



## 3 / Television and Learning

Part of the message of a medium, as we have seen, lies in the information-processing skills fostered by its technology, forms, and code. Another part of a medium's message, also created by its forms and technology, is its bias toward presenting certain types of information rather than others. The fact that television's images are both visual and moving makes it particularly well suited to present two particular kinds of content: information about dynamic processes of action and transformation, and information about space. The predominance of visual motion also suits television to the mental abilities of the young child.

### MOTION AND LEARNING

The characteristic that sets television and film apart from earlier media is visual movement. Movement can help children learn, because, first, it attracts their attention to the screen. In Sweden, for example, where narrated stills are used for young children's television in a picture-book format, children say they prefer movement, making comments like "It's no fun unless it moves!"<sup>1</sup>

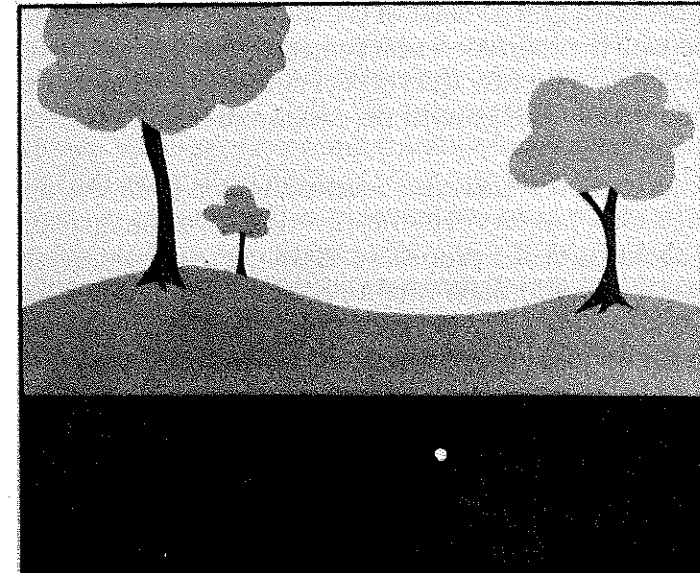
A second way visual movement aids learning is by

making information about action easier to remember. Elementary school children recall actions from a narrated television story better than they recall actions from the same story read to them from a picture book. The TV version makes these actions visually explicit, whereas in the picture-book version they are visually implicit, although they may be described verbally in the narration. The children who watch the TV version also use action more in later reasoning about the story.<sup>2</sup>

This ability of film or television to teach about actions can have useful applications. Actions are very much involved in manual and physical skills. In England, filmed motion was compared with still pictures as a way to teach children ages four to eight how to put together a complex wooden puzzle.<sup>3</sup> While the still pictures did help some (in comparison with no instruction), the filmed demonstration led to the greatest success with the task. The visual movement intrinsic to television and film makes these media well suited to teach tasks involving physical skill.

This characteristic of television is also useful in teaching about topics that emphasize dynamic processes rather than static states. One example comes from Sweden. Five- and seven-year-olds watched films about the process of a tree going *From Seed to Telephone Pole*.<sup>4</sup> One group saw an animated narrated film, the other a narrated film made up of still pictures. Children of both ages learned more information from the animated version.

For the seven-year-olds, the advantage of motion was in teaching about the dynamic processes presented in the film. The animated film showed the seed sprouting its roots, for example, while the still version merely included pictures of the seed without and then with roots (see figure 3). Even though the narrator of both versions described the action explicitly—"Suddenly, a little root



3. "Suddenly a little root breaks through the shell of the seed." (Adapted from Rydin, "Children's Understanding of Television.")

breaks through the shell of the seed"—seven-year-olds who saw the animated film remembered this fact better than those who saw the still version. It seems clear that motion made the growth process more explicit and understandable.

The five-year-olds also learned better from the animated film, but for them the advantage was not in learning about particular processes. At this age, motion seemed primarily to stimulate attention; even motion that was irrelevant to the film's content improved their learning.

It seems likely that the reason animation did not help the younger children to learn about the processes is that they were preoperational: that is, they had not yet reached Piaget's stage of concrete operations, a stage characterized by a relatively mature understanding of physical transformations. By age seven, when children typically have attained this stage, they are better able to learn about physical processes from film.

A study of children's reactions to the popular American series *The Incredible Hulk* shows how preoperational children can misunderstand a visible transformation portrayed on television. Most of the time, the hero of the show, David Banner, looks and acts like a normal person, but when he gets angry he turns, on screen, into an ugly, green-faced monster. The two forms of the character are played by different actors, but the film is edited to imply that the hero is transformed into the Hulk right before the viewers' eyes. Children between the ages of three and five tend to see the character's two forms as separate people. In contrast, nine-through-eleven-year-olds, who have reached the stage of concrete operations, generally see David and the Hulk as one character.<sup>5</sup> It seems that children's ability to learn about or understand processes of transformation from television is limited by their stage of cognitive development.

Motion attracts the child's attention; it helps children remember the action of a story; it can help children of the right age learn about processes; and it can aid in the teaching of physical skills. The contexts in which these different applications are and could be made are of course quite different. The tendency to acquire information about actions in general is most relevant to entertainment programming. The advantages of using film to teach about biological or physical processes can be applied in documentary or instructional television or film. The ability to teach physical skills is useful in teaching trades, crafts, or sports.

### SPATIAL SKILLS

Spatial skills are another type of skill that one might expect children to acquire from watching television. In discussing television literacy, I mentioned that certain spatial skills are required to interpret some of television's visual techniques. For instance, the skill of integrating different visual perspectives is necessary to interpret shots taken from different angles.

A Swiss study was designed to test the effectiveness of television in teaching children spatial information. Kindergarten and first-grade children saw or heard a television or radio version of a story.<sup>6</sup> In the story, the main characters, three children, were faced with some spatial problems. For example, they were going to see an owl, and they wanted the owl to think there was only one of them. To solve this problem, they walked in a line, with the tallest child first, so that the shorter children were blocked from the owl's view. After seeing or hearing this story, each child was asked to act out the solutions to the problems, using puppets. More children could solve the problems after seeing the story on television than after hearing it on the radio. (The sound-

tracks were identical in both versions.) The advantage of television over radio was larger for the younger children and for the harder problems. At kindergarten age children apparently are ready to begin to solve this type of spatial problem, but only with the aid of visual cues such as those provided by television. Later there comes a point when the child is able to solve such problems without the visual cues. This experiment shows that television can help a child learn by demonstrating a spatial relationship that the child cannot yet construct from purely verbal information. It reinforces the value of television for modeling a visual/spatial skill at an early stage of learning, a point that emerged in the last chapter.

### MAKING TELEVISION FIT THE CHILD

*Sesame Street* shows how scientific knowledge about the ways children think and learn at certain ages can be applied to creating an educational program for children. Let me give a few examples.<sup>7</sup> First, the creators of *Sesame Street* wanted to determine what attracted the attention of their potential audience and to emphasize these elements in the program. Examples of such elements are animation, puppets, and sound effects. Second, *Sesame Street* made use of a Piagetian principle of knowledge acquisition that applies to all ages: to learn something new, you generally need to be able to relate it to something you already know. Thus, to teach letter shapes, segments would start with a familiar object having the same shape as the letter being taught. Y, for example, might be compared with a fork in the road. Third, *Sesame Street* used the principle that repetition enhances learning. Testing a segment designed to teach recognition of the letter J, the researchers found that more children

learned the letter after seeing the segment several times than after seeing it once.

The show also uses repetition to get children to participate actively, because active involvement is generally necessary for learning. For example, in one segment the actor James Earl Jones recites the alphabet, and each letter appears next to his head a moment before he says it. The first time through, the child says the letters along with Jones. After a few repetitions, the child starts to anticipate Jones, saying each letter after it appears on the screen but before Jones recites it. With still more repetition, the child names the letter *before* it appears. The anticipation elicited by repetition enables the child to learn the alphabet as well as to recognize the individual letters.

This example illustrates how television, even though it is a one-way medium, can be used to make the child an active participant. Observations of four-year-olds watching *Sesame Street* proved that the show also elicits, in most children, other types of activity, such as imitating verbal or physical action that has taken place on the show.<sup>8</sup>

The importance of activity to learning is not special to learning from television; it applies to all sorts of learning. Turning television from a passive to an active medium is central to exploiting its teaching potential. Much discussion in this book will focus on eliciting activity through forces outside the program itself, such as parent-child discussion. But *Sesame Street* makes the important point that through the judicious use of carefully chosen techniques television can, on its own, make the child an active participant.

In England, children's programs made by the BBC were attempting to get children to participate many years before *Sesame Street*. An example for preschool children

is *Playschool*, which started in 1964. Later series on both public and commercial television (such as *You and Me* and *Mr. Trimble*) followed in the same tradition. The types of activity and the techniques used to elicit them are rather different from those used on *Sesame Street*. As one example, the host of a program may ask direct questions of the viewing child. In a second major type, the host presents ideas for games to play and things to make. These are basically the same techniques a nursery school teacher might use. However, in contrast to the response of the viewers of *Sesame Street*, preschool children rarely respond to the questions or carry out the suggested activities presented on these programs.<sup>9</sup> (In the United States, *Mr. Rogers* does get children to answer questions, perhaps by giving them plenty of time to respond.) As far as activities are concerned, it is hard to participate in a game or to make something while watching a program at the same time. Nursery school techniques may lose their effectiveness when transferred to television. It may be that the methods used by *Sesame Street*, which stimulate mental rather than physical activity, and do so by format rather than by request, succeed better because they are better suited to the medium of television.

The English children studied do sometimes carry out activities stimulated by a television program. But they do so *after* rather than *while* watching, and their mothers play a key role; the stimulus of television is not enough.<sup>10</sup> Such activities seem to require an adult to use the television for the child, a theme to which I shall return later.

The contrast between children's observed responses to *Sesame Street* and to the British shows suggests that the ways of getting children to participate actively cannot simply be transferred from earlier forms of communication. Nevertheless, some British shows, such as *You and Me*, do stimulate impressive learning even without overt activity on the part of the viewers.<sup>11</sup>

## A PARADOX

There is a paradox in this chapter. In my discussion of the potential of television to aid learning, virtually all of the positive examples come from experimental films and programming made for educational television. Certainly one implication is that adults need to see that children view these sorts of programs. However, we must also face the fact that the average child does not spend very much time with this type of fare. Instead, children spend long hours watching adult films, comedies, and action adventures.<sup>12</sup> Is the learning potential I have discussed actually available to them?

A number of the formal features I have discussed are intrinsic to all television, not just to experimental or educational programs. This is true of both motion and space. My hypothesis is that children learn to assimilate information about action, process, and physical transformation through their exposure to all sorts of television and film. In the same way, I think it likely that children get information about the two-dimensional representation of three-dimensional space through many types of programs. These are the messages of the medium: effects on thinking that are produced by the technology and the forms, rather than by any particular content.

I do not think that these possible benefits should be a rationalization for too many hours spent with entertainment programming. Far better to receive television's cognitive messages through a TV diet that includes some mind-stretching programs while avoiding harmful content. These issues will be discussed in Chapters 4 and 9. Nor should too many hours be spent with television in general, no matter how worthy the content. As a medium, television has its strengths, but it also has its weaknesses. Such weaknesses as the passivity of the viewer and the lack of opportunity to use the imagi-

nation will also be taken up in later chapters, where I will show that the weaknesses of television are strengths of other media. Balanced development for a child requires not only the skills and qualities developed by television but those fostered by other media of communication as well.