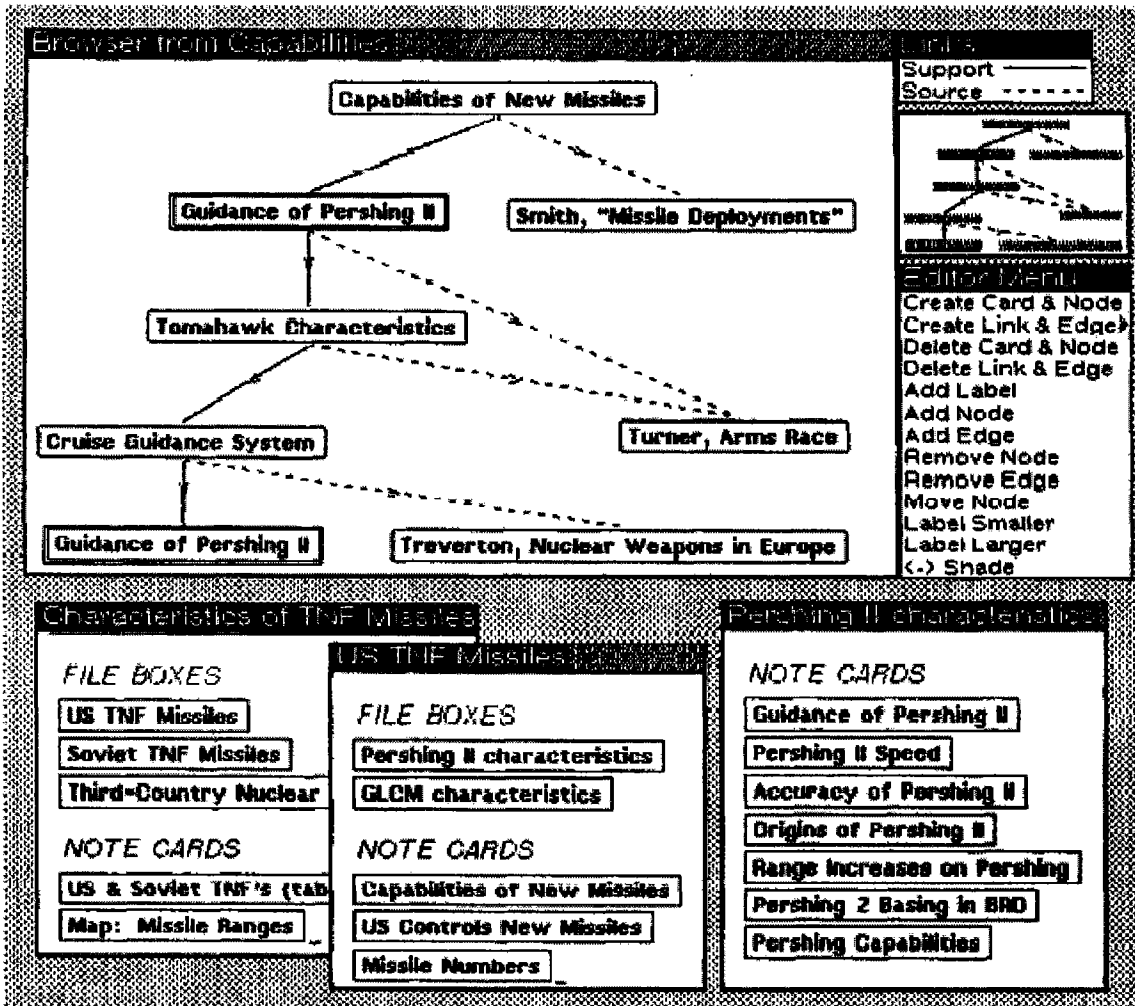
<p>Capabilities of New Missiles</p> <p>Even though the weapons in question replace older weapons (the Pershing IA and the Vulcan bomber), both are capable of more destruction faster than their predecessors. This is the result of new radar guidance systems, with new levels of accuracy. Also have sufficient range to make vulnerable installations and cities in the Western USSR, in the case of the P 2, within a matter of minutes.</p> <p>(p. 371) See Guidance of Pershing II</p>	<p>Map: Missile Ranges</p> 
<p>Guidance of Pershing II</p> <p>"The new American Pershing II missile, fitted with a radar-homing warhead, is designed to be even more accurate. As it falls back to earth this compares a radar image of the target with an image stored in its computer memory. It should then be able to adjust its flight path so as to hit its target with pin-point accuracy after a journey of 1,600 Kilometers." (p. 13)</p> <p>See (Unspecified) Tomahawk Characteristics</p>	<p>Tomahawk Characteristics</p> <p>Tomahawk cruise missile: jet engine produces speeds of 800km/h over distances of 2,600 km. [Icon] Missile carries a computer which is programmed with maps of the areas missile is to fly over, so can compare actual position with programmed course and correct course. Computer is designed to allow missile to follow a zig-zag</p>

FIGURE 1. Example Notecards with Embedded Link Icons

Notecards



Characteristics of TNF Missiles

FILE BOXES

- US TNF Missiles
- Soviet TNF Missiles
- Third-Country Nuclear

NOTE CARDS

- US & Soviet TNF's (TAB)
- Map: Missile Ranges

US TNF Missiles

FILE BOXES

- Pershing II characteristics
- GLCM characteristics

NOTE CARDS

- Capabilities of New Missiles
- US Controls New Missiles
- Missile Numbers

Pershing II Characteristics

NOTE CARDS

- Guidance of Pershing II
- Pershing II Speed
- Accuracy of Pershing II
- Origins of Pershing II
- Range Increases on Pershing
- Pershing 2 Basing in BRD
- Pershing Capabilities

FIGURE 2. Example Browser Card (top) and Filebox Cards

Notecards

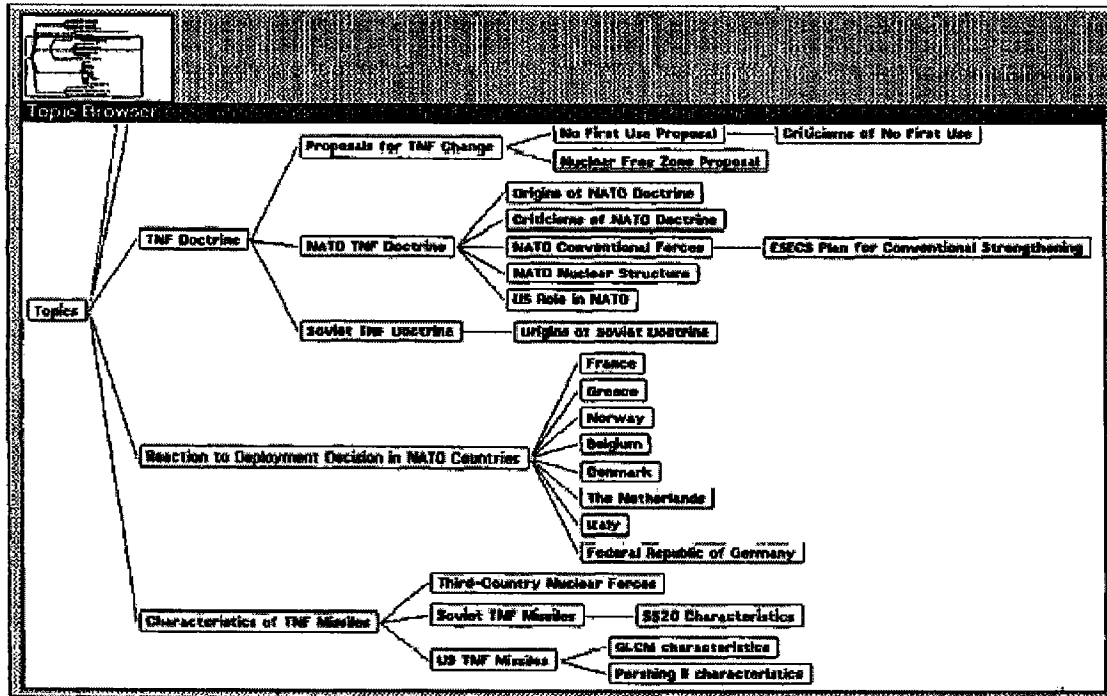
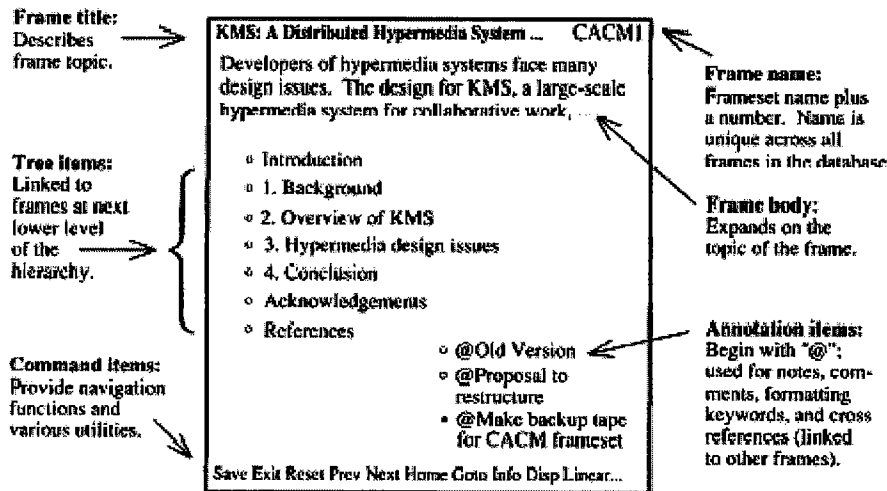


FIGURE 3. Browser of the Filebox Hierarchy from the Public-Policy (NATO-missiles) Notecard

KMS – Knowledge Management System

Robert Akscyn, Donald McCracken, Elise A. Yoder

(monolithic)

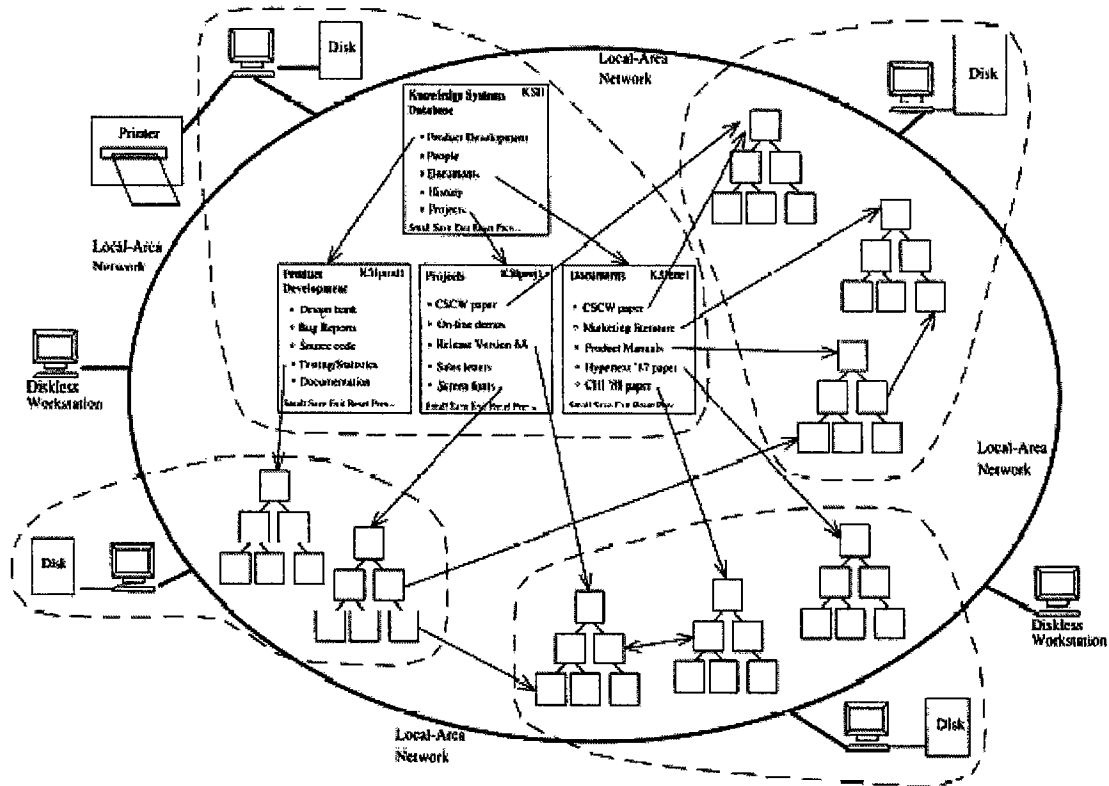


This is the "top" frame of the frame hierarchy that represents this article. A frame may contain any combination of text, graphics, and image items. Each individual item can be linked

to any other frame (indicated by a small hollow circle) or to a program (small solid circle).

FIGURE 1. Typical KMS Frame

KMS



Each little hierarchy of frames represents a task-related group of frames, such as a document, group of sales letters, issues analysis, etc. The dotted lines

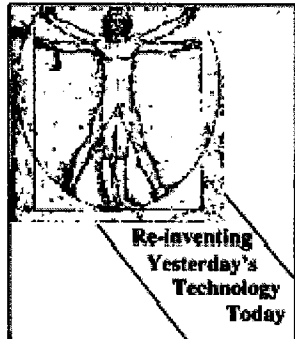
indicate which framesets are stored on which disks.

FIGURE 3. Hypothetical KMS Database Distributed Across a Network

Brochure26

Plan for brochure cover

Here is the current mockup of the cover design for our brochure.
Please feel free to make comments.



↑

Back

Re-inventing
Yesterday's
Technology
Today

• @Comments

↑

GMCP
copy
Del

• @Alternative images

• @Old versions

@Deadlinks

↑

LMCP
copy
Del

• @Make backup tape

↑

AMCP
copy
Del

Save Exit Reset Prev Next Home Goto Info Disp Linear Print Fmt UnDel Scale Exit Grav

- The KMS mouse cursor changes dynamically to indicate the operations currently available on each of the 3 mouse buttons. Here we show the principal KMS cursors sprinkled on a frame to illustrate the contexts in which they appear. The operations performed by the buttons for the various actions are:
- Act** Invoke action (KMS program)
 - Anchor** Anchor the item being dragged by the #Cube
 - Back** Go back to the previous frame (dragging attached items, if any)
 - Copy** Copy the item
 - Del** Delete the item (middle and right button combination)
 - Goto** Go to the frame to which this item is linked
 - Move** Latch onto the item for moving (dragging)
 - Line** Create first endpoint of a line (starts rubberbanding)
 - Link** Create a link to a new frame or existing frame
 - Rect** Create first corner of a rectangle (starts rubberbanding)

FIGURE 4. Frame Showing KMS Cursors in Different Contexts

Intermedia (monolithic)

Nicole Yankelovich, Bernard J. Haan, Norman K. Meyrowitz, Steven M. Drucker

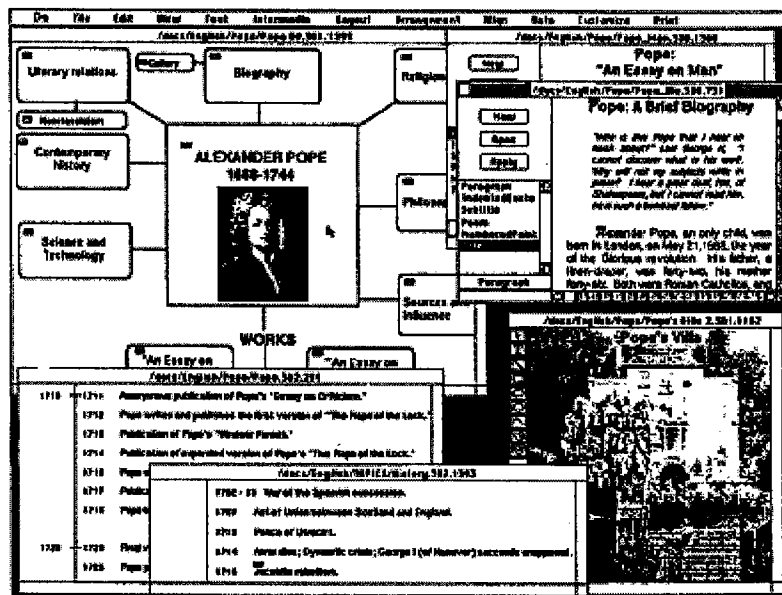


Figure 1. Two InterText documents (top right), two InterVal documents (bottom left) and two InterDraw documents (top left and bottom right) open on the screen. Both InterDraw documents contain scanned images cropped, copied, and pasted from InterPix documents.

Sample session

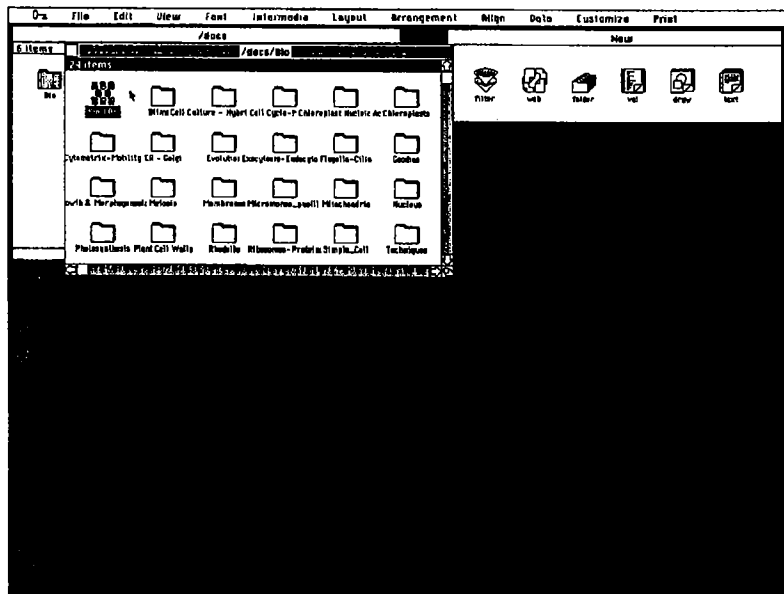
To illustrate Intermedia's user-interface features and linking functionality, this sidebar will take you on a system walkthrough designed to simulate the interaction that takes place during a hands-on Intermedia session. The screen illustrations should help you visualize the system, while the text should supply the action.

The example is taken from *Bio 106: Cell Biology in Context*, designed by Brown University biology professor Peter Heywood. Students in Heywood's plant cell biology course use Intermedia's editors, utilities, and linking functionality to write term papers and explore materials about the cell and its processes.

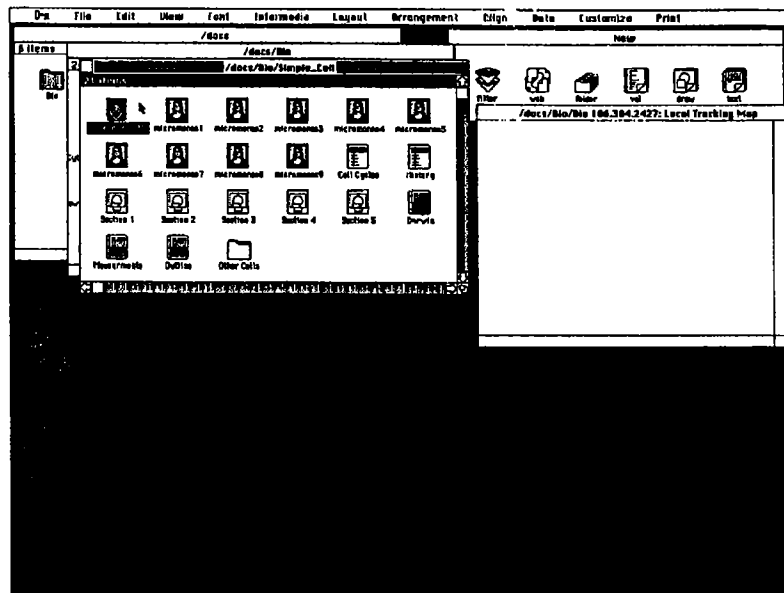
The scenario will take you through a sample session from the perspective of the biology professor in the midst of creating course materials.

Screen 1. As you can see, the Intermedia desktop includes a window manager, a graphical folder system, a menu bar, and a mouse interface. The contents of the folders reflect the underlying hierarchical structure of the file system.

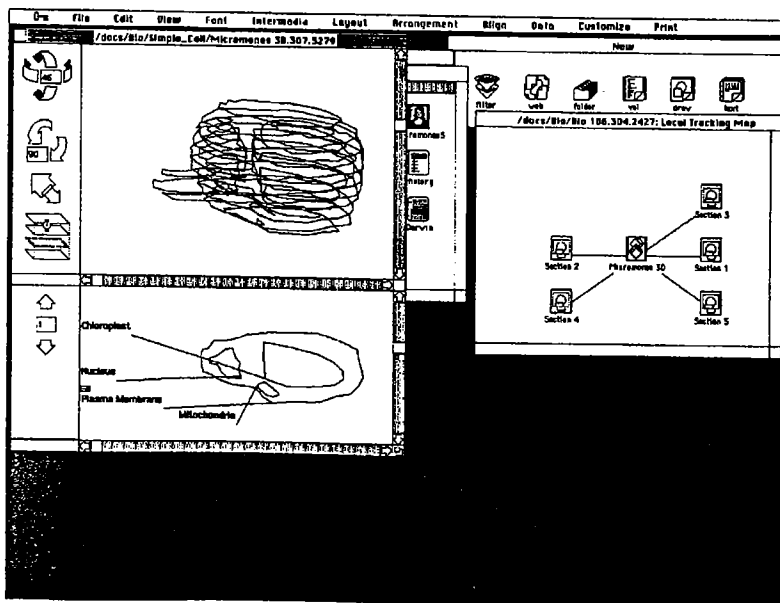
Unlike the Macintosh, Intermedia does not store application icons in the same folders with documents. Instead, application icons are stored with several other special-purpose tools in an application, or New, window that you can see in the upper right corner of the screen. The reason for this is twofold. First, users do not have to search through folders to find the applications. Even if the New window is hidden from view by overlapping windows, selecting the New command from the File menu will reveal it. Second, in a networked environment, it is best to have a single set of applications in an agreed-upon place that can be maintained and updated by a system administrator.



Screen 1



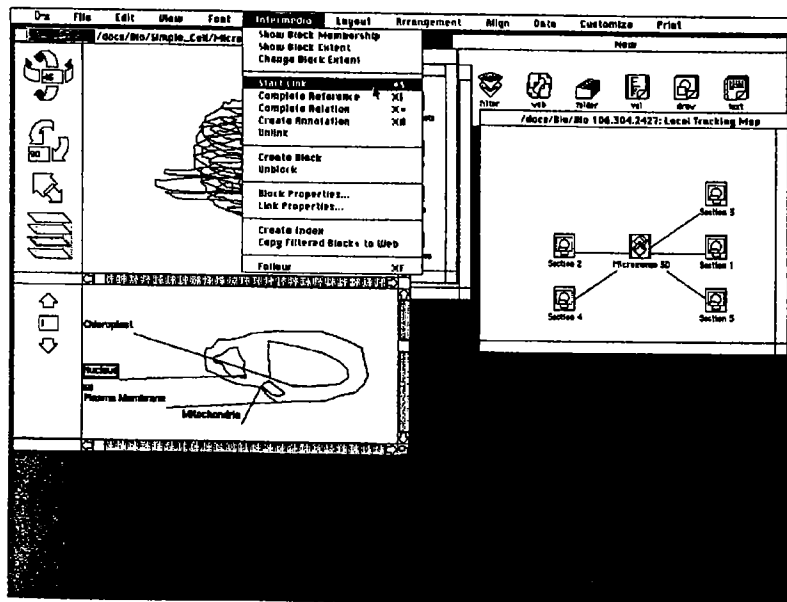
Screen 2



Screen 3

Before we browse through the documents contained in the folders, follow links, or create them, we must first define a context by opening an existing web or by creating a new one. If a web is not open, we can still open and edit the documents even though no link and block information will be visible. Rather than beginning a new web, we select the icon titled "Bio 106" and choose the Open command (not pictured) from the File menu.

Screen 2. After opening the web, indicated by an empty local tracking map window (described below), we open a folder contained in the "Bio" folder called "Simple Cell." The icons in this cell folder represent a folder plus a number of different types of documents (one InterSpect, nine InterPix, two InterVal, five InterDraw, and three InterText). Any of these document icons can be selected, opened, and edited. We select and double-click on the InterSpect document called "Micromonas 3D" to open it.



Screen 4

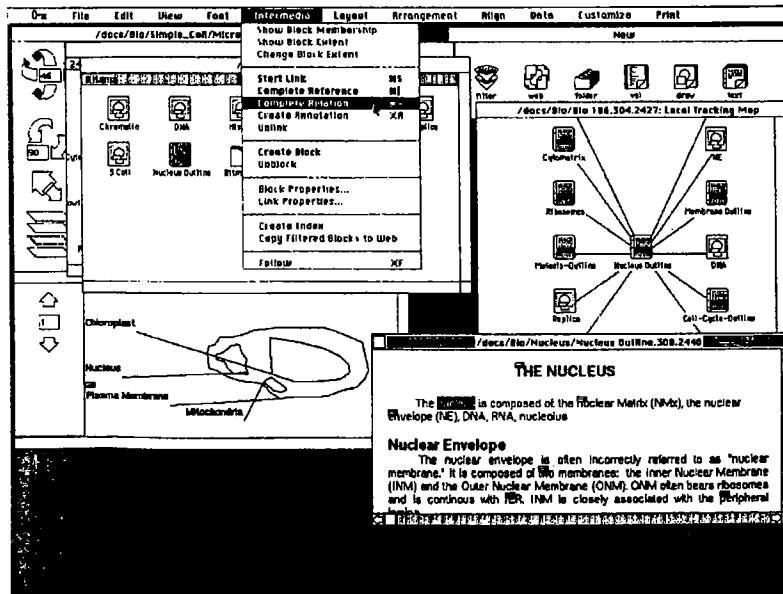
Screen 3. When the InterSpect document opens, the application displays the entire Micromonas cell in a three-dimensional view (above left) and a single section of the cell in a two-dimensional view (below left). Students can use the tools in the palette to rotate the 3D reconstruction, to highlight the location of the 2D section currently displayed in the bottom view, and to scroll through all the 2D sections associated with the cell. Menu commands allow you to selectively hide and display different components of the cell and/or the labels.

The local tracking map, empty in the previous screen, now shows the currently active document and the links that emanate from it. Local maps are analogous to detailed street maps. They show you your current location and what location you can travel to the immediate vicinity. As you

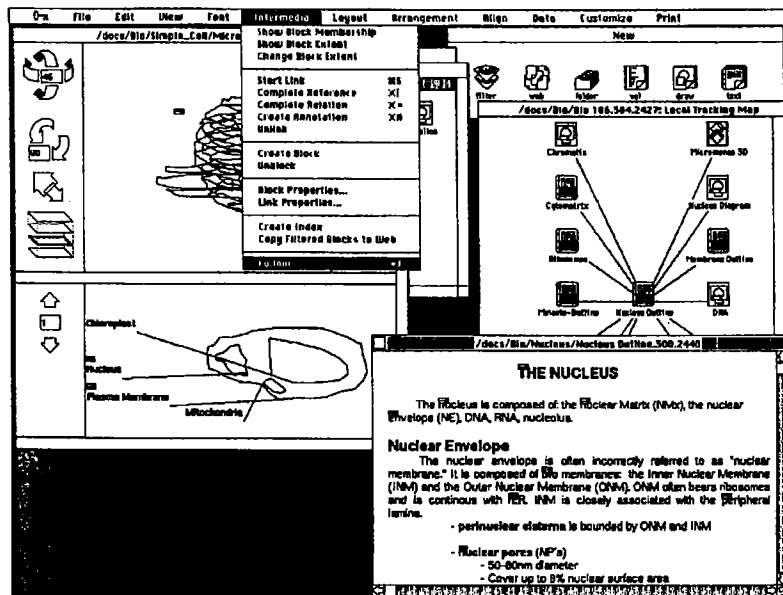
change locations, you require a new local map as a guide. In Intermedia, when the user activates a different document, either by following a link or by opening one from a folder, the local map updates or tracks the user's progress to display the new current document and its direct predecessor and successor links.

Screen 4. When we last worked on the *Micromonas* 3D document, we created a number of links connecting the plasma membrane to five different InterDraw documents, each containing a scanned photograph of one of the sections of the *Micromonas* cell used as data for the 3D reconstruction. Before we connect the plasma membrane to the remaining photographs, we decide to connect the nucleus to general information about nuclei. The first step in creating a link involves defining a block to serve as the anchor for the link. We select the label "Nucleus" as the source block of the new link (the selection is indicated by a rectangular box) and choose the Start Link command from the menu. While a link is pending, we can perform any number of other actions unrelated to link-making. Like the Copy operation common to all Macintosh-like applications, the Start Link operation is completely modeless.

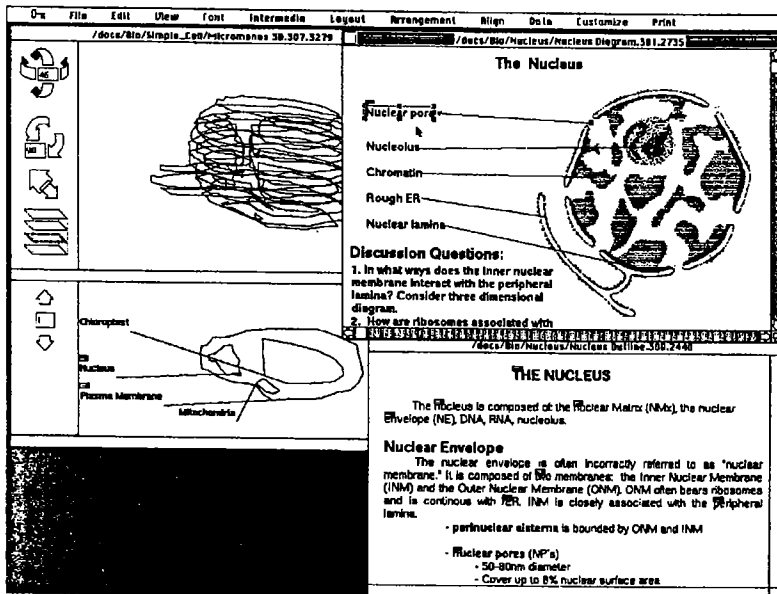
Screen 5. Before completing the pending link, we browse through the folders and locate and open an already existing InterText document called "Nucleus Outline." Once the text is displayed, we select the word "nucleus" in the first sentence of the document to serve as the destination block of the link and choose Complete Relation from the menu. You will notice two different complete commands in the menu. These are similar in function, but each creates a different type of link. The Complete Relation command that we



Screen 5



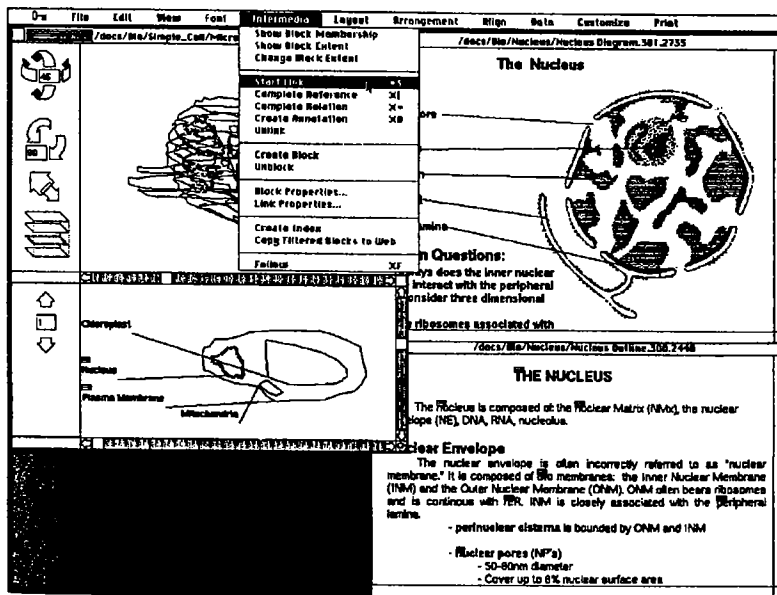
Screen 6



Screen 7 (The illustration of the nucleus was originally published in *Molecular Biology of the Cell* by Bruce Alberts et al. and is reprinted with the permission of Garland Publishing, Inc.)

chse indicates a primary path, whereas the Complete Reference command signifies a secondary path, in much the same way as a footnote or a "see also..." reference. Notice that the local tracking map has been updated to show the links that emanate from "Nucleus Outline," since it is the currently active document.

Screen 6. Once the link is established, both ends are indicated with markers (arrows enclosed in rectangular boxes) and the new link is added to the local tracking map. To find other relevant material to connect to the nucleus in the InterSpect document, we enlarge the InterText window and read through the text. Since pores are important when studying simple cells such as the *Micromonas* cell, we select the link marker above the words "nuclear pores" and choose the Follow command from the menu to traverse the link.



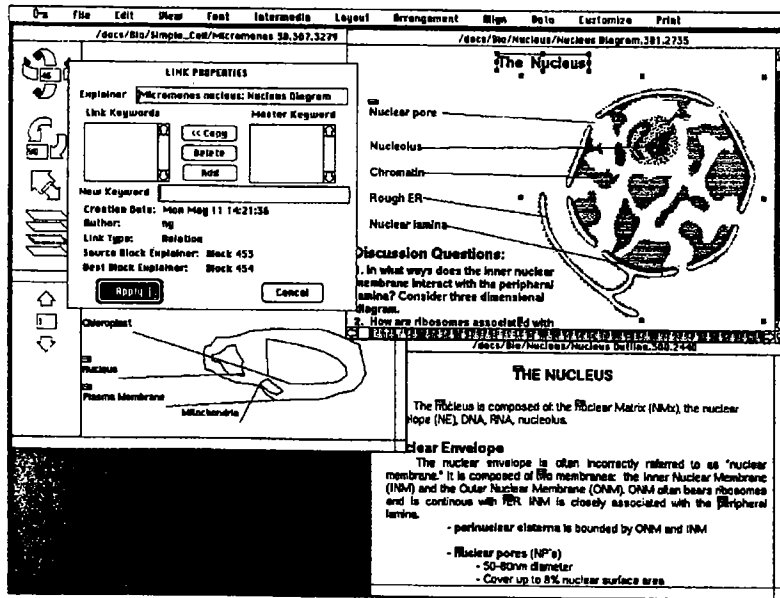
Screen 8

Screen 7. Following the link causes an InterDraw document containing a diagram of the nucleus to open. Notice that when a link is traversed, Intermedia automatically highlights the extent of the block at the other end of the link, indicating a particular scope of information to the reader. In this case, our attention is drawn to the label "Nuclear pore" and its associated label line.

The illustration on the screen was entered into the system using a scanner. The bit map was then displayed by the InterPix application, cropped, and pasted into this InterDraw document, and the text and lines were added to complete the diagram.

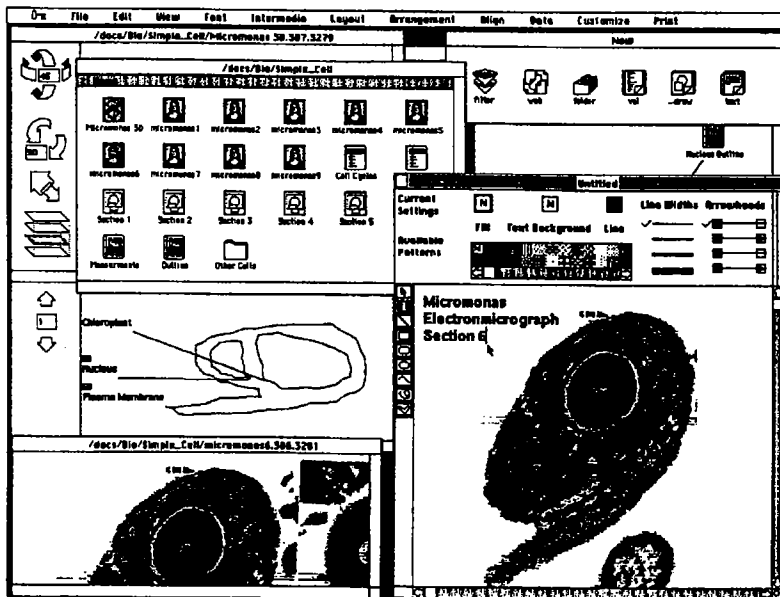
Before we continue making new links, we decide to change the default "viewing specification" for link creation to "verbose" (not pictured). With the verbose option, Intermedia automatically presents a property sheet for each new link as it is created.

Screen 8. We activate the InterSpect document by clicking once in the window and select the nucleus. This time we decide to select the component itself rather than the label. When students follow the link from the InterDraw diagram to the three-dimensional representation, their attention will be drawn to the nucleus (the source block) in both the 2D and 3D views. As in Screen 4, we select the Start Link command to initiate a new link.



Screen 9

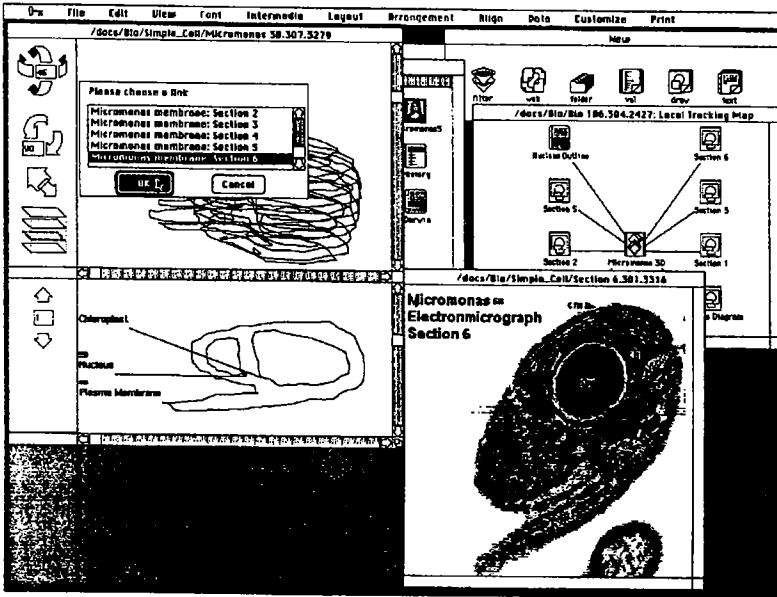
Screen 9. Next, we reactivate the "Nucleus Diagram," select the title of the diagram and the scanned illustration as the destination block for the link, and choose Complete Relation from the menu (not pictured). After we issue the complete command, a link property dialog box appears, allowing us to fill in descriptive information about the link. We replace the default text, "Link 35," with the more meaningful explainer shown in Screen 9.



Screen 10 (The electronmicrograph of *Micromonas* was originally published in *The Journal of Phycology* and is reprinted with the permission of the editor.)

Screen 10. Now we will skip ahead a few steps. After creating the link from the nucleus in "Micromonas 3D" to the InterDraw diagram, we reactivated the InterSpect document and used the bottom tool in the palette to scroll to the next two-dimensional section. Since the label "Plasma Membrane" has already been defined as a block for another link, we decided to select the existing marker as the source point for our new link.

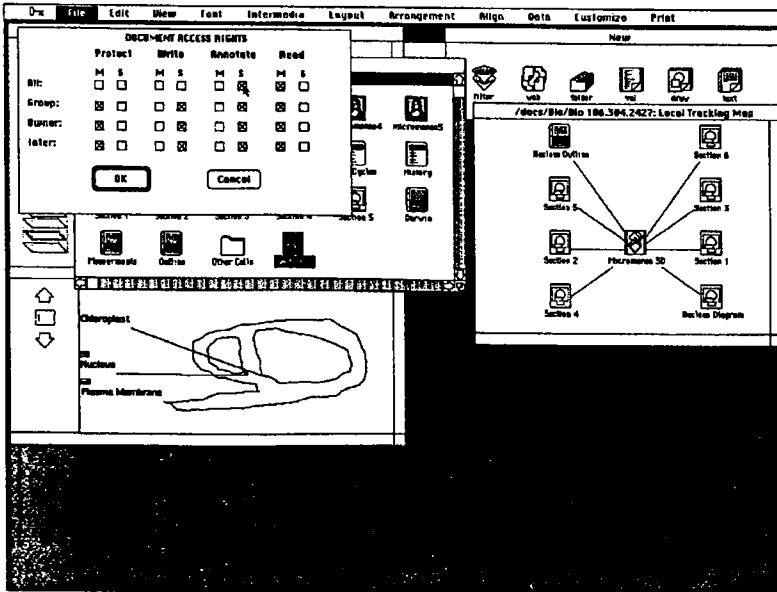
Before we are ready to complete the link, we have to create a new document. We return to the "Simple Cell" folder, open an InterPix document (bottom left) containing a photograph that corresponds to the section currently displayed in the InterSpect document window, and crop and copy a portion of the photograph into



Screen 11

the clipboard. We paste this image into a new InterDraw document, created by double-clicking on the draw icon in the New window. Finally we add some text to accompany the photograph (bottom right).

Screen 11. Here, we have completed editing the new InterDraw document and have hidden the palettes to unclutter the screen. We have also completed the pending link, using the text "Micromonas Electronmicrograph Section 6" as the destination block of the link. After the link was established, we double-clicked on the marker associated with "Plasma Membrane" in the InterSpect document to traverse the new link. Since more than one link is associated with the selected block, Intermedia presents a dialog box containing the explainers for each link. We select the link we just created and click on "OK." Since the document at the other end of the link is already open on the screen, following the link will simply activate the document and highlight the extent of the destination block (not pictured).



Screen 12

Screen 12. Before ending our session, we save and close the new InterDraw document, select its icon, and choose the Access Rights command from the menu. The dialog that appears allows us to add or subtract access rights for different groups of users. For this document, we decide to add Annotate rights for all users of the system. This means that any user may create links to or from the document but may not edit its content. Before exiting the system, we save and close the open InterSpect document and the Bio 106 web.

areas." Similarly, in our discussion about the system itself (an interchange about the current bugs and desired features), certain areas of the main view became the "property" of a particular author, while others tended to be group efforts.

Spatial layout also provides some useful cues for authors and readers navigating a large discussion, especially when it is coupled with a birds-eye view of the entire structure. Figure 8 shows an example of a large portion of the Aquanet bugs and features discussion. From this overview, it is easy to discern major object groupings and the basic structure of the discussion.

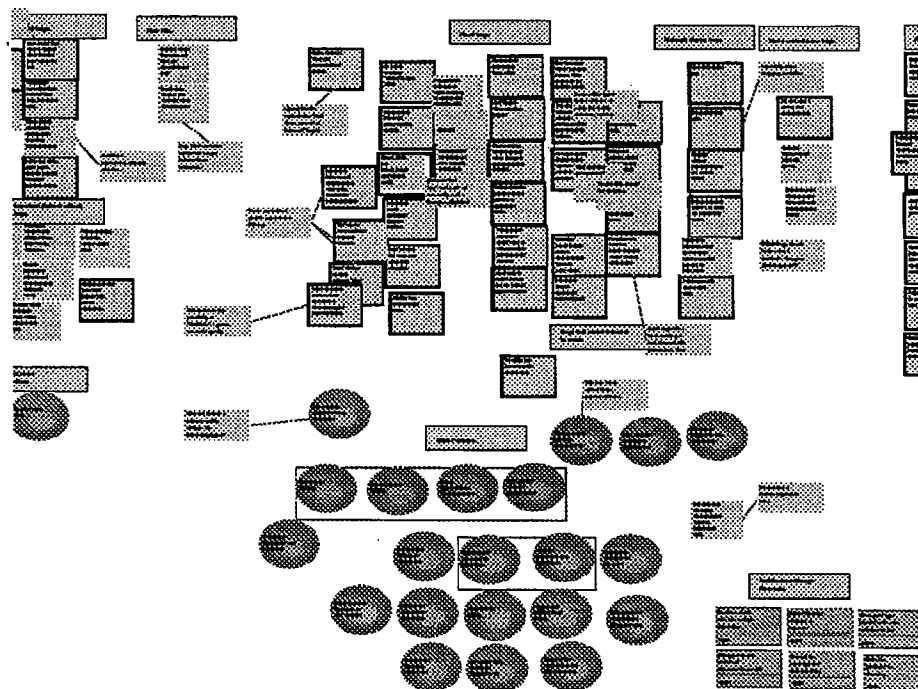


Figure 8. Using spatial layout to organize a discussion.

Given the prevalence of these spatial organization and layout strategies, it is clear that future versions of Aquanet should provide explicit support for them.

7.2 Supporting common representational underpinnings

Our early experiences with Aquanet have shown us that schemas will differ radically given different tasks and different people involved in a discussion. Most of the schemas to date are highly specific to the content of the discussion. For example, for our discussion of Aquanet bugs and features, we have developed a schema that includes types like "Bug," "Feature," and "Architectural Change," and relations like "Fix" and "Group" (a relation to group associated objects). Other schemas are more general, like the one expressing the Argument relation that we've used in our earlier examples; the types that it provides do not necessarily correspond to specific characteristics of the task at hand. Our intuition is that the more general schemas are either more difficult to use - it is harder to get people to agree on a content-representation mapping - or that they aren't as powerful in structuring content since useful distinctions aren't brought out.

Although we've discovered that schemas may differ radically, we've also found that some representational needs don't vary that much across applications. One of the first types that we created was modeled after a post-it note. This type is displayed as a bright yellow

basic object, an Argument relation, a CounterArg relation, and a Note basic object. The Argument relation has been selected for editing.

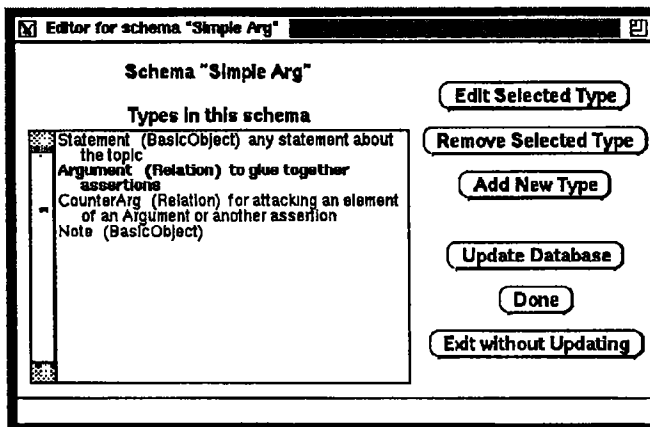


Figure 6: The schema editor. The Argument relation has been selected for editing.

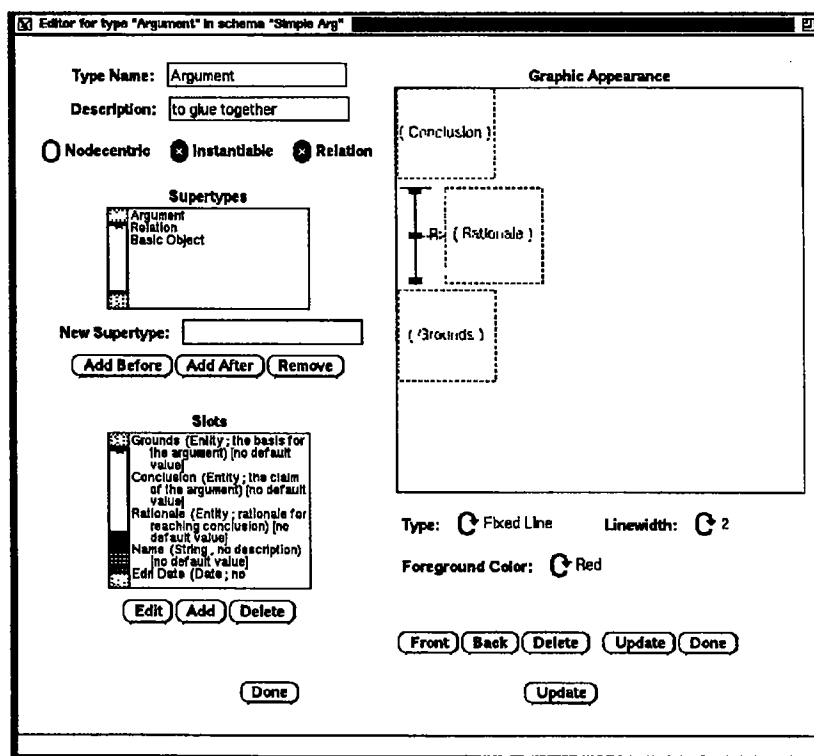


Figure 7: Editing a type.

Users edit types with a separate type editor. The type editor allows users to name a type, list its supertypes, define its slots, and specify its graphic appearance. Figure 7 shows the type editor invoked on the Argument relation. It has no supertypes beyond the system types of Relation and Basic Object. It contains three entity-valued slots, Grounds, Conclusion, and Rationale. Its graphic appearance is shown in the editing pane on the right hand side of the window. In Figure 7, one of the lines has been selected; a user is changing its color to red and its width to 2.

Aquanet (Spatial)

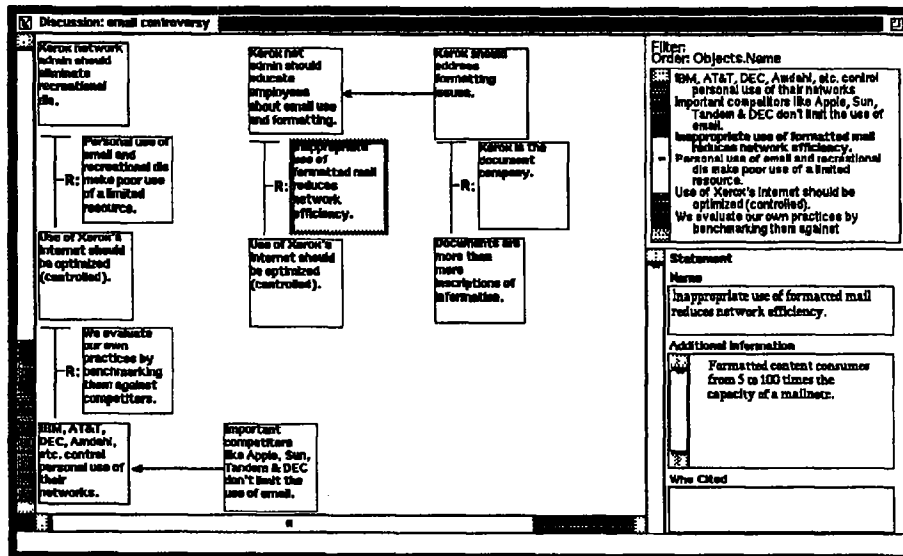
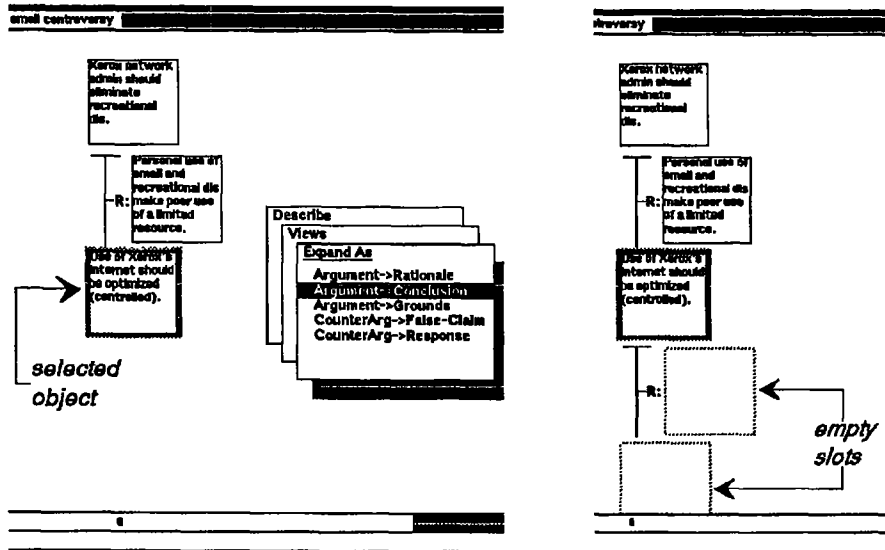


Figure 4: An Aquanet window.

Users can extend a structure in two different ways: they can use an existing object in a new role, thus creating a new relation, or they can create a new relation and fill its slots with new or existing objects. Figure 5 shows an example of how a structure grows through chaining. In Figure 5a, the selected Statement "Use of Xerox's Internet should be optimized," which is already Grounds for one argument, is being used as the basis for creating a new Argument relation. In the new relation, the Statement will fill the Conclusion slot; the other two slots will be empty. Figure 5b shows the results of this operation.



a. Using a Grounds statement as a Conclusion

b. The extended network

Figure 5: Using an object in a new role

Users develop and modify schemas with a schema editor as shown in Figure 6. The types that are included in the schema may be selected from the list on the left side of the window. The schema "Simple Arg" shown in the figure includes four types, a Statement