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Touch of Silence

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I'd like to divide up the morning into two parts: first, a look at the recut and remix I've just finished of Orson Welles' *Touch of Evil*. Then I'd like to discuss the use of silence in film, and the sounds we can wrap around that silence to make it more evocative – what Michel Chion was just discussing, in orchestral terms, as 'the silence of the orchestra around the single flute'.

> 'The effect should be just exactly as bad as that…'
>
> – Orson Welles

For those of you who may not be familiar with the sad history of *Touch of Evil*, Universal fired Welles from the film shortly after he completed his first cut – they felt that he was taking too long, and that the dark and cynical film they saw emerging was not going to be the commercial hit they were looking for. You might recall that at the time, Charlton Heston – the lead of *Touch of Evil* – was the world's biggest movie star. Eventually Universal rewrote and reshot four scenes and substantially recut the remainder of the film. They were contractually obliged to show Welles the results of all this and they did so, but reluctantly – letting him view the film only once, without stopping.

By the next morning he had typed up 58 pages of comments – astute, insightful, boiling with passion under the surface, but tactfully restrained since

he was addressing the heads of the studio (particularly Ed Muhl) who were his declared enemies. It is heartbreaking to read. Both for the obvious waste of talent and insight of one of the twentieth-century's great film-makers; and because, with hindsight, we know *Touch of Evil* was to be Welles' last film within the Hollywood system he had so dramatically entered nearly twenty years earlier.

But it is inspiring as well as heartbreaking. The memo is a unique document that gives us precious insights into Welles' creative process – insights that we wouldn't possess if Universal hadn't taken *Touch of Evil* away from him. This is the silver lining in an otherwise rather dark cloud that closed around the film in late 1957.

Then – one afternoon about forty years later – my phone rang. This call out of the blue was from Rick Schmidlin, someone I didn't know at the time. He introduced himself and told me that a couple of years earlier he had come across some tantalizing fragments of a long-lost memo Welles had written during the frustrating post-production of *Touch of Evil*. And from that moment on, Rick had made it his mission to locate the entire memo – which, amazingly, he eventually did – and then, equally improbably, to convince Universal Studios to let him produce a recut and remix of *Touch of Evil*, using the memo as a Bible. This would be for the fortieth anniversary of the film's release.

Rick was looking for someone to take on the interpretive aspects of the project and he thought of me because he felt I had the necessary expertise in picture editing and sound mixing – Welles' notes required changes in both areas in equal measure. What you see on the screen is, in part, determined by what you hear, and, vice versa, how you hear something is partly determined by what you see. So, even though they're technically separate departments, the mutual influence of sound and picture is inextricable. Even for me, who works in both areas, they are sometimes completely mysterious in their chemistry. Anyway, I was more than intrigued with Rick's challenge, and accepted his offer.

Rick drew up a budget, which was low for this sort of thing, and Universal agreed to go ahead. We started work in January and finished in April, shortly before I came to London.

What I'd like to do is take you through the first ten or fifteen minutes of the new version of the film, stopping where there are significant changes from the original. Luckily, Universal kept the negative in ideal conditions and the new print looks absolutely stunning. A few sections that were damaged or dirty have been digitally repaired. Also we had access to the original monophonic three-track master: one track of dialogue, one of music and one of sound effects – called the DME – which allowed us, as many of Welles' notes require, to separate one track from the others, to raise its level, to eliminate it, or shift it in time. And because we were able to remix the whole film in Dolby Digital, you will hear the soundtrack with an

unprecedented full-frequency range and I guess what might be called 'appropriate' dynamics. It will still be monophonic; the film was conceived in mono and finished in mono. If *Touch of Evil* had been made twenty years later, Welles probably would have used stereo – one just doesn't know.

We were constantly aware of the sacred ground that we were treading in tackling something like this: *Touch of Evil* is an almost holy object for many people – from the members of the French New Wave on. It has influenced several generations of young people to pick up their cameras and microphones and become film-makers. In the course of an interview for *The LA Times* a couple of months ago, I mentioned that each decade sees another interpretation of *Touch of Evil* and the version that's in theatres at the moment is *LA Confidential*. Shortly afterwards I received the following note from Curtis Hanson, director of the film: 'Thanks for the mention; there's no work whose name I'd like paired with *LA Confidential* any more than *Touch of Evil*. I have the original poster; when I walk up to my office I see it every day and I bow down before it.'

So when I tell friends what I've been up to, they get this shocked and slightly despairing look in their eyes: one of them even said, 'You know, this is like hearing that God just phoned and wants changes in the Bible.' But the truth is that Welles was deeply disappointed in the final version of the film – he never saw it again after that one sad screening. The whole thing was a particularly traumatic experience for him because he was re-living the nightmares of *The Magnificent Ambersons* and *The Lady from Shanghai* and other films of his, where the post-production had gone wrong and he'd lost control in the final phases of post-production.

This was very much in contrast with the way *Touch of Evil* started. Universal was happy with the script that Welles had written; they loved the footage when they saw it in dailies, and they enthusiastically proposed a five-picture deal with him. So, Orson Welles, the former boy genius, slightly more mature now at age 42, came back to Hollywood in 1957 to continue in the direction that had been sidetracked during the 1950s. As it turned out, the Bad Things came out of the woodwork again: he lost control of *Touch of Evil*, returned to Europe, and never regained his foothold in commercial cinema.

The music you hear when the film begins is by Henry Mancini, and it accompanies the famous opening crane shot. At the very beginning there's a close-up of a time bomb being set at 3 minutes 20 seconds, which is exactly how long the shot runs, and then the bomb is planted in the trunk of a convertible. Universal, against Welles' wishes, used the shot as a background for the opening credits. And because there were credits, there had to be credit music, so they asked Henry Mancini to write the theme that you'll hear.

None of this was Welles' intention. He wanted the shot to run without any credits, and he wanted something very different on the soundtrack, as he describes

at the beginning of the memo: 'I assume that the music now backing the opening sequence is temporary.'[1] (He was referring to the Mancini score.) 'As the camera moves through the streets of the Mexico border town, the plan was to feature a succession of different and contrasting Latin American musical numbers, the effect, that is, of our passing one cabaret orchestra after another. In honky-tonk districts on the border' – the border between the United States and Mexico – 'loudspeakers are all over the entrance of every joint, large or small, each blasting out its own tune, by way of a come-on or pitch for the tourists. The fact that the streets are invariably loud with this music was planned as a basic device throughout the entire picture', which, as you'll see, it is. 'The special use of contrasting mambo-type rhythm numbers with rock 'n' roll will be developed in some detail at the end of the memo, when I'll take up details of the beat and also specifics of musical colour and the instrumentation on a scene-by-scene and transition-by-transition basis. In this version I was shown yesterday, it's not clear where you've decided to place the credits.'

Later on, he talks about the music coming from the nightclubs, through the doors of the smallest bars and cantinas: 'It is very important that the usual ranchero and mariachi (Mexican) numbers should be avoided and the emphasis should go on Afro-Cuban rhythm numbers. Those few places where traditional Mexican music is wanted will be indicated by special notes. Also, a great deal of rock 'n' roll is called for. Because these numbers invariably back dialogue scenes, there should never at any time be any vocals. The rock 'n' roll comes from radio loudspeakers, juke boxes and, in particular' – he's talking about another scene now – 'the radio in the motel. All of the above music, of course, is "realistic" in the sense that it is literally playing during the action.'

One of the side-effects of having the magnetic masters is that when we removed the Mancini title music something was revealed which had been hidden for forty years: the sound effects track for this opening scene. It was a complete surprise to us that it even existed, buried as it was under the score. As you may know, there's a perennial cat-and-dog fight between the music and sound effects departments on almost every film. And unless the ground rules have been made clear, and everyone keeps up-to-date with what everyone else is doing, there are inevitably going to be moments where the sound effects and the music want to hold centre-stage at the same time. The decision usually goes to the music, for various artistic, political and economic reasons. Welles was keenly aware of all this, given his own background in radio and stage and his twenty years of experience in making films. And so he writes about how certain things in the music will have to be underplayed in order to give the sound effects room to breathe. The memo allows us to listen in on him orchestrating all this – he not only knows what should be done but how it should be done – to achieve the final effect that he's after.

Anyway, the sound effects for this opening scene had been fully prepared and premixed on the E (effects) track of the D, M and E. And if Welles' original intentions had been followed, they would have been heard. But in 1957, when Universal made the final optical track for *Touch of Evil*, Mancini's music so dominated everything that the sound effects were played at near inaudible levels. The music just used up all the available audio 'oxygen'. I think you might be able to hear a few car-door slams and maybe a police whistle or two, but certainly nothing of the complexity Welles had in mind: a more atmospheric montage of music wafting from the nightclubs, the cantinas, the tourist traps – just generally in the air of this border town. Also, significantly, music coming from the radio of the convertible that has the bomb in it. Notice how the car will veer out of frame while the camera will go somewhere else; and then it will come back into frame again. That happens three times, and each time, in the new version, the re-entry of the car is preceded by the tune that was on the radio when the ignition was started, which now allows the audience to track the progress of this potentially fatal object – the car with the bomb – as it drives closely alongside our two stars, Heston and Leigh.

To fulfill Welles' wishes we needed to create a multilevel montage of seven or eight pieces of source music, yet we didn't want to bring anything new and 'foreign' into the film. So I plundered fragments of source music from later in the film to weave together at the beginning, like an overture. Then fortuitously, we discovered a spare piece of negative which turned out to be the original opening shot without the titles. It was damaged and incomplete, and didn't extend as far as the border crossing, but it gave us what we needed to digitally reweave the opening without any credits.

Q: *Did you find that you had to do very much to the effects track that you were presented with other than lift the level to let it be heard?*

WM: Well, when we raised the level a lot of tape hiss came along with it, so we had to suppress the hiss. But this is something we were doing to the entire soundtrack – the dialogue and music as well as the effects. Just a bit more in this case, because we were raising the level by ten decibels or so, which is considerable.

I think, from circumstantial evidence, that when Universal previewed *Touch of Evil* the results were not so good. I'm guessing that one of the frequent comments from the audience was: 'I can't understand what the actors are saying.' And this was probably because of Welles' enthusiasm for overlapping dialogue. He came to film from radio, and so his appreciation of sound was heightened by the need, in radio, to tell the whole story through audio. All of his interest in sound effects, in 'realistic' dialogue overlaps, in the manipulation of acoustic space, came from innovations that he developed for his own radio programmes, and then imported wholesale into the films that he made.

This is admirable, but we have to take into consideration the somewhat limited cinema audio technology of the time; also the fact that Quinlan, the character Welles plays, talks with an accent and is frequently eating candy bars, so he mumbles. Well, one solution to this problem would have been to get all the actors back into the studio and re-record the dialogue separately and clearly. But the quicker and less expensive way was simply to pull the level of the sound effects down. This is apparently what Universal did in the final mix in 1958.

The new version of *Touch of Evil* has the advantage of digital noise suppression and a final master in full-frequency Dolby Digital, so we were consequently able to lift the sound effects track up without losing intelligibility in the dialogue. And in the opening sequence, the transparency of the new musical montage allows space for the sound effects to be heard. Listen for the sound of the herd of goats, which is completely missing in the 1958 mix.

Let me read you one more page, which may give you some idea of what Universal was coping with. Welles is writing about the treatment of the music in the scenes with Susie (Janet Leigh) talking to Grandi (Akim Tamiroff): 'The music should have a low insistent beat with a lot of bass in it. This music is at its loudest in the street and once she enters the tiny lobby of The Ritz Hotel, it fades to extreme background. However, it does not disappear but continues and, eventually, there will be a segue to a Latin-type rhythm number, also very low in pitch, dark, and with a strong, even exaggerated, emphasis on the bass.' Then his typewriter breaks into capital letters, and he centres the next paragraph right in the middle of the page:

> IT IS VERY IMPORTANT TO NOTE THAT IN THE RECORDING OF ALL THESE NUMBERS, WHICH ARE SUPPOSED TO BE HEARD THROUGH STREET LOUD SPEAKERS, THAT THE EFFECT SHOULD BE JUST THAT, JUST EXACTLY AS BAD AS THAT.

He continues: 'The music itself should be skillfully played but it will not be enough, in doing the final sound mixing, to run this track through an echo chamber with a certain amount of filter. To get the effect we're looking for, it is absolutely vital that this music be played back through a cheap horn in the alley outside the sound building. After this is recorded, it can then be loused up even further in the process of re-recording. But a tinny exterior horn is absolutely necessary, and since it does not represent very much in the way of money, I feel justified in insisting upon this, as the result will be really worth it.' Well, in that paragraph, if you are a Universal executive in 1958, are two completely incompatible concepts: after the music is recorded, 'it can then be loused up even further' and 'the result will really be worth it'.

Put yourself in the shoes of Ed Muhl, the head of Universal at the time. Here is a director saying that he wants to take a well-recorded music track and louse it up by re-recording it in an alleyway and then maybe louse it up even further in the final mix, and to top it all off 'the result will really be worth it'. It wouldn't take much more to make you question everything that Welles was doing. And if he was taking a long time doing it, you might feel justified in removing the film from his control. When we were working on the recut, Rick discovered that Mr. Muhl was still alive, 95 years old, and living in the San Fernando Valley, so we called him up to tell him what we were doing and see if he had anything to suggest. He was acerbic and unrepentant, felt that Welles had been a conceited poseur who never directed a film that made any money, and of course they were justified in taking *Touch of Evil* away from him.

Well, we now know exactly what Welles was up to with his alleyway recording – it was the analogue forerunner of all the digital reverberation techniques that have blossomed over the last twenty-five years, allowing us to colour a sound with an infinite variety of acoustic ambiances. For me, Welles' description of his technique had a particularly strong impact because this is something – what I then called 'worldizing' – I developed on my own in the late 1960s. Or at least I thought I had until I read this part of the memo. Having heard *Touch of Evil* at film school I was probably subconsciously influenced by what Welles had done. Though I had always – even when I was playing with my first tape recorder in the early 1950s – been fascinated by the emotion that a spatial treatment of sound can give, and I was frustrated with the limited technical resources available to do that in the mid-1960s.

There is also a practical reason for adding spatial colouring: you can put acoustically-treated sound – music, let's say – in the background of a scene and it will tend not to interfere with the intelligibility of the foreground dialogue because its sonic 'edges' have been softened and diffused by the acoustic treatment. This is very much the equivalent of a narrow depth-of-field in photography. If you were taking a photo portrait of somebody you would typically choose a long (75mm) lens and a wide aperture to give a narrow depth of field. Then you focus on your subject's eyes and consequently the rose hedge in the background is thrown out of focus. When somebody sees the resulting photograph they know immediately – without thinking – what they're supposed to be looking at, because that's the part in focus – the rose hedge is just an attractive blur in the background. If the roses were also in focus, it would be confusing to the eye.

So my technique would be to take a soundtrack out of the studio and into the world, along with another tape recorder and a speaker, and position the two so that the second machine recorded the other playing back with a nice envelope of reverberant sound around it – say, an abandoned subway station for some of the

voices in *THX-1138*. In the final mix, I would lay this new track alongside the original so that I could fade from one to the other, going from a dry, clean sound to a diffuse atmospheric 'dirty' one depending on the needs of the scene. Many of the soundtracks I did at film school are full of this, as well as Coppola's *The Rain People*; Lucas's *THX-1138*, and the wedding scene in Coppola's *The Godfather*. The most extreme use is probably in Lucas' *American Graffiti* – where the music runs throughout the whole film, alternating between the background and the foreground.

Parenthetically, I should mention that *Graffiti* was also done for Universal – fourteen years after *Touch of Evil* – and our mix was initially evaluated by the studio as 'one of the worst soundtracks we have ever heard. An embarrassment to Universal Studios.'

Just one more point before we move on. Here are Welles' comments about a piece of music outside Zsa-Zsa Gabor's nightclub: 'This music should have a highly casual, low, almost improvised feeling, and the colour should be dark and rather menacing. This continues faintly throughout the acid-throwing business, with the percussive part of it building. The actual drumming should be extremely muted, however, in the original recording, so that there is no conflict between this throbbing rhythmic effect and the sudden sizzling, frying effect of the acid landing on the poster of the girl.' He's addressing the thorny issue of music conflicting with sound effects and asking the music to repress something in its normal development so that, at the right moment, the sound effect of acid being thrown and hitting a poster on the wall can be shockingly sizzling.

I want to take a look at one other sequence, the one featuring Tania (Marlene Dietrich) and a player piano. One of the fascinating things I learned doing this recut is that Tania is a creation of the shooting; she's not in the original script at all. About a week or two into production, Welles must have felt, 'I need Marlene, I need that something that she can give to a film like this', and so he called her up and said (hypothetically) 'Darling, can you help me? I want you to play the madame of a whorehouse and I'm shooting your scene in three days.' 'Oh yes? Thank you. What should I look like?' 'Well, you're supposed to be Mexican.' 'Ah, darling, I can't do Mexican.' 'It doesn't matter. Remember that Gypsy thing you wore a couple of years ago?' 'Yes.' 'Well, wear that. I think we've got one of Elizabeth Taylor's wigs, and we'll put it on you.' 'OK, I'll be there. Delightful.'

Despite the haste, this was not a frivolous decision. He was, I believe, worried about the final assessment of Quinlan's character in the script. The epitaph 'He was a great detective but a lousy cop,' was – in the original script – to have been delivered by Vargas (Charlton Heston) over Quinlan's dead body. After a couple of weeks of filming, Welles must have felt uncomfortable about giving this crucial line to Vargas, so he rewrote the scene, reuniting Vargas with wife Susie, getting him out of the way, and left the final assessment of Quinlan to Tania, played by

Dietrich. The District Attorney, Schwartz, now feeds her the line 'Hank was a great detective all right...' and Tania counters with '...And a lousy cop'. Schwartz then asks 'Is that all you have to say for him?' and Tania replies with the world-weary epitaph 'He was some kind of a man ... What does it matter what you say about people?' which Dietrich in later years referred to as the best line and best delivery of her entire career. The point of this digression is that Welles created, while shooting, a character who seems irrevocably part of the film, who had a past – a probably romantic past – with Quinlan, and who could consequently assess his character with more depth and humanity than the slightly tin-horn Vargas. In fact, the final image of the film is Tania, walking away into the night, saying 'Adios.' It doesn't hurt that there was probably a romantic link between Welles and Dietrich, which gives an added frisson.

That paradoxical contradiction: 'Great detective, lousy cop' also has, in hindsight, a spooky resonance with Welles' career. He was a great director – one of the greatest – but at the same time I suspect that there was also something else about him that was deeply flawed, from the point of view of how one successfully makes the system – almost despite itself – yield the results one is after.

So here we are at the first meeting between Quinlan and Tania in many years, and the source music (written by Henry Mancini) is coming from a player piano. When Quinlan leads the others out the back way from Zsa-Zsa Gabor's nightclub, he stops, hearing the sound of the player piano wafting in the air. Now quoting from the memo: 'This music should not be playing at the start of the scene but should begin just a beat before Quinlan notices it. That is to say, it does not fade in but has a straightforward musical commencement, as though the player piano had been started at this point. Tania's is some distance away and the player piano should be distant in this shot, particularly since we want to get a rather startling contrast on the next cut, where we go directly to a close shot of the player piano in full operation. In this cut, of course, the piano should be loudest. When Quinlan enters Tania's, the music itself reaches a definitively slower and more romantic section, and this continues through the dialogue scene between Tania and Quinlan. The music itself should be subdued enough and slow enough so that by monitoring it well down, we can have the needed colour for this scene without any confusion or difficulty in making out the words.' Again, he's taking everything into consideration. 'The music itself comes to a complete finish just before Quinlan says "That Pianola..."'

Well, in the 1958 version of the film, the studio didn't do any of these things. The piano was playing right from the beginning of the alleyway scene. And it continued, barreling on through the whole scene between Tania and Quinlan. When you do what Welles wants, however, it has three positive effects. First of all, the music acquires more personality, because it wasn't simply playing irrespective

of who was in the alleyway – it was waiting for Quinlan to show up. As soon as he appears, there's a second's pause, and then you hear the first notes. The music is now purposeful: it pounces as soon as it sees its prey, dragging him into Tania's.

Secondly, by shifting the start point, one of the wonderful, serendipitous things we found is that the music itself has an internal caesura that occurs just before Dietrich has her first line. So at exactly the moment the music comes to this brief stop, she says, 'We're closed', and then it starts up again for its coda. As a mixer you pray for those kinds of things and, sure enough, there it was as soon as we did what Welles wanted and shifted the start point of the music.

And thirdly, at the halfway point in the scene, the piano now comes to a stop. You now notice that the scene is articulated. The first part, which has musical backing, is all atmosphere. 'Do you know who I am?' 'We're closed.' 'I'm Hank Quinlan.' 'I didn't recognize you.' 'You look great.' 'You should lay off those candy bars.' There's all this smoky innuendo about what may or may not have passed between them in the years prior to the film. But then the music stops, Quinlan makes a brief comment about the Pianola, and Tania gets down to brass tacks: 'What can I offer you?', meaning, 'Why are you here?' 'Do you know anything about the bomb?' 'That happened on your side of the border.' 'Yeah, I know, but in a place like this, you hear things.' Pause ... 'I heard the explosion.' Whether she knows or not, she's not going to tell Quinlan. The second half of the scene is all plot. First half: atmosphere with musical backing; second half: plot with no music. This was Welles' original plan. What happens when you have the music all the way through, as in the 1958 version, is a blurring and lack of dramatic articulation: the music is telling you, subconsciously, 'This is all atmospheric, they're just saying things to hear themselves talk – don't bother yourself with the words.' Now, when the music stops, it's like a switch that goes on in your head, the audience's head, that says, 'OK, pay attention now – listen to what they're saying, because it's about the story.'

Touch of Evil is a highly designed film. Welles wrote it, directed it, starred in it. As you've heard in the memo, he was concerned about the minutiae of music, sound and editing. So when the film was taken away from him and given to someone else, things just began to get fuzzy. What I think we have accomplished in this recut and remix is a reduction in conceptual fuzziness. The examples I have given here are just a few of the fifty things that we changed, but they are representative of what Welles was asking for. Obviously, the original 1958 version is still a great film – great enough to inspire many people to go into film-making. These changes we've made are subtle – they certainly don't turn the film inside out – but they're strong. The organisation and emphases of the new version are more consistent with the film as a whole. *Touch of Evil* is now more itself.

Our job on *Touch of Evil* was restorative. It was taking something that had been finished forty years ago and readjusting the internal elements. As I said, it was

exhilarating, but we were also walking on eggshells, because we didn't want to do anything, inadvertently, outside of the purview of Welles' memo. It's a very different situation, both technically and psychologically, from working on a new film, where everything has to be created from scratch – where there are no eggshells. A good example of this is the soundtrack to *Apocalypse Now*, where most of what was recorded on location was used only as a guide track – very little of the original recording made it into the finished film. Francis wanted *Apocalypse* to have a high level of visual and sonic realism, and that had a knock-on effect for the location sound: he used real helicopters (with real helicopter motors) and real boats (with real boat motors). Nat Boxer, the location sound recordist, was frequently lucky if he could get just the faintest scratch of what people were actually saying; and the sync tracks we brought back from the Philippines were mostly overwhelmed with the sound of motor noises. So our job in post-production was to recreate everything after the fact, and yet make it seem authentic. It was like assembling a beach one grain of sand at a time, you know [gestures] ... just sprinkling it here and there, until finally it accumulates and begins to look like a beach. The volume of material, just the mass of sound effects that we had to record to create the realistic sounds of war in Vietnam, was staggering.

To change metaphors, working on a soundtrack this vast was similar to painting a mural. With a smaller canvas, the painter can take it all in at a single glance, he can retouch, quickly step back, then move in and make another adjustment: there's a rapid feedback between observation and execution. With a mural, there's no way to do that, physically. Think of Michelangelo lying on his back painting the ceiling of the Sistine Chapel. Of course you could climb down off the scaffolding, but then you can't change anything from that distance. And when you're in close again you can't see the whole. That was us with the sound of *Apocalypse*: it was too big to take in with a single audio 'glance'. So we did what painters do when creating a mural: develop a grid of smaller-sized elements of the whole, like a mosaic, so that when working up close on one of the grids, we would have a guide of what that section should sound like, and how it fits into the whole; trusting that we had planned well enough so that when we stood back from the work, all the grids would link together organically.

Since human beings are what we are – the talking animal – dialogue has a pre-eminence in film that it shares with opera and theatre – if you don't understand what's being said, you are taken out of the moment. The bottom line is: make the dialogue intelligible. So I would first mix the dialogue as a sub-unit all by itself.

I then divided the remainder of the soundtrack into different grids of instrumentation – the sound effects equivalent of an orchestra's string section, woodwinds, timpani, brass, double basses, etc. – down to the little triangle ping. All of the 'strings', for example, were organized into one premix element for each

ten-minute reel of film. In the example I'm going to show you, my 'string section' – the most important element – was the sound of the helicopters.

I would then switch the dialogue mix to playback and put up all sixty-five tracks of helicopters. And, listening to the dialogue, would mix the helicopters so that they appeared to fly in all directions around the space of the scene. They could sound overwhelming when necessary; but when there was dialogue, we would fade them down to an appropriate level. The result is that the helicopters premix has dynamics built into it: if you listen to it on its own, the sound will suddenly diminish, because something significant is happening in one of the other sections of the 'orchestra'.

The next most important element was the Valkyries music: this might be analogous to the brass section. Going back for a moment to Welles' notes about making source music sound like it is really coming from loudspeakers, this was Wagner's 'Ride of the Valkyries' being played through giant electronic megaphones attached to the sides of the Air Cavalry helicopters. Our job was to make this music, lifted from an LP, appear to be coming from several moving sources at once. We did a 'worldizing' re-recording of the music, played through metallic speakers, and then folded that track into the mix, steering it with specially designed computer-controlled joystick panners. All while listening to the playback of both the dialogue premix and the helicopters premix.

By now you should see the pattern evolving: each new pre-mix, in descending order of priority, is mixed with reference to what has been done previously. So the next orchestral element after the Valkyries – the small-arms fire (AK47s and M16s) – was mixed while listening to the playback of dialogue, helicopters and Valkyries. The reason for doing it this way is that it's easy, as it is when painting a mural, to get carried away with the particular square that you're working on and lose sense of how it has to fit within the larger work. 'What great AK47s I have!' you think. But then you play them back with everything else and all you hear is AK47s, or you don't hear enough of them. So this hierarchical method, in the initial preparation of the material, is there to make sure that I'm not fooling myself about the necessary proportions of the various elements.

And so it goes, on through the various sections of the sound effects orchestra until you get to the final triangle: some little sound effect accents here and there. I should mention that this is the way I work on every film. It was especially urgent in the case of *Apocalypse Now* because the amount of material that we were dealing with was so great and the system we were recording to was so new and unknown. But even when there is less material and we are on more familiar ground, this is the approach that I use. It's just the way my mind works. I try to analyse the sound into instrumental groupings, then balance each one against the others hierarchically so, hopefully, when I get into the final mix, it almost – almost – mixes itself.

> In silence,
> even objects drop their masks
> and seem to look at you with wide-open eyes.
> – Béla Balázs

What I'd like to show you next picks up from what Michel Chion was talking about yesterday: the uses of silence. The creative use of long stretches of relative or absolute silence is one of the unique characteristics of cinema – no other art form can achieve this: not music, radio, literature, nor any of the graphic arts. Not even theatre, where prolonged silence begins to feel like a mistake of some sort. Perhaps some of Samuel Beckett's plays come close.

This first section I'm going to play for you, from the Valkyries sequence in *Apocalypse Now*, is what I would call 'locational silence'. It's done for the purposes of demonstrating a shift in location but also for the visceral effect of a sudden transition from loudness to silence. This sudden silence – cutting to a quiet schoolyard – also helps you share the point of view of the Vietnamese, who are shortly going to be overwhelmed with the noise and violence coming at them. Then, from the rear speakers only, you begin to hear the Valkyries and the sound of helicopters. The people on screen notice it, and then the sound moves rapidly forward and eventually encompasses the whole theatre.

This cut to silence came about, partially, from of an idea of Francis' that I kicked against. While the helicopters were in flight, he wanted the tape that was playing the music to break. You'd be caught up in the excitement of all this Valkyries music and suddenly – the music would stop! And then you'd see a soldier fiddling with the tape and it would start up again. I think I can understand what he was trying for, but, once you invoke this music, it's just so overwhelmingly powerful, on so many levels, that I tried to find another way to get the effect he wanted but put it where I thought it would be more emotional and graspable: cutting to the peaceful schoolyard of the Vietnamese. All transitions to silence have a psychological component although, in this case, the geographical component is quite strong. We're with the helicopters and then – cut – we are a dozen miles away and the music is gone. Nonetheless, there is a visceral effect on the audience when something that's so loud and sustained suddenly cuts off. This cliff of silence also gave us a chance to build up the level of the music again, which makes the moment when the helicopters actually hit the beach that much more powerful. If the music had been sustained and loud right from the beginning, without this break, it would not be so effective. Your ears would get tired of it before the scene was over.

The next example is a different kind of silence, which has less geography and more psychology: the scene leading up to the tiger jumping out of the jungle. Chef (Fred Forrest) and Willard (Martin Sheen) have gotten off the boat and gone

into the jungle to search for mangoes. Chef starts talking about himself and his ambitions: he wanted to be a cook so he joined the Navy ('heard they had better food') but they made him boil the meat and it was disgusting, etc. He's a Navy man and not comfortable in the jungle. Willard on the other hand is a jungle fighter and so he's first to become aware that something subtle is wrong with what he's hearing. It's like those scenes in westerns where a cowboy says, 'Ya hear that?' And the other cowboy says, 'I don't hear anything.' And the first guy says, 'That's just my point.' So, something changes in the sound of the forest, some little insect goes quiet, and Willard picks up on this, thinking, 'Charlie…!' And he moves deeper into the jungle, much to Chef's distress. Meanwhile the soundtrack is getting more and more minimal the closer they get to the source of the silence.

The important thing in scenes like this, where you are reducing the soundtrack incrementally, is the curve of the slope: how fast you bring the sound to silence. It's like those airplanes NASA uses when they're teaching astronauts about zero gravity. They fly to a high altitude and then arc back toward the ground following a specific curve where gravity disappears and they begin to float around the plane. Coming gradually to silence is a similar thing. If you come to it too quickly, it's as if you suddenly reached the bottom of a funfair ride – there's this jolt and you wonder, 'What was that all about?' Very much what we just saw with the sudden cut to silence from the Valkyries. The reason it works in that case is because the cut to silence is accompanied by a shift in location.

Here, with the two men in the jungle, the silence has to develop within the same environment. If it is effective, it makes you participate in the psychological state of characters onscreen, who are listening more and more intently to a precise point in space behind which they think 'Charlie' is lurking. In fact, we never reach absolute silence in this scene. It feels silent, but it isn't. We've narrowed it down to a thin sound of a creature called a 'glass insect', native to Southeast Asia; it makes a sound like a glass harmonica – when you rub your finger on the top of a wine glass, just that [sings note], which itself is a sound that puts you on edge. So we've done very much what Michel was calling 'the silence of the orchestra around the single flute' – or the single insect in this case. The trick here is to orchestrate the gradual elimination of 'orchestral' elements of the jungle soundtrack: if it is done too fast, the audience is taken out of the moment; too slow, and the effect we were after, the tense moment before the tiger jumps, wouldn't have been as sharp.

I should mention that I spent many hours juggling the exact relationship between the move of the tiger and the roar of the tiger – ultimately the sound of the tiger is slightly delayed from its motion, so that you see leaves beginning to move and you think, 'It's Charlie!' But that realisation takes a little bit of time. What Michel was saying yesterday is that both sound and our appreciation of the sound are inevitably linked to time. You hear something but it takes you a

certain amount of time to come to a realisation about what it is. It can be fast, but it finally depends on our reaction time. So, just as the audience's reaction time is congealing around the belief that 'it's Charlie' at that exact moment, the roar of the tiger happens. People are rising out of their chairs already because they think it's Charlie, and then they really jump because it's not Charlie, it's a tiger! And then the shooting starts.

Q: *Can you talk us through your approach to the surround mix for Apocalypse?*

WM: Well, *Apocalypse* was mixed in a new format we were creating especially for it, with stereo surrounds and enhancement of the super-low frequencies. This format has subsequently become the standard for motion pictures and is currently dubbed '5.1' sound: three channels of sound behind the screen (left, centre, right); two channels behind the audience (left back, right back); and one non-directional track of super-low frequencies (15-60hz). That last track is the '.1' of the 5.1 because it contains so little audio information.

Before *Apocalypse*, I was one of those people who didn't like stereo. I liked mono, I liked its purity, so Francis had to push me into this multi-channel world. But finally I thought, OK, let's tackle this head-on: Francis wants a quadraphonic format (speakers in four corners of the theatre), but that's not really suitable for large halls. How can we configure the sound to give him what he wants and also be suitable for theatrical presentation in large theatres: the 5.1 format was the result. I knew that we had to have definite rules about what we did, because there should be an organic and developed relationship between the space of the theatre and the film. Not just a series of flashy effects for their own sake. The danger of using surrounds, which is doubled when you have two channels of them, is that you can force a 'Brechtian' experience on an unwilling audience: reminding them that they are in a theatre watching a motion picture, even though most of them have paid their money to forget that and to be taken into another world. So, how you use surrounds and what you put into them was topic number one for me.

In fact, that's where the use of the term 'sound designer' came from: I had worked out a conceptual and technical design for the sound of *Apocalypse* that involved graphs indicating all six channels, and then three and then one, for both the sound effects and the music throughout the whole film, and how the sound would evolve and change within the three-dimensional space of the theatre. I wanted the film, sometimes, to be monophonic, and then at the right moment to open up into stereo – but front channels only – and then at the next right moment to open up into full six-track sound. And then later on to collapse back to mono again – all for the emotional effect that these changes would have on the audience. Once we had this graph, we could refer to it at any moment in the film and say, 'Here the music should be using all five channels, filling the theatre, but the sound effects should only be in front. Five minutes later we want to pull the sound effects

into the back as well, and push the music just to the front channels.' So there was a comprehensive design made in advance, thinking about what sound space might be right for each moment in the film. It also saved the sound editors a certain amount of work because they knew in advance how 'deep' they had to prepare their tracks.

We thought of the surrounds as something that could be pulled over the theatre like a blanket, and then they could melt away like snow. For instance, in the Playboy bunny scene, the sound is initially all up front, and then the three helicopters arrive, one of which lands Bill Graham and the Playboy bunnies, and then two others fly overhead left and right. Those two helicopters pulled their sounds into the surrounds, and after they'd faded away the whole sound of the audience was now revealed in the surrounds as well as in the front – which it hadn't been until the helicopters flew by.

One of our other rules was to avoid any dialogue in the surrounds. Anything that you had to pay conscious attention to like dialogue – keep that in the front and, for the most part, keep it just in the centre. We rarely went out to the sides with dialogue, except for echo and reverberation. We also had to be careful about gunshots or explosions. If there was an explosion in front, it was permitted to have the reverberation of that explosion in the surrounds, but never vice versa. In the sequence you saw with the artillery, all of the artillery was incoming – the whistle of the artillery would come from the surrounds, but the explosions would always be up front. Washes of sound, however – wind, cricket backgrounds, fields of sound, helicopter drones – all of these were easy and effective to put into the surrounds.

Why are there these rules? It goes far back in time, I think, to the way that we – as a species – have learned to process the world of sound around us. There seems to be a non-linear component to sound in back of us: if it falls below a certain threshold, our minds suppress it even further. It's like a noise gate, to help us more easily focus our attention on what's in front. Then, there comes a critical point, probably something like the snapping of a twig by a tiger's paw, where the brain does the opposite: it amplifies the sounds from the rear and diminishes what's in front, because what's behind is now a threat. Say you're out hunting 40,000 years ago and you're looking for what's in front of you and trying to ignore what's behind you. But then what's behind you becomes a threat, and the reverse happens: the back becomes more important than what is up front.

How does this relate to the use of surrounds in film? Well, what we found is that as we would gradually raise the level of the surrounds, it would be – at the initially low levels – as if we weren't adding anything at all, so why bother? Then as we'd continue to raise the level further we'd enter a narrow sweet spot – a range of about four decibels – in which the surrounds would seem to be balanced effectively with

the fronts. But then, once we raised the surrounds above that four-decibel level, the rear channels would suddenly become intrusive – as if something's happening in the theatre rather than being part of the world of the film. So we were trying to find, for each sound, that balance point between ineffectiveness and intrusiveness. We had to research all of these issues because of everyone's inexperience in dealing with this 5.1 set-up, where sound could move dynamically in all four co-ordinates of the theatre. We also had to design the room we were mixing in – which is another whole story.

The next clip demonstrates another kind of silence, even more psychological. What you saw with the tiger is something that's not geographic displacement, but, nonetheless, it is something that could happen in a geographic reality. It's a possibility that the animals in the forest could all slowly get quiet like that. What I'm going to show you now is impossible, realistically speaking. This is what's called the Do Lung sequence: the Americans are trying to construct a bridge across the Do Lung River, and the Vietnamese are bombing it to pieces every night. So it's an exercise in futility done for some military balance sheet back in Saigon. The reality of the situation is that nothing is being accomplished – people are dying and it's all hopeless.

The scene begins with the realistic sounds of bridge construction. You hear arc welders, flares going off, machine guns and incoming artillery. As the scene continues, though, you'll notice that the explosions and the machine guns are gradually replaced by sounds of construction – the machine guns become rivet guns, for instance, so there's already a subtle warping of reality taking place. Francis called this scene 'the fifth circle of Hell'. Once the scene gets into the trench, the dilemma is explained: there's a Vietnamese soldier out there, a sniper taunting the Americans, and they're shooting wildly into the dark with an M50 machine gun, but they just can't get him. Finally, out of frustration the machine gunner asks for 'The Roach'. He turns out to be a kind of human bat; someone who has precise echo-location instead of sight: if he can hear the sound of the voice, he can then pinpoint his target, adjust his grenade launcher and, in the dark, shoot the sniper. As 'The Roach' approaches the camera, the rock music that has been reverberating in the air of the scene, coming from all speakers in the theatre, concentrates itself in the centre speaker only and narrows its frequency range, seeming to come from a transistor radio which Roach then clicks off, taking all the other sounds with it. After a brief rumble of distant artillery, there is now silence except for some kind of unexplained, slow metallic ticking and the calling of the sniper. Visually you see the battle continuing – flashes of light, machine gun bursts, flare guns – but there is nothing of that at all. You have entered into the skin of this human bat and are hearing the world the way he hears it. He echo-locates, shoots, there's an explosion and then a moment of complete silence: even the metallic ticking is

now gone. Willard asks Roach if he knows who's in command, and Roach answers enigmatically: 'Yeah.' Then the scene is over, we shift location and the world of sound comes flooding back in again.

There's a quote from Bresson about actors that could apply here: 'An actor can be beautiful with all of the gestures that he could – but does not – make.' You have to invoke the possibility of the sound. You can't simply be silent and say, 'This silence is great' – instead you have to imagine the hundred musicians on stage in order for their silence to mean anything. You have to work with the psychic pressure exerted by the instruments or sounds that are not playing. This is the underpinning of what I try to do with sound, which is to evoke the individual imagination of each member of the audience.

In most films everything is 'see it = hear it'. The sounds may be impressive, but since they come from what you're looking at they seem to be the inevitable shadow of the thing itself. As a result, they don't excite that part of your mind that is capable of imagining far beyond what the film-makers are capable of producing. Once you stray into metaphoric sound, which is simply sound that does not match what you're looking at, the human mind will look for deeper and deeper patterns. And it will continue to search – especially if the film-makers have done their work – and find those patterns, if not at the geographic level, then at the natural level; if not at the natural level, then at the psychological level. And through the mysterious alchemy of film+audience, your understanding will re-project itself into the characters and situations themselves and you will assume that what you are feeling is coming from the characters and the situation rather than from something that is happening on the soundtrack. There's a process of digestion and re-projection that goes on – it's in the nature of the way our minds work. John Huston used to say that the real projectors in the theatre are the eyes and ears of the audience.

The ultimate metaphoric sound is silence. If you can get the film to a place with no sound where there should be sound, the audience will crowd that silence with sounds and feelings of their own making, and they will, individually, answer the question of, 'Why is it quiet?' If the slope to silence is at the right angle, you will get the audience to a strange and wonderful place where the film becomes their own creation in a way that is deeper than any other.

One of the dangers of film, exacerbated in this brave new world of digital visual effects and six-seven-eight-channel sound, is that the real subject matter of the film can be crushed by the film's ability to represent it. As a result, I'm always searching for ways to get out of that rut and choose sounds that are off-axis and, ultimately, to find places where I can get to silence. And I do it not just for artistic reasons, but also for the physical relief that silence gives. You could listen to a symphony played at full blast with all the instruments at the same level for about

ten minutes, and then it would begin to pall on you. What the musicians of the nineteenth century began to discover, starting with Beethoven, was the idea of dynamics within each movement, of shrinking the orchestration down to a single instrument and then expanding it outward again at the right moment. It's an approach that generally characterises nineteenth-century music and is well suited to film for similar reasons.

Q: *How much of what you do is based on things you've developed in the past and how much is developed with what's in front of you?*

WM: Well, I'm always trying to discover new things, technical and artistic. Over the last thirty-five years I have been repeatedly – and with my enthusiastic co-operation – thrown into the briar patch without much preparation. I was a film student and, all of a sudden, I was on my own sound-editing and mixing a feature motion picture, Francis Coppola's *The Rain People*. I didn't know all of the professional conventions so I had to invent my own and hope that they were right, or right enough. It's a risky business because you can make terrible mistakes. But the advantage of it is that you're Robinson Crusoe on your own island – you are forced to invent new ways of getting the water down the mountain, so to speak.

Dougie Slocombe, the director of photography on *Julia*, felt strongly about this aspect of our work. We were having breakfast on the first day of shooting and he surprised me by saying: 'I've learned to welcome the very thing that when I started out frightened me most: the breeze blowing through my brain.' It was a provocative image and I asked him to explain what he meant: 'Well, you arrive on the set, it's dark, it's cold, it's five o'clock in the morning, and you have to create a world with light. It's terrifying, because how do you do it? How do you know what the right approach is? There's this empty feeling – "Oh no, what's going to happen?"' His initial reaction was to run away from the darkness (and you could just as easily say silence instead of darkness): 'I'll do what I did last time.' Or, 'I'll use the approach Freddie Young used on such-and-such a film – yes, that's a good idea.' As a result, everybody knows what he's doing, because they've seen it done before, and they say, 'Good idea, that's great.' But when it's finished, and he looks at the results, something in him sags. There's a feeling of, 'Yes, it's good enough, but it could have been better.'

Eventually what Dougie found himself able to do was walk on the stage at five o'clock in the morning and just stand there in the darkness, the silence, and let the breeze blow through his brain, let ideas emerge out of the emptiness. Which is a terrifying state to be in until the ideas emerge.

Frank Warner, the sound editor, goes through a similar state in the preparation of his work. He's retired now, but he did *Raging Bull*, *Close Encounters* and many other films. He would take one of the reel-to-reel tapes from his huge library and put it on almost at random and move it with his fingers. He'd just move it manually,

at various speeds, backwards and forwards across the playback head. Meanwhile, he'd have a film recorder turned on, capturing all these random noises. If you were a mouse at the door listening to what he was doing, it would sound completely crazy. But he was in the darkness, letting the breeze blow through his brain, waiting for the kernel of an idea that would emerge, fragments of unique sounds upon which he could build everything else. That's where the punches in *Raging Bull* came from, and the sound of the flash bulbs. He'll never tell what they are, but it's something that came from just bumping the tape around, probably some completely different sound that had nothing to do with a punch or a flash. Then at the end of the film he destroys everything. He has a ritual fire and he burns it all – not the original library, of course, but this sub-library of sounds he's created especially for each film. He doesn't want anyone, including himself, ever to use these sounds again; they were born of the moment, true to the moment, and it would debase them if they were to be used again.

What eventually materializes out of that dark silence, no matter how primitive it might initially be, will have the essence of the right approach: it will be unique to the moment and to the film. If you can catch hold of that tiny fragment and then, with a certain risk and the possibility of misunderstanding – because you're doing something new – you will be able construct an approach that will be right for the film. People will say afterwards, 'What a fantastic idea! Where did it come from?' Well, it came out of that darkness, that silence, which people usually want to avoid at all costs, but which is the real source of creativity at the beginning as well as at the end of the process.

Note

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Walter Murch has been a film editor and sound designer since 1969, nominated eight times by the Academy of Motion Pictures. He collaborated on the early films of Francis Coppola and George Lucas (*THX-1138*, *The Godfather* and *The Godfather II*, *The Conversation*, *American Graffiti*, and *Apocalypse Now*). He was also the film editor of Fred Zinnemann's *Julia*, Philip Kaufman's *The Unbearable Lightness of Being*, and Anthony Minghella's *The English Patient* and *The Talented Mr. Ripley*. Walter also wrote and directed *Return to Oz* (1985). He is currently editing and mixing Minghella's adaptation of Charles Frazier's *Cold Mountain*.