Some scholars have noted the link between film narrative and computer-interface design (Berg, 2003; Plowman, 1994). Similarities between early film and interactive multimedia in the establishment of narrative conventions such as intertitles and narration are clear. Burch (1981) describes the transition from early film involving a linearization of the narrative for viewers. Early film emphasized spectacle and the documentation of unrelated events. Events and individual shots were not woven into a coherent narrative until D. W. Griffith and others led to the development of montage and a cinematic narrative language. Some suggest that this same process of creating new media conventions needs to occur to increase the educational effectiveness of computer-based programs (Berg, 2003). Instructional designers working in computer environments do not have ready access to an established narrative language and consequently need to be more explicit in their structure. The user’s knowledge of film conventions allows the authors to feel confident that their narrative can be quickly and simply understood. Consequently, instructional designers need to spend time developing narrative conventions and making narrative elements clear to the learners.

In *Computers as Theatre*, Brenda Laurel (1993) examines how computer interfaces might be best structured as dramatic structures in the tradition of Aristotle’s *Poetics*. For Laurel, the computer is a medium, not a tool. Consequently, it needs to be analyzed in regard to its specific principles as a new medium, just as in photography and film. Laurel defines theater as representing whole actions with multiple agents and sees this as the essence of computer-interface design. Direct manipulation or engagement is a key aspect of interactivity on the computer. For Laurel, there are two primary advantages to thinking about computers as theater: significant overlap of action through the use of agents; and the familiar, comprehensive, and evocative nature of theater in the interface. Laurel distinguishes drama from narrative by stating that drama is more active, intense, and has greater unity of action in the Aristotelian sense, and concludes that interface design should focus on action.

Another important American scholar, Janet H. Murray (1997), argues that stories define how we think, play, and understand our lives, and sees computers as having a profound effect on the stories of the late 20th century. Murray asks how users can enter a fictional world without disrupting it, and points out that computer-based narrative seems to be showing the tendency to emphasize the border and test the fictional illusion. Murray proposes a notion of interactive computer narrative as a labyrinth, goal driven enough to guide navigation, but open-ended enough to allow free exploration. She argues that the navigational space lends itself to journey stories, and that the computer has transformative power that leads people to assume roles. She argues that formulas in storytelling are well suited to digital storytelling, but the ending of the story is key. Finally, Murray sees the most ambitious promise of the new narrative medium of the personal computer as its potential for telling stories about whole systems in detail.

If the computer is a medium and not a tool (Johnson, 1997; Turkle, 1995), then recent film theory has relevance to the discussion of computer-interface design. As noted above, the computer as a medium is in an early stage of development. Some interface designers have looked toward film models for structure and analogy. Computer applications such as Macromedia’s Director, the dominant multimedia-authoring program, explicitly use the film metaphor in its design and its use of terminology such as scene, script, score, and stage. Additionally, digitized film is used in computer applications and some of the simple elements of its grammar, such as transitions, framing, camera movement, and camera angles, are often employed. With the increased power of computers, digitized video and sound is becoming prevalent. As an older medium, film produced theories that may supply some of the best
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