

Why Do Cuts Work?

Well, the fact is that *Apocalypse Now*, as well as every other theatrical film (except perhaps Hitchcock's *Rope*³), is made up of many different pieces of film joined together into a mosaic of images. The mysterious part of it, though, is that the joining of those pieces—the “cut” in American terminology⁴—actually does seem to work, even though it represents a total and instantaneous displacement of one field of vision with another, a displacement that sometimes also entails a jump forward or backward in time as well as space.

It works; but it could easily have been otherwise, since nothing in our day-to-day experience seems to prepare us for such a thing. Instead, from the moment we get up in the morning until we close our eyes at night, the visual reality we perceive is a continuous

³ A film composed of only ten shots, each ten minutes long, invisibly joined together, so that the impression is of a complete lack of editing.

⁴ I was aware, talking to an Australian audience, of the bias inherent in our respective languages. In the States, film is “cut,” which puts the emphasis on *separation*. In Australia (and in Great Britain), film is “joined,” with the emphasis on *bringing together*.

stream of linked images: In fact, for millions of years—tens, hundreds of millions of years—life on Earth has experienced the world this way. Then suddenly, at the beginning of the twentieth century, human beings were confronted with something else—edited film.

Under these circumstances, it wouldn't have been at all surprising to find that our brains had been "wired" by evolution and experience to reject film editing. If that had been the case, then the single-shot movies of the Lumière Brothers—or films like Hitchcock's *Rope*—would have become the standard. For a number of practical (as well as artistic) reasons, it is good that it did not.

The truth of the matter is that film is actually being "cut" twenty-four times a second. Each frame is a displacement from the previous one—it is just that in a continuous shot, the space/time displacement from frame to frame is small enough (twenty milliseconds) for the audience to see it as *motion within a context* rather than as twenty-four different contexts a second. On the other hand, when the visual displacement is great enough (as at the moment of the cut), we are forced to re-evaluate the new image as a *different context*: miraculously, most of the time we have no problem in doing this.

What we *do* seem to have difficulty accepting are the kind of displacements that are neither subtle nor total: Cutting from a full-figure master shot, for instance, to a slightly tighter shot that frames the actors from the ankles up. The new shot in this case is different enough to signal that *something* has changed, but not different enough to make us re-evaluate its

context: The displacement of the image is neither motion nor change of context, and the collision of these two ideas produces a mental jarring—a jump—that is comparatively disturbing.⁵

At any rate, the discovery early in this century that certain kinds of cutting "worked" led almost immediately to the discovery that films could be shot discontinuously, which was the cinematic equivalent of the discovery of flight: In a practical sense, films were no longer "earthbound" in time and space. If we could make films only by assembling all the elements simultaneously, as in the theater, the range of possible subjects would be comparatively narrow. Instead, Discontinuity is King: It is the central fact during the production phase of filmmaking, and almost all decisions are directly related to it in one way or another—how to overcome its difficulties and/or how to best take advantage of its strengths.⁶

The other consideration is that even if everything *were* available simultaneously, it is just very difficult

⁵ A beehive can apparently be moved two inches each night without disorienting the bees the next morning. Surprisingly, if it is moved two *miles*, the bees also have no problem: They are forced by the total displacement of their environment to re-orient their sense of direction, which they can do easily enough. But if the hive is moved two *yards*, the bees will become fatally confused. The environment does not seem different to them, so they do not re-orient themselves, and as a result, they will not recognize their own hive when they return from foraging, hovering instead in the empty space where the hive used to be, while the hive itself sits just two yards away.

⁶ When Stanley Kubrick was directing *The Shining*, he wanted to shoot the film in continuity and to have all sets and actors available all the time. He took over almost the entire studio at Elstree (London), built all the sets simultaneously, and they sat there, pre-lit, for however long it took him to shoot the film. But *The Shining* remains a special exception to the general rule of discontinuity.

to shoot long, continuous takes and have all the contributing elements work each time. European filmmakers tend to shoot more complex master shots than the Americans, but even if you are Ingmar Bergman, there's a limit to what you can handle: Right at the end, some special effect might not work or someone might forget their lines or some lamp might blow a fuse, and now the whole thing has to be done again. The longer the take, of course, the greater the chances of a mistake.

So there is a considerable logistical problem of getting everything together at the same time, and then just as serious a problem in getting it all to "work" every time. The result is that, for practical reasons alone, we don't follow the pattern of the Lumière Brothers or of *Rope*.

On the other hand, apart from matters of convenience, discontinuity also allows us to choose the best camera angle for each emotion and story point, which we can edit together for a cumulatively greater impact. If we were limited to a continuous stream of images, this would be difficult, and films would not be as sharp and to the point as they are.⁷

⁷Visual discontinuity—although not in the temporal sense—is the most striking feature of Ancient Egyptian painting. Each part of the human body was represented by its most characteristic and revealing angle: head in profile, shoulders frontal, arms and legs in profile, torso frontal—and then all these different angles were combined in one figure. To us today, with our preference for the unifying laws of perspective, this gives an almost comic "twisted" look to the people of Ancient Egypt—but it may be that in some remote future, our films, with their combination of many different angles (each being the most "revealing" for its particular subject), will look just as comic and twisted.

And yet, beyond even these considerations, cutting is more than just the convenient means by which discontinuity is rendered continuous. It is in *and for itself*—by the very force of its paradoxical suddenness—a positive influence in the creation of a film. We would want to cut even if discontinuity were not of such great practical value.

So the central fact of all this is that cuts *do work*. But the question still remains: *Why?* It is kind of like the bumble-bee, which should not be able to fly, but does.

We will get back to this mystery in a few moments.

"Cut Out the Bad Bits"

Many years ago, my wife, Aggie, and I went back to England for our first anniversary (she is English, although we'd been married in the United States), and I met some of her childhood friends for the first time.

"Well, what is it that you do?" one of them asked, and I replied that I was studying film editing. "Oh, editing," he said, "that's where you cut out the bad bits." Of course, I became (politely) incensed: "It is much more than that. Editing is structure, color, dynamics, manipulation of time, all of these other things, etc., etc." What he had in mind was home movies: "Oop, there's a bad bit, cut it out and paste the rest back together." Actually, twenty-five years down the road, I've come to respect his unwitting wisdom.

Because, in a certain sense, editing *is* cutting out the bad bits, the tough question is, *What makes a bad bit?* When you are shooting a home movie and the camera wanders, that's obviously a bad bit, and it's clear that you want to cut it out. The goal of a home movie is usually pretty simple: an unstructured record of events in continuous time. The goal of nar-

rative films is much more complicated because of the fragmented time structure and the need to indicate internal states of being, and so it becomes proportionately more complicated to identify what is a "bad bit." And what is bad in one film may be good in another. In fact, one way of looking at the process of making a film is to think of it as the search to identify what—for the particular film you are working on—is a uniquely "bad bit." So, the editor embarks on the search to identify these "bad bits" and cut them out, provided that doing so does not disrupt the structure of the "good bits" that are left.

Which leads me to chimpanzees.

About forty years ago, after the double-helix structure of DNA was discovered, biologists hoped that they now had a kind of map of the genetic architecture of each organism. Of course, they didn't expect the structure of the DNA to look like the organism they were studying (the way a map of England *looks* like England), but rather that each point in the organism would somehow correspond to an equivalent point in the DNA.

That's not what they found, though. For instance, when they began to compare them closely, they were surprised to discover that the DNA for the human and the chimpanzee were surprisingly similar. So much so—ninety-nine percent identical—as to be inadequate to explain all of the obvious differences between us.

So where do the differences come from?

Biologists were eventually forced to realize that there must be something else—still under much dis-

cussion—that controlled the *order* in which the various pieces of information stored in the DNA would be activated and the *rates* at which that information would be activated as the organism grew.

In the early stages of fetal development, it is difficult to tell the difference between human and chimp embryos. And yet, as they grow, they reach a point where differences become apparent, and from that point on, the differences become more and more obvious. For instance, the choice of what comes first, the brain or the skull. In human beings, the priority is brain first, skull next, because the emphasis is on maximizing the size of the brain. Any time you look at a newborn human infant you can see that the skull is not yet fully closed around the top of the still-growing brain.

With chimpanzees, the priority is reversed: skull first, *then* brain—probably for reasons that have to do with the harsher environment into which the chimp is born. The command from the chimp's sequence is, "Fill up this empty space with as much brain as you can." But there's only so much brain you can get in there before you can't fill it up anymore. At any rate, it seems to be more important for a chimp to be born with a hard head than a big brain. There's a similar interplay between an endless list of things: The thumb and the fingers, skeletal posture, certain bones being fully formed before certain muscular developments, etc.

My point is that the information in the DNA can be seen as uncut film and the mysterious sequencing code as the editor. You could sit in one room with a

pile of dailies and another editor could sit in the next room with exactly the same footage and both of you would make different films out of the same material. Each is going to make different choices about how to structure it, which is to say *when* and *in what order* to release those various pieces of information.

Do we know, for instance, that the gun is loaded *before* Madame X gets into her car, or is that something we only learn *after* she is in the car? Either choice creates a different sense of the scene. And so you proceed, piling one difference on top of another. Reversing the comparison, you can look at the human and the chimp as different films edited from the same set of dailies.⁸

I'm not assigning relative values here to a chimpanzee or a human being. Let's just say that each is appropriate to the environment in which it belongs: I would be wrong swinging from a branch in the middle of the jungle, and a chimpanzee would be wrong writing this book. The point is not their intrinsic value, but rather the inadvisability of changing one's mind in the process of creating one of them. Don't start making a chimpanzee and then decide to turn it into a human being instead. That produces a stitched-together Frankenstein's monster, and we've all seen its equivalent in the theaters: Film "X" would have been a nice little movie, perfectly suited to its "environment," but in the middle of production someone got an inflated idea about its possibilities, and, as a result, it became boring and pretentious. It was

⁸By the same token, a chimpanzee and a cockroach are made from different "dailies" to begin with.

a chimpanzee film that someone tried to turn it into a human-being film, and it came out being neither.

Or film "Y," which was an ambitious project that tried to deal with complex, subtle issues, but the studio got to it and ordered additional material to be shot, filled with action and sex, and, as a result, a great potential was reduced to something less, neither human nor chimp.

Most with the Least

You can never judge the quality of a sound mix simply by counting the number of tracks it took to produce it. Terrible mixes have been produced from a hundred tracks. By the same token, wonderful mixes have been made from only three tracks. It depends on the initial choices that were made, the quality of the sounds, and how capable the blend of those sounds was of exciting emotions hidden in the hearts of the audience. The underlying principle: Always try to do the most with the least—with the emphasis on try. You may not always succeed, but *attempt* to produce the greatest effect in the viewer's mind by the least number of things on screen. Why? Because you want to do only what is necessary to engage the imagination of the audience—suggestion is always more effective than exposition. Past a certain point, the more effort you put into wealth of detail, the more you encourage the audience to become spectators rather than participants. The same principle applies to all the various crafts of filmmaking: acting, art direction, photography, music, costume, etc.

And, of course, it applies to editing as well. You would never say that a certain film was well-edited

because it had more cuts in it. Frequently, it takes more work and discernment to decide where *not* to cut—don't feel you have to cut just because you are being paid to. You are being paid to make decisions, and as far as whether to cut or not, the editor is actually making twenty-four decisions a second: "No. No. No. No. No. No. No. No. No. No. Yes!"

An overactive editor, who changes shots too frequently, is like a tour guide who can't stop pointing things out: "And up there we have the Sistine Ceiling, and over here we have the Mona Lisa, and, by the way, look at these floor tiles . . ." If you are on a tour, you do want the guide to point things out for you, of course, but some of the time you just want to walk around and see what *you* see. If the guide—that is to say, the editor—doesn't have the confidence to let people themselves occasionally choose what they want to look at, or to leave things to their imagination, then he is pursuing a goal (complete control) that in the end is self-defeating. People will eventually feel constrained and then resentful from the constant pressure of his hand on the backs of their necks.

Well, if what I'm saying is to do more with less, then is there any way to say how much less? Is it possible to take this right to its absurd logical conclusion and say, "Don't cut at all?" Now we've come back to our first problem: Film is cut for practical reasons *and* film is cut because cutting—that sudden disruption of reality—can be an effective tool in itself. So, if the goal is as few cuts as possible, when you *have* to make a cut, what is it that makes it a good one?

The Rule of Six

The first thing discussed in film-school editing classes is what I'm going to call three-dimensional continuity: In shot A, a man opens a door, walks half-way across the room, and then the film cuts to the next shot, B, picking him up at that same halfway point and continuing with him the rest of the way across the room, where he sits down at his desk, or something.

For many years, particularly in the early years of sound film, that was the rule. You struggled to preserve continuity of three-dimensional space, and it was seen as a failure of rigor or skill to violate it.⁹ Jumping people around in space was just not done, except, perhaps, in extreme circumstances—fights or earthquakes—where there was a lot of violent action going on.

I actually place this three-dimensional continuity at the bottom of a list of six *criteria* for what makes a

⁹ The problem with this thinking can be seen in any multi-camera situation-comedy on television. Because the cameras are filming simultaneously, the actors are necessarily always "correct" as far as their spatial continuity and relation to each other is concerned, but that absolutely does not prevent bad cuts from being made all the time.

good cut. At the top of the list is Emotion, the thing you come to last, if at all, at film school largely because it's the hardest thing to define and deal with. *How do you want the audience to feel?* If they are feeling what you want them to feel all the way through the film, you've done about as much as you can ever do. What they finally remember is not the editing, not the camerawork, not the performances, not even the story—it's how they felt.

An ideal cut (for me) is the one that satisfies all the following six criteria at once: 1) it is true to the emotion of the moment; 2) it advances the story; 3) it occurs at a moment that is rhythmically interesting and "right"; 4) it acknowledges what you might call "eye-trace"—the concern with the location and movement of the audience's focus of interest within the frame; 5) it respects "planarity"—the grammar of three dimensions transposed by photography to two (the questions of stage-line, etc.); 6) and it respects the three-dimensional continuity of the actual space (where people are in the room and in relation to one another).

1) Emotion	51%
2) Story	23%
3) Rhythm	10%
4) Eye-trace	7%
5) Two-dimensional plane of screen	5%
6) Three-dimensional space of action	4%

Emotion, at the top of the list, is the thing that you should try to preserve at all costs. If you find you have to sacrifice certain of those six things to

make a cut, sacrifice your way up, item by item, from the bottom.

For instance, if you are considering a range of possible edits for a particular moment in the film, and you find that there is one cut that gives the right emotion *and* moves the story forward, *and* is rhythmically satisfying, *and* respects eye-trace and planarity, *but* it fails to preserve the continuity of three-dimensional space, then, by all means, that is the cut you should make. If none of the other edits has the right emotion, then sacrificing spatial continuity is well worth it.

The values I put after each item are slightly tongue-in-cheek, but not completely: Notice that the top two on the list (emotion and story) are worth far more than the bottom four (rhythm, eye-trace, planarity, spatial continuity), and when you come right down to it, under most circumstances, the top of the list—emotion—is worth more than all five of the things underneath it.

And, in fact, there is a practical side to this, which is that if the emotion is right and the story is advanced in a unique, interesting way, in the right rhythm, the audience will tend to be unaware of (or unconcerned about) editorial problems with lower-order items like eye-trace, stage-line, spatial continuity, etc. The general principle seems to be that satisfying the criteria of items higher on the list tends to obscure problems with items lower on the list, but not vice-versa: For instance, getting Number 4 (eye-trace) working properly will minimize a problem with Number 5 (stage-line), whereas if Number 5 (stage-line) is correct but

Number 4 (eye-trace) is not taken into consideration, the cut will be unsuccessful.

Now, in practice, you will find that those top three things on the list—emotion, story, rhythm—are extremely tightly connected. The forces that bind them together are like the bonds between the protons and neutrons in the nucleus of the atom. Those are, by far, the tightest bonds, and the forces connecting the lower three grow progressively weaker as you go down the list.

Most of the time you will be able to satisfy all six criteria: the three-dimensional space and the two-dimensional plane of the screen and the eye-trace, and the rhythm and story and emotion will all fall into place. And, of course, you should always aim for this, if possible—never accept less when more is available to you.

What I'm suggesting is a list of priorities. If you have to give up something, don't ever give up emotion before story. Don't give up story before rhythm, don't give up rhythm before eye-trace, don't give up eye-trace before planarity, and don't give up planarity before spatial continuity.

Don't Worry, It's Only a Movie

Earlier I asked the question, "Why do cuts work?" We *know* that they do. And yet it is still surprising when you think about it because of the violence of what is actually taking place: At the instant of the cut, there is a total and instantaneous discontinuity of the field of vision.

I recall once coming back to the editing room after a few weeks in the mixing theater (where all movements are smooth and incremental) and being appalled at the brutality of the process of cutting. The "patient" is pinned to the slab and: Whack! Either/Or! This not That! In or Out! We chop up the poor film in a miniature guillotine and then stick the dismembered pieces together like Dr. Frankenstein's monster. The difference (the miraculous difference) is that out of this apparent butchery our creation can sometimes gain not only a life but a soul as well. It is all the more amazing because the instantaneous displacement achieved by the cut is not anything that we experience in ordinary life.

We are accustomed to such things, of course, in music (Beethoven was the innovator and master of this) as well as in our own thoughts—the way one realization will suddenly overwhelm everything else, to be, in turn, replaced by yet another. But in the dramatic arts— theater, ballet, opera—there didn't seem to be any way to achieve total instantaneous displacement: stage machinery can only move so fast, after all. *So why do cuts work?* Do they have some hidden foundation in our own experience, or are they an invention that suits the convenience of filmmakers and people have just, somehow, become used to them?

Well, although “day-to-day” reality appears to be continuous, there *is* that other world in which we spend perhaps a third of our lives: the “night-to-night” reality of dreams. And the images in dreams are much more fragmented, intersecting in much stranger and more abrupt ways than the images of waking reality—ways that approximate, at least, the interaction produced by cutting.

Perhaps the explanation is as simple as that: We accept the cut because it resembles the way images are juxtaposed in our dreams. In fact, the abruptness of the cut may be one of the key determinants in actually *producing* the similarity between films and dreams. In the darkness of the theater, we say to ourselves, in effect, “This looks like reality, but it cannot be reality because it is so visually discontinuous; therefore, it must be a dream.”

(Along those lines, it is revealing that the words a parent uses to comfort a child frightened by a nightmare—“Don't worry, darling, it's only a dream”—are

almost the same words used to comfort a child frightened by a film—“Don't worry, darling, it's only a movie.” Frightening dreams and films have a similar power to overwhelm the defenses that are otherwise effective against equally frightening books, paintings, music. For instance, it is hard to imagine this phrase: “Don't worry, darling, it's only a painting.”)

The problem with all this is that the comparison of films and dreams is interesting, probably true, but relatively barren of practical fruits: We still know so little about the nature of dreams that the observation comes to a stop once it has been made.

Something to consider, though, is the possibility that there may be a part of our waking reality where we actually do experience something like cuts, and where daylight images are somehow brought in closer, more discontinuous, juxtaposition than might otherwise seem to be the case.

I began to get a glimmer of this on my first picture-editing job—*The Conversation* (1974)—when I kept finding that Gene Hackman (Harry Caul in the film) would blink very close to the point where I had decided to cut. It was interesting, but I didn't know what to make of it.

Then, one morning after I had been working all night, I went out to get some breakfast and happened to walk past the window of a Christian Science Reading Room, where the front page of the *Monitor* featured an interview with John Huston. I stopped to read it, and one thing struck me forcefully because it related exactly to this question of the blink:

"To me, the perfect film is as though it were unwinding behind your eyes, and your eyes were projecting it themselves, so that you were seeing what you wished to see. Film is like thought. It's the closest to thought process of any art.

"Look at that lamp across the room. Now look back at me. Look back at that lamp. Now look back at me again. Do you see what you did? You *blinked*. Those are *cuts*. After the first look, you know that there's no reason to pan continuously from me to the lamp because you know what's in between. Your mind cut the scene. First you behold the lamp. *Cut*. Then you behold me."¹²

What Huston asks us to consider is a physiological mechanism—the blink—that interrupts the apparent visual continuity of our perceptions: My head may move smoothly from one side of the room to the other, but, in fact, I am cutting the flow of visual images into significant bits, the better to juxtapose and compare those bits—"lamp" and "face" in Huston's example—without irrelevant information getting in the way.

Of course there are limits to the kind of juxtapositions I can make this way—I can't jump forward or backward in time and space (that is the prerogative of dreams and films).¹³ But even so, the visual displacements available to me just by turning my head (from the Grand Canyon in front of me to the forest behind me, or even from one side of this room to the other) are sometimes quite great.

¹² *Christian Science Monitor*, August 11, 1973. John Huston interviewed by Louise Sweeney.

¹³ But see footnote #16.

After I read that article, I started observing people, watching when they blinked, and I began to discover something much different than what they tell you in high-school biology, which is that the blink is simply a means to moisten the surface of the eye. If that's all it is, then for each environment and each individual there would be a purely mechanical, predictable interval between blinks depending on the humidity, temperature, wind speed, etc. You would only blink when your eye began to get too dry, and that would be a constant number of seconds for each environment. This is clearly not the case: People will sometimes keep their eyes open for minutes at a time—at other times they will blink repeatedly—with many variations in between. The question then is, "What is causing them to blink?"

On the one hand, I'm sure you've all been confronted by someone who was so angry that he didn't blink at all: This is a person, I believe, in the grip of a single thought that he holds (and that holds him), inhibiting the urge and need to blink.¹⁴ And then there is the opposite kind of anger that causes someone to blink every second or so: This time, the person is being assailed simultaneously by many conflicting emotions and thoughts, and is desperately (but unconsciously) using those blinks to try to separate these thoughts, sort things out, and regain some kind of control.

¹⁴ There is that telling phrase from classic cowboy (and now diplomatic) stand-offs: "he blinked." The loser in this mental game of chicken could not hold fast to his single position and instead allowed some other thought to intrude at the critical moment. The blink signals the moment he relinquished his primary thought.

So it seems to me that our rate of blinking is somehow geared more to our emotional state and to the nature and frequency of our thoughts than to the atmospheric environment we happen to find ourselves in. Even if there is no head movement (as there was in Huston's example), the blink is either *something that helps an internal separation of thought to take place*, or it is *an involuntary reflex accompanying the mental separation that is taking place anyway*.¹⁵

And not only is the *rate* of blinking significant, but so is the actual *instant* of the blink itself. Start a conversation with somebody and watch when they blink. I believe you will find that your listener will blink at the precise moment he or she "gets" the idea of what you are saying, not an instant earlier or later. Why would this be? Well, speech is full of unobserved grace notes and elaborations—the conversational equivalents of "Dear Sir" and "Yours Sincerely"—and the essence of what we have to say is often sandwiched between an introduction and a conclusion. The blink will take place either when the listener realizes our "introduction" is finished and that now we are going to say something significant, or it will happen when he feels we are "winding down" and not going to say anything more significant for the moment.

And that blink will occur where a cut could have happened, had the conversation been filmed. Not a frame earlier or later.

So we entertain an idea, or a linked sequence of ideas, and we blink to separate and punctuate that idea from what follows. Similarly—in film—a shot

¹⁵ Dr. John Stern of Washington University in St. Louis has recently (1987) published experimental work in the psycho-physiology of the blink that seems to confirm this.

presents us with an idea, or a sequence of ideas, and the cut is a "blink" that separates and punctuates those ideas.¹⁶ At the moment you decide to cut, what you are saying is, in effect, "I am going to bring this idea to an end and start something new." It is important to emphasize that the cut by *itself* does not create the "blink moment"—the tail does not wag the dog. If the cut is well-placed, however, the more extreme the visual discontinuity—from dark interior to bright exterior, for instance—the more thorough the effect of punctuation will be.

At any rate, I believe "filmic" juxtapositions are taking place in the real world not only when we dream but also when we are awake. And, in fact, I would go so far as to say that these juxtapositions are not accidental mental artifacts but part of the method we use to make sense of the world: We must render visual reality discontinuous, otherwise perceived reality would resemble an almost incomprehensible string of letters without word separation or punctuation. When we sit in the dark theater, then we find edited film a (surprisingly) familiar experience. "More like thought than anything else," in Huston's words.¹⁷

¹⁶ This can occur regardless of how big or small the "idea" happens to be. For instance, the idea could be as simple as "she moves quickly to the left."

¹⁷ William Stokoe makes an intriguing comparison between the techniques of film editing and American Sign Language: "In signed language, narrative is no longer linear. Instead, the essence is to cut from a normal view to a close-up to a distant shot to a close-up again, even including flashback and flash-forward scenes, exactly as a movie editor works. Not only is signing arranged more like edited film than like written narration, but also each signer is placed very much as a camera: the field of vision and angle of view are directed but variable." William Stokoe, *Language in Four Dimensions*, New York Academy of Sciences (1979).