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Frank Eadie, Brian Sutton-Smith, and Michael Griffin

In the spring of 1974 we were approached by Rodger Larson and Lynne Hofer of the Young Filmmakers Foundation of New York with the request that we conduct research on their methods of teaching film to young children. Over the prior decade they had had particular success in bringing filmmaking experience to many youngsters in New York, some of whom had gone on to film careers. Their approach to filmmaking had been published in two works: Young Filmmakers (Larson and Meade 1969) and The Young Animators and Their Discoveries (Larson, Hofer, and Barrios 1973). This article summarizes some of the major findings of our resulting two-year study, which was funded by the Ford Foundation.1

Presuppositions

Our task was to conduct an empirical study of the methods and procedures of the Young Filmmakers Foundation as used in their street-front workshops in the Lower East Side of New York. It quickly became apparent that we were bringing to that task a number of presuppositions. First, given that our own discipline was developmental psychology, we expected to find age differences in children's performances in camera work and editing. More specifically, we queried whether there might not be "stage" differences as well as age differences, that is, nonlinear as well as linear trends. A nonlinear trend might apply as it does in graphics, where young children draw with peculiar freedom, preadolescents show a more confined concern with technique, and adolescents show a burst of creativity (Gardner 1980:148). A linear trend would operate if children simply become more skillful, more complex, and less error-prone with age. Second, we wondered, following a quip by John Culkin,2 whether "perhaps in film, ontogeny recapitulates monotage"—whether, that is, the approach of children might parallel the course of film history: an initial concern for the flow of images without narrative, proceeding to fixed-camera narrative with Méliès, to narrative with multiple camera angles and positions with Porter, then to mobile camera and editing with Griffith and Eisenstein.

Third, we assumed, following Worth and Adair, that children, like other "aboriginals," might well use the filmmaking opportunity to produce expressions of themselves and their world as they see it" (Worth and Adair 1975:252). Finally, we suspected that mastering film technique might have an impact on particular cognitive processes, bringing about changes in children's perceptual and cognitive performance (Olson 1974, Salomon 1979).

The following account of what we found and how our presuppositions fared starts with a brief description of our methodology and moves to a discussion of teaching variables, to consideration of the impact of physical setting and interaction variables, to film, and, finally, to psychological variables.

The data presented come from various sources involving, in all, approximately 160 child filmmakers and more than twice that number of films. There were three main groups:

1. Ninety-five children, ages 9 to 16 years, were tested and observed in after-school workshops on the Lower East Side of New York. These were lower-socioeconomic-status (SES) Euro-American and Puerto Rican children.

2. Forty-four children, four at each age level, two of each sex, ages 5 to 15 years, participated in a controlled study in which they received standardized instructions on making an animated film and then made such a film. These were predominantly non-Spanish-speaking Euro-American children of upper-middle SES.

3. Twelve children, ages 8 to 10 years, participated in a controlled live film study during school hours at a public school (P.S. 3).3

Methodology

While the project using animation (group 2) represented our attempt to conduct a systematic study under partially controlled conditions, the other two research projects, which are the focus of the discussion that follows, were conducted more in the mode of ethnographic research, with some contributions from psychology. A complete methodological discussion is outside the scope of this article, but, in brief, we used before-and-after psychological testing and interviews. We followed up on children who had quit the project and retested them; we videotaped and observed samples of children during all filmmaking activities; we developed coded observation systems; we collected all the children's products (whether scripts or films) that we could. In addition, we consulted many of the films and records from the preceding five years of the workshop operation. We coded a representative sample of films shot by shot, using a list of some fifty technical variables (camera angles,
distances, editing, etc.). All this material was subjected to factor analyses and various other statistical procedures and is detailed in our earlier report (Sutton-Smith and Eadie 1979).

Teaching

Although film content was by and large left for the children to determine, their teachers provided a relatively rigorous training in film technique and filmmaking. After a general introduction, almost all children were exposed to a series of equipment exercises (with viewer, splicer, camera in animation, camera in live action1), which was followed by instruction in developing a narrative treatment for a first film. For younger and inexperienced filmmakers, teacher supervision and instruction continued throughout the production of the shot list or story board, recruitment of cast and crew, other logistics, filming, editing, and sound dubbing. Teacher involvement, however, declined considerably with the children's age and experience, so that teachers functioned largely as resource people on the later films of older children. A well-worked-out narrative or shooting script remained a prerequisite for equipment use even for the most inexperienced, however.

Quite clearly, then, what Larson and colleagues took for granted and taught incorporates what Challen (1974, 1980) might consider the middle-class filmmaking paradigm—the filmmaker as director behind the camera, manipulating people or things from a distance rather than the lower class paradigm—the filmmaker presenting self as actor through the film as medium. In addition, Larson's approach included a concern with careful planning and preparation and an insistence that the filmmaker be responsible for every aspect of the process.

This is, of course, not the only possible approach. There are many alternatives, such as painting directly on film, doing direct filming without prior planning, an imitating art work, and filming theater, but these were not regularly used by Young Filmmakers, though they have been central for some other teachers (Sutton-Smith 1977). This means that it is not easy to tell, given these various mediations, to what extent these children's films were free expressions of their own way of perceiving the world. The same complexities, which also dogged the work of Worth and Adair (Mead 1975), may be inescapable in naturalistic studies of this kind. As we shall see, however, the children's films reveal much that has a clearly childlike quality.

Early in the project it became clear that, as developmental psychologists, our presuppositions were contrary to those of the professional filmmakers who were teaching the children. Whereas we wanted to see whatever young children could do, the film teachers were more concerned with the more "adequate" work of older children. We were concerned with beginnings, with zero points; they were concerned with outcomes, with final products. Ours was a genetic viewpoint; theirs was an aesthetic one. Whereas they preferred to work with young adolescents, we wanted to find out what younger children could do.

For the two years in which we were involved with the workshops and of approximately 100 children (all volunteers) from the ages of 8 to 15 years whom we observed, only one-third survived the program long enough to make a first film. Of this third, only a very small number were not critical of their experience. Most of them found the teachers difficult and demanding and much of the work tedious in the extreme, at least as recorded in their interviews afterward. This figure suggests that the Young Filmmakers program was run as an "art academy," the kind of place that has historically attracted volunteers, some of whom have the necessary "talent" to undergo rigorous training processes required in ballet, music, and painting. The Young Filmmakers had modeled their teaching process after what many directors do in filmmaking and had sought to teach apprenticeship of the necessary steps. Although we have no hard data from other filmmaking approaches, interviews with those other teachers seem to indicate that their less rigorous approaches resulted in lower dropout rates. How this difference in outcomes is evaluated depends on whether one wishes to applaud those who bring new opportunities to children who would not otherwise have them or to discover models of film teaching that will be of general educational usefulness. Clearly, the Young Filmmakers score higher from the first than the second perspective.

Physical Setting

Prior to our study, the workshop had been conducted out of the headquarters of the Young Filmmakers Foundation at 4 Rivington Street. Most of the children were native Spanish-speakers (largely, though not entirely, the New York-born children of Puerto Rican parents) and this was their home neighborhood. In that relatively "cafe" environment, the children used exterior locations more than they did when the workshops moved to the relatively less safe environments of Ludlow Street and Henry Street, where the children preferred to be indoors rather than outdoors. Of the latter two locations, Henry Street was
nearer to a school and in a residential neighborhood, making it easier for volunteers to attend. Consequently, we found the children at Henry Street to be less involved; we also found weaker relationships between our tested psychological variables (discussed later) and filmmaking. The dropout rate was highest at this location. In the "safer" settings, with as many as seven adults present and a resultant apprenticeship kind of relationship, more girls were present because they reacted more favorably to the "safe" experience than did the boys.

**Interactional Variables**

The film teachers were of mixed ethnic background (Anglo, Jewish, Puerto Rican): two were more ideologically interested in the opportunities for political self-expression that filmmaking would bring to these children, and one was more interested in teaching film technique for its own sake. The films produced by children working with this latter teacher were more technically complex than the others. The films of children under the age of 12, however, lacked evidence of ideological concerns regardless of teacher and contained dominantly childish interests (chasing and fighting), whereas children above that age began to register ideological content (problems of drug usage, crime, etc.).

In the project with twelve younger middle-class children, the female sex of the teacher and the dependent attitude required to learn filmmaking with her were probably responsible for the fact that most of the boys dropped out. Our study itself, however, also had an impact: those children who were selected for the heaviest schedules of observation were also those most likely to drop out.

When films made by Young Filmmakers’ students before our research study were compared with films made by children during this study, two major differences were noted: the latter films were set indoors far more often, and they had more sophisticated sound tracks (more sound effects, less popular music). Although the first difference was indubitably due, in part, to the more dangerous and foreign location of the Ludlow Street workshop, the teachers’ stated intention to exercise greater control over the filmmaking process may have led them to encourage that films be produced within the workshop, where closer supervision was possible. The second change was probably due to the arrival of a new teacher who was a musician and specialized in teaching sound techniques as well as to the greater general teacher involvement in production.

At one location, there was a knife-wielding incident between some Chinese and Puerto Rican girls who were members of the project. On three occasions all the equipment was stolen. Perhaps not surprisingly, something of a “macho” film culture developed at this location, and most of the films made by girls reflected the same kind of combative and monster content that characterized the films of the boys. In the other projects, with non-Spanish-speaking, middle-class children in a school environment, characteristic sex stereotypes prevailed in the films. In the animation study, with the same toys available to all children, for example, the boys used significantly more war toys and vehicles and the girls used significantly more animals and people.

**Age Trends in Filmmaking**

This analysis is derived from forty-three films made by twenty-eight filmmakers in the Young Filmmaker’s workshops. We can compare the films of the younger children (7 to 10 years) with those of children ages 11 to 13 and 14 to 16 years. In addition, we can compare first films with later films made by some of the same children. The data cited have undergone factor analyses and regression analyses, although detail is not provided here.

**Ages 7 to 10 Years**

By and large, the films of this group are simple, unelaborated narratives. Highly conventional signifying props are used as cues for character identity and locational establishment (e.g., a cap for a policeman, a cape for Dracula, cardboard Martian heads, etc.). There is little or no condensation of time; actions portrayed on the screen almost always take as much time as they would naturally. An extremely large proportion of the films is taken up with walking, running, scuffling, fighting, and going in and out of doors and up and down the street.

The silent film _Story of Dracula_, made by a 9-year-old girl, is representative of this propensity to show certain prominent actions frequently. Its plot is also relatively typical of those of this age group. It is 3 minutes and 20 seconds long and consists of twenty-three different shots. About half the time, characters are shown walking or running around; moving or parading in front of the camera seems to equal the story line in importance. The shot list is as follows:
Story of Dracula

1. Medium shot. Dracula is walking. (Dracula is identified by the mask and cape she is wearing.)
3. Medium shot to long shot. Dracula walks down a hall away from the camera and then turns to face the camera.

(This walking and establishment of Dracula takes exactly 30 seconds.)

4. Medium shot. Casketlike cabinet with the lid jiggling (2.5 seconds).
5. Medium close shot. Boy and girl walk out the door.
7. Medium shot. Boy and girl walk in a door.
8. Medium shot to long shot. Boy and girl walk down the hallway to the casketlike cabinet.

(This walking and establishment of the boy and girl takes exactly 20 seconds.)

9. Long shot to medium shot. Boy and girl back toward camera, with Dracula chasing them.
10. Medium shot. Dracula stops at doorway they open through, turns, and slowly walks back past the camera to the original door (10 seconds).
11. Long shot. Dracula (inside) walks down the hallway away from the camera (10 seconds).
12. Medium shot. Dracula stands looking at the camera, then sits down in "coffin."

(In this 24-second section, Dracula is parading and posing for the camera.)

13. Medium shot. Boy and girl come in door and talk to a woman (mother) (10 seconds).
14. Long shot to medium shot. Dracula rises out of "coffin" and walks toward the camera (10 seconds).
15. Close shot. Dracula walks past the camera (3 seconds).
16. Medium shot to long shot. Dracula walks up to the boy lying on a bed. Leans over him, appears to bite him, and runs back past the camera and away down the hall (9 seconds).
17. Medium long shot. Dracula stands in the "coffin" facing the camera, then stoops into the coffin (4 seconds).
18. Medium shot. Girl wakes mother and shows bitten brother (10 seconds).
20. Medium shot. Mother and sister go to door and pull in a boy with a policeman's cap on. He walks over and looks at bitten boy (16 seconds).
21. Medium shot. Jump cut to policeman and girl who run over to coffin and kick open the lid. Policeman drives a stake into the vampire (17 seconds).
22. Close shot. Mother strokes boy's head. He gets up, and gives her a long hug (13 seconds).
23. Medium close shot. Boy rubs neck and talks to girl (13 seconds).
The titles of the other films of this nature suggest that the children cared less about unique or creative plots (they simply borrowed them from each other) than about using the camera to follow movement. Titles were: *Boxing, The Cow Robber, The Crocodile, Dracula Kills a Woman, House of Vampires, Story of Dracula, Vampire Who Hides in a Tree, Hungry Monster, End of the World, Desperate Girl, The Lost Girl, The Murder, and Three Girls Who Get Killed.* Filmic behavior—behavior constructed and staged for the film—melted into natural, unplotted behavior. Often the children seem to be playing with one another and the cameraman, as a participant observer, simply pushes the button on the camera. The same setting is often used for all the action, regardless of what type of event occurs. The same kind of make-believe that allows children to use the same room as a store one minute and a jail the next permits them to use one small area in which to chase the villain around and around.

These filmmakers clearly are attempting to organize actors and impose a narrative structure in a general atmosphere of children playing with one another and conducting what Chalpen (1974) calls "look at me" performances for the camera. The end results, however, are more than simply testimonies to the difficulty children experience in organizing the various aspects of filmmaking. The camera tends to be purposefully directed toward playful activity, moving, chasing, and fighting, and footage of this kind is not eliminated in the editing process. Movement itself provides a central focus for many of the films. Shot and sequence structure are centered around attention to movement. Cutting off one stationary object to another is very rare. Cutting from one perspective to another on the same object is virtually nonexistent. Cutting back and forth from long shot to medium shot or to close-up for purposes of directing attention or creating a visual rhythm does not occur. Cutting from one location to another is unusual. Each shot and each shot transition tend to be focused on a movement to or from some point where attention has been or is being directed.

The most common type of shot is a following pan. In several of the films, well over half the shots are connecting and following pans. There are also attempts to match-cut continuous actions and rough attempts to cross-cut the pursuer and the pursued in chase scenes. But none of these are mastered or integrated as thoroughly as the tendency to follow movement as a transition for changing location, introducing characters, and linking the events of a narrative. Thus, the active, physical movements that are so integral to the play culture of children play a twofold role. On the one hand, the activity provides a large amount of the content that the children are interested in showing; on the other hand, it is an element of the structure by which transitions are made and films are sequenced.

The results of our statistical analysis of the fifty-eight technical codes derived from these films are similar to those derived from our descriptive analysis (Griffin 1978). The statistical analysis also draws attention to some characteristics that these films lack. The younger children, compared with those of older age groups, demonstrate a significantly greater usage of high-angle shots (often showing dead bodies on the ground), matched cuts (owing to the large number of extended walking and chase scenes cited above), camera and editing "errors" (unsteady camera work, flash frames, poor framing, unintended jump cuts), spoken narration over film and over titles and credits, natural lighting, and outdoor shots. These younger children make significantly less use of low-angle shots, zooms, synchronized sound effects, dubbed voices, and transition shots. In addition, this group made the shortest films, used the fewest locations, made less use of unusual camera angles and techniques (zooms), and were less varied in their soundtracks. This was true despite the fact that the same equipment was used by all children and that the teachers attempted to teach the same material to all children.

Comparing the earlier and later films made by the same children, we find that films by the youngest children show the greatest change over time. There is the greatest decline in the liable uncontrolled use of the camera and in the total number of "errors." On the other hand, some of this group's most distinctive characteristics are enhanced rather than diminished by experience. These young children show even more concern for the use of external settings for their camera work, especially as evidenced through their establishing shots and the use of natural light (older children decrease their use of these techniques with experience). They continue to construct extended scenes with few transitions and with even more matched cuts. They show an increasing use of cutaways as a means of developing a plot or focusing on details. In addition, narration continues to be used frequently, instead of more sophisticated (dubbing, synchronizing, etc.) sound techniques.

There is, then, evidence here that, teaching, these younger children improve (make fewer "errors") but continue to emphasize their own "stagelike," action-oriented approach to filmmaking. Only these young (ages 7 to 10 years) children show characteristics resembling those of Chalpen's (1980) Stable Pattern I (characteristic of his black-American lower-class samples). Note that the films of young middle-class Euro-American children have had the same characteristics, except that the girls did not generally portray violence. The films of the older poor native Spanish-speaking and black-American children do not share these characteristics. This leads us to conclude that children over 10 years of age, taught in terms of the middle-class, "young filmmaker" para-
digm, give up Stable Pattern I characteristics in favor of the conventions they have been taught.

But those younger children who are not so susceptible to adult norms stay under the sway of their own action-oriented play norms. We might conclude that Challen's older, lower-class black-American groups would also have shifted their techniques if pressure of the kind applied here had been applied to them. In a sense, by giving them as much leeway as he did and by working with well-established peer groups, Challen allowed peer group norms to dominate in his situation. His middle-class group, which was only an aggregation of individuals rather than a well-established gang group, was more susceptible to industry norms. Of course, there is nothing to indicate our very youngest group might not have shifted, with further teaching, from their own distinctive viewpoint toward the more conventional one of older children. Still, for the year or two of this project, they held firm.

Age 11 to 13 Years

This age group is more heterogenous in the content of its films than the earlier one and also shows a much greater concern with technique. In one group of films, the major concern is with some special piece of trickery in camera or editing work. Although the narrative may be no more complex than in the films of the younger children, the possibility of manipulation seems to have induced a more conscious organization of formal elements. Thus, in The Cookie Show, by a girl of 13, the narrative consists of nothing more than a girl sitting down to play with a deck of cards only to have the cards disappear and then reappear when she looks away. The initial sequence, which shows her walking into the frame, getting herself a drink, and sitting down to begin a game of solitaire, merely sets the stage for the cards to be pulled off the table so they can pop back onto the table after the next cut. This disappearing and appearing sequence is followed by our heroine fainting, as viewed by a whirling camera, and the film is over. Yet even though the film has only ten shots, the use of this technical illusion requires a more careful construction of direct cuts than was displayed in the films of the younger group.

The Magic Stick, by a boy of 11, and Twin Magic, by a boy of 12, are similarly constructed around the cut necessary to pop objects and people in and out of the frame. The narrative in The Magic Stick consists of a boy finding a stick that will make things disappear, then using it to eliminate people, objects, and finally (by mistake) his friend. Twin Magic is more involved. In it, the same actor plays two characters and there is an explicit attempt to moralize about the abuse of power. After a skilled magician teaches his twin brother the secrets of his magical powers, the brother abuses those powers by making too many people and objects appear or disappear. Because of the abuse, he forfeits his powers.

In a second group of films, children of this age level seem to seek more realistic film action, moving away from a reliance on overt signifying props, printed narratives, or special effects. These films are more clearly fictive in the sense that they are more carefully controlled constructions, and in most cases their direct derivation from a particular film genre is clear. Titles are The Addict, Bag Full of Sorrows, The Detective, A Friend in Need, Kung Fu, Mary's First Friend, The Picnic, and Stop before Starting. The notion of creating a film for an audience seems to be an important influence. The action of the film is more completely and consciously manipulated. It is not affected so much by natural play activity; the filming frame is not confused with the play frame.

For example, The Detective, made by two 12-year-old boys, is a naturalistically staged film with a simple plot. In this film, as in Kung Fu, A Friend in Need, and others, kung fu-type fighting seems to be particularly popular. The film begins with a typical following pan of a boy strolling along the sidewalk, and this sets the pace for a very movement-oriented film. Thirty-five of forty-two shots in this film contain following pans. It, again, has many of the characteristics of the younger films and is structured so that a great deal of fighting can be shown. But the attempts to provide a natural-looking stage for the actions is evident, from the office-type appearance of the police station to the use of a lobby and a set of revolving doors to portray a hospital. The narrative structure is like that of a typical television show, but the plot elaboration television might present is replaced by fight sequences. The film can be characterized with the following schema:

1. Hero is introduced
2. Hero meets villain (fight sequence).
3. Villains are locked up.
4. Villains escape (fight sequence).
5. Villains challenge hero to take revenge (fight sequence).
6. Villains defeat hero by gangning up on him.
7. Hero finally vanquishes villains (fight sequence).
8. End.

A Friend in Need, by a 12-year-old boy, has a very nearly identical structure.

1. Heroes are introduced (they are followed as they run).
2. Heroes help someone being beaten by villains (fight sequence).
3. Heroes practice their kung fu (fight sequence).
4. Villains take revenge by capturing one of the heroes (fight sequence).
5. Other hero comes to his rescue (fight sequence).
6. Villains are defeated.
7. End.

The third group of films by children in the 11 to 13 age group shows an influence of television genre and a desire to be clever or funny. In some cases there is a self-conscious resistance to taking the filmmaking seriously, and in these cases parody is the common product. For example, Channel 6 News, by a boy of 11, is a 30-second parody, with “Bert Beautiful” giving a special report. There is a facsimile of a news studio, including table, chair, map, cup of water, and Channel 6 News logo. There are four shots, all stationary: one of the logo, two of Bert Beautiful, and one of a Washington correspondent. The framing of the reporters is conventional.

A Night of TV Watching, by a boy of 14, is a series of parodies of several different television shows, with an incredulous and/or disgusted viewer changing channels. While the content is determined by the particular program being mocked, the form seems most influenced by the attempt to condense several different parodies into a short period of time.

The Bionic Kid, by a boy of 13, is an attempt to duplicate the bionic themes and special effects of television shows like “The Six Million Dollar Man” and “The Bionic Woman.” The end product is more a caricature of its television counterparts than a parody or replication of them.

The statistical analyses of these films show, as expected, that this age group makes fewer “errors” (in five of the seven categories coded) and longer films than the younger group and that they use fewer camera angles per shot but more point-of-view shots (in which the camera acts as the eye of the person). More interesting, however, is this group and the younger group are at the extreme on many characteristics, with the 14- to 16-year-olds taking an intermediate position. When all nonlinear age differences are considered, these two younger groups are ten times as likely as any other two to show the greatest contrast on the available variables. The relationship between them is largely, then, of a nonlinear or “stage” character. In general, if the earlier group was largely focused on action, the middle group is largely focused on technique, which is very controlled and includes difficult elements such as voice and sound effect synchronization and transition shots.

Ages 14 to 16 Years

The films of these older children more successfully control and manipulate the medium for a meaningful purpose. They are the most fictive products in that they clearly have been consciously constructed for an audience. In none of these films has candid behavior simply been recorded or have shots been put together in an unintentional or uncontrolled fashion. Conventional continuous-motion editing seems to be mastered, and more creative editing is often displayed. Plot and sequence structure still rely heavily on television and movie models, but attempts to make more personal statements are common, and the films tend to go beyond duplications of a television genre. Special effects are used with a meaningful purpose within the overall structure of the film and do not become the central focus.

Time, by a boy of 15, addresses conflict between “real” time and the manipulated time of film. The filmmaker’s narrative—in which a boy who has to be home by a certain time is continually delayed by freak mishaps—creates a sense that a great deal of time has passed, even though the film is relatively short. Each shot is purposefully organized. The various vehicles the boy rides—a ferry, a train, a van—and the scenery outside are shown in carefully constructed reversal cuts from inside to outside and back again.

I Can’t Get Started, by a boy of 14, is about a lonely and destitute young woman who wanders around the city, sleeps outside, gets caught shoplifting, and sits and starves, simulating depression and loneliness. The soundtrack consists mainly of songs sung by the blues singer Billie Holiday. There are back-and-forth close shots when the woman talks to the store detective. There is a liberal use of the zoom lens for establishing scenes. Continuous-motion cutting is used to follow the woman as she moves within a location. Cuts are used to change location. A long quickly shot is constructed by the camera on an escalator. The movement of character is the central focus of the entire film, but the movement is manipulated for the purpose of the film, rather than the film being structured by the movement.

The statistical analyses show that these older children make even longer films and even fewer “errors” than both prior groups. There is more indoor filming, more diversity of distance and angles, and more zooms and points of view that are content-related techniques.
Summary of Age Differences

The progression we have noted seems to be from a very loose style focused on playful actions (7 to 10 years), to a very controlled, precise style focused on effects and trickery (11 to 13 years), to a flexible, complex, and content-related style (14 to 16 years). The only shifts that were consistent across all three age levels were a decrease in "errors" and increases in the use of the zoom lens and in film length. The major changes that came about as a result of experience for all age levels (when first films were compared with fourth films by the same filmmakers) were reductions: in camera movements, in the use of conventional camera (medium and medium-close) distances, in camera and editing "errors," and in the use of the sound techniques of voice-overs and pop recordings. These variables, although they are important, do not constitute the major part of the variance in this study. The simplest explanation for them is the continued application of teacher pressure to learn minimal competences and to avoid "error," although we cannot say whether that learning was facilitated most by teachers, peers, or personal feedback from the films made.

One type of explanation for these "stage" differences involves the kinds of cognitive and social shifts that are known to occur around age 11: the greater theoretical capacity that children acquire as well as a greater concern for the way others might perceive their work. While this kind of developmental theory seems relevant to the shifts from the younger to the middle group, it does not explain what happens with the oldest group. There is no prior reason for expecting this group not to continue the linear progression of changes shown by the 11 to 13 age group. The character of film skill acquisition has more explanatory power here than do theories of cognitive and social development.

Thus, the lack of mastery of a new film skill often constrains its use by beginners. While children in the youngest group remain relatively unaffected by their lack of expertise, continuing to use the camera as a vehicle for recording their own play, those in the intermediate group definitely show such constriction on their road to mastery. The older children apparently master these skills more easily and so can exploit them more flexibly. A long-standing evaluation of children's development through graphics similarly contends that there is a shift from spontaneity in those under 11 years old, to technical concerns in the preadolescent, and a return to creative uses in the middle-adolescent period (Gardner 1980). As Gardner says, in the middle period "children are seen as sinking into the doldrums of literalism. . . . this interest in accuracy overwhelms the child's behavior" (Gardner 1980:148-149). He suggests that this is probably due to the decreasing use in school of graphics and the increasing use of words as the major mode of communication.

While there is a fairly rigid following of certain rules of camera work and editing by 11- to 13-year-olds, so that they can control these techniques, the content to which the techniques are rigidly applied is itself varied. Films involve both technique and content, and it appears that either one can be concentrated on at any one time. The intermediate age group, then, actually displays no loss of creativity in an area they have already mastered (words, ideas, and narrations for the movies) but rather a literalness on the camera and editing levels. Perhaps the theory of preadolescent literalness or expressive sterility needs to be reconsidered in terms of the distinction between medium and message and in terms of the level of general experience the child has with a particular task when encountering its subskills.

Psychological Measures

The children submitted to a battery of psychological tests and interviews prior to beginning their workshop experience. Months or years later, they were followed up with exit tests and interviews, and those children who had dropped out were also located for similar assessments. Here we can only summarize these results.

Selection Variables

The children who came to the workshop as volunteers were undoubtedly different from others who did not come. To begin with, the boys and, even more strikingly, the girls were of higher than average intelligence for their culture groups.

When the volunteers were themselves divided into those who stayed with the workshop and those who dropped out, we found that the dropouts (a) were of lower IQ (performance) but (b) had higher scores on the Torrance Figural Test of Creative Thinking. Those who stayed to complete one or more films (a) had higher scores on the Wechsler Intelligence Scale for Children (W.I.S.C.) Picture Completion Subtest, (b) had higher scores on the W.I.S.C. Object Assembly Subtest, (c) had better memory for films that had been observed being made in New York, and (d) were more often the youngest of a small family or the eldest of a large family than from other possible birth orders. All differences were statistically significant.

It was a shock to us to discover that those who dropped out were already somewhat more creative, in terms of displaying the labile free associational competence required by the Torrance test. But when we look at the characteristics of those who stayed on in
the program and consider the analytic competences required by the tasks of camera work and editing as well as the dependency required in order to garner information from the teachers, the finding makes more sense. The literature shows that firstborns (and, possibly, large-gap “last borns”) are superior to other children in their use of affiliation. Their long and closer apprenticeship with their own parents seems to pay off when they must work with other adults (Sutton-Smith and Rosenberg 1971). It also makes sense that they may also be predisposed to perceive things more analytically, as the tests suggest (picture completion and object assembly).

The extensive interviews yielded very little, but the item that differentiated those who stayed in the program from those who did not appears to indicate somewhat greater memory of past film-related experience and, therefore, perhaps greater motivation toward filmmaking as an experience. While there are probably many other perceptual, cognitive, and characterological variables that might be relevant to the story, moreover, the differences we found are sufficient to suggest that filmmaking as an art form “selects out” those who have special traits and abilities.

We doubt that these predispositions qualifying the group that stays for training are sufficient to explain much of the content and form of filmmaking itself. It is certainly possible that there are differences within the successful group in these and other as yet unexamined psychological properties that would help to explain the films that are produced: this kind of thinking is found in psychodynamic theories of art. But given the fairly stereotypic content and structure of the films, we have some doubts as to its importance in this project, except in evaluating the more idiosyncratic and complex work of some of the oldest age group. When one is dealing with highly talented or genius mature artists, small-scale psychological differences might well be critical; when one is dealing with a fairly normal, if not average, population of children, that need not be the case. It is our judgment, therefore, that the psychological predispositions qualifying the children for entry and continuance in filmmaking in the present project do not have much to tell us about the filmmaking that then takes place.

In general, we expected children to show improvement on the performance aspects of the W.I.S.C. after their filmmaking experience because the tests are analogous in various ways to the cognitive organization required in making either live or animated films. We expected improvement as well on the Witiuk Embedded Figures test, in which subjects search out hidden figures in graphic presentations, because the process of editing sometimes takes hundreds of hours of disembedding the subtle cues that indicate appropriate frames for cuts. We thought that these hundreds of hours of persistent inner direction ought to have some effects on tests of experienced locus of control also.

In analyzing changes in test scores over time, we separated the effects of the actual completion of the full set of filmmaking operations from the effects of simple presence in the workshop environment. Significant changes in the cognitive measures proved to be related (in different ways) to the number of films produced and to the amount of time spent in the workshop. A single test—the Block Design subtest of the W.I.S.C.—showed a significantly larger increase for those completing at least one major film than for those completing no films over the initial four- or five-month period. The locus of control measure also showed a significant shift for this group.

The one significant effect of merely participating in the workshop was on the Embedded Figures Test scores. While most groups showed gains on this test, the gain of those children who stayed in the workshop at least four months was significantly larger than that of those children who dropped out or who did not participate.

When the particular year of attendance was considered in the analyses of amount of participation, the interaction of the two was significant in a majority of cases. The differences involved large gains for those who attended the workshop the first year but not for those who attended the second year, when three burglaries resulted in the loss of some films, forced temporary closings, and resulted in the move to a less desirable but safer location. This effect was particularly striking for, again, the Embedded Figures Test was due almost exclusively to the girls in the groups. This may indicate that girls, who consistently score lower than boys on this test, were profiting more rapidly than boys from their experiences.

The fact that the children did not differ initially on the measure of embedded figures but did differ on measures on picture completion, object assembly, and on the Torrance creativity tests and differed ultimately on measures of picture arrangement and embedded figures implies a fairly complex arrangement of competences. The predisposing competences of object assembly and picture completion appear to facilitate the analogous learned compe-
tences of disembarking figures, block design, and picture arrangement, the latter being more specific to the filmmaking task.

These are unique findings in the literature of psychological aesthetics and offer the promise that similar findings are possible in other expressive areas. They imply that particular kinds of art experience have unique formative effects on psychological development. The literature on games and play has established that similar formative effects result from the mastery of their expressive systems (Sutton-Smith 1972).

Conclusions

The present empirical study of the work of professionals from the Young Filmmakers Foundation teaching in workshops on the Lower East Side of New York between 1974 and 1976 allows the following conclusions. First, despite the difficulties of disentangling teacher influence from child perspective in work of this naturalistic kind, it is very clear that the youngest children, at least, showed a stage-like proclivity to persist with their own interests and camera techniques, despite the emphasis by teachers on what they considered to be more sophisticated forms. In some sense, at this age the children's 'message' superseded the adult form of the medium. The teachers were successful, however, in many respects in reducing filmmaking 'errors.'

Second, it seems that these younger children were motivated largely by their own play interests in action, although we have not considered here the possible effects of exposure to cartoon mass media, in which a focus on in presenting action is also a primary value. The films of the middle group of children seem susceptible to the interpretation that popular films may have provided the major exemplars. Here indeed the medium (as trickery and parody) seems to have become the message. In addition, their great concern with technique rather than free expression was not inconsistent with the age changes noted in previous work on graphics (Gardner 1980). Their humor and creativity in parody films, however, might imply that what we actually find in filmmaking with multiple codes is that newly learned codes are constrained (camera and editing techniques), while well-established codes (of words and imagery) are more freely expressed.

Finally, we do seem to have provided very considerable evidence that the persistent exercise of a medium can lead to important impacts on various measures of perceptual, cognitive, and characterological competence. Perhaps the relatively poor results from prior research have been due to the limited nature of the exposure of subjects to the medium under consideration.

Notes

1 We thank Lynne Hofer for persuading McGeorge Bundy that the Ford Foundation should fund this kind of research. We register our appreciation also to Oleg Labonov and Richard Kapp of the Ford Foundation, who were so helpful throughout all the phases of the grant.

Some 50 students helped with this project by way of video coding, data analysis, language coding, interviewing, testing, and film coding or as observers. While there are too many to list here, we would like to single out our secretary, Karen Hansen, as well as Frank Barraca and Peter Lazzaro for their special assistance.

During the entire project of course, the teachers—Susan Zeig, Pedro Rivera, Jerry Lindahl, and Carlos Baez—as well as the Young Filmmaker directors—Rodger Larson, Lynne Hofer, and Jamie Barrios—played a primary role.


3 See Sulturn-Smith and Eddle (1979) for a discussion of the means of recruitment at the larger workshop. Peer contact was probably the most common. Participants in the twelve-child study were volunteers from among subjects in a larger study of the development of narrative competence at an elementary school in Greenwich Village. In both cases all expenses were borne by foundation grants to Young Filmmakers or by the research budget.

4 With very few exceptions, all work was done with super-8 equipment.

5 What are called "errors" is based on a contrast with the older children who do not do these things as much (unsteady camera work, flash frames, poor framing, unintended jump cuts). While it is possible that these characteristics represent distinctive aspects of the younger child's perception of the world, it is our judgment that they do not, that these are not deliberate actions and that they would not do them if they had the chance. We may contrast these "errors" with the other unique young child characteristics that increase rather than diminish with experience: external settings, few transitions, more matched cuts, cutaways, etc. The former group of "errors" was disparaged by the teachers; the latter was not.
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