

FOCAL LENGTHS AND GRAVITY WAVES

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ABSTRACT

Film is composed of tiny photographs which, when projected, sometimes look very much like people and things in the real world. Film, too, cannot be separated from its tools. Aesthetic criticism was, and still is, weighted towards consideration of the life-like tiny photographs. This thesis traces the evolution of film technology in order to establish the point where non-fiction ideology (aesthetics) lost pace with technical innovation - a derailment, so to speak, with nefarious implications for the present-day filmmaker. The emphasis is on lenses - the provocative "camera eye" - and sound recording equipment - which proved to be the rate-limiter of technical advance.

This thesis considers two filmmaking solutions to the present malaise; the Standard TV Documentary, and the single-person shooting methodology of former MIT filmmakers, Jeff Kreines and Joel DeMott - both of which, in turn, will be compared to my own response - in the form of a movie, Gravity, which is about the members of an MIT experimental astrophysics laboratory trying to discover gravity waves.

A videotape copy of the movie is included with the thesis paper.

Thesis Supervisor: Richard Leacock  
Title: Professor of Cinema

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## I. INTRODUCTION

Every art medium has a history of experimentation designed, so it seems in retrospect, to define formal properties peculiar to itself. The twentieth-century painters reduced their medium to two-dimensional space within a single unit of time; the musicians decided music was essentially a change in air pressures against our receiving organs, the ears. These explorations produced extended means for formal and thematic interplay and, as a consequence, unlimited means of expression.

The moving picture is two-dimensional sound and picture moving through time. In most cases (barring animation) the image originates in light waves or photons reflected from the subject which are then converted chemically, to a series of photographs, or electronically into a video signal. This signal conversion is true for sound except the initial material is measured in decibel changes instead of number of photons. The end result bears an uncanny resemblance to the initial subject despite the considerable number of permutations the signal encounters along the way. This resemblance endows film with an aesthetic based on its "degree of reality", a criticizing standard with which the painter (with the exception of Photorealism) and the musician need not be burdened.

The painting historian juggles Post-Abstract Expressionism with Dadaism while we in the film world wrestle with "fiction and non-fiction", "Cinema Verite and Direct Cinema", the "documentary of ideas and the documentary of fact", "actuality and the story film".

One might note that the above divisions are based on this "degree of reality" and be tempted to transfer all such analysis into the capable hands of philosophers or semanticists.

There is one approach which, although does not plumb the depths of intellectual discourse, is at least valid for its relative scarcity. One recognizes that film theory must, at some point, acknowledge the tools at hand; the camera, the lens, the sound recorder. By tracing the evolution of such tools from 1930 to 1985 and considering, in parallel, non-fiction film's taxonomical modifications, one can then address larger relationships - between the filmmaker and the subject, the filmmaker and the viewer, and, finally, between the filmmaker and the medium itself.

This thesis will highlight 1959, wherein occurred an especially provocative technical breakthrough, and then consider two present-day filmmaking solutions - the standard TV Documentary and the single-person shooting methodology of Jeff Kreines and Joel DeMott. Both are valid responses to current film problems, both inherit deep-rooted filmmaking traditions, both are vastly different from each other and yet, in the minds of the general public, they are one and the same. They are both documentary films. This thesis hopes to explore the roots of this present-day, to put it mildly, nomenclatural confusion.

## II. 1930 AND BEFORE

There can only be one legitimate use for the dialogue film and that is the topical-news and gazette reel. Here the appeal to the mind is quite different, for there is no aim at dramatic effect in news speeches. They are simply a record in which the interest lies more in the speech than in the visual image. They are not constructed films seeking to achieve the dramatic effect of a story. They are an elementary form of the cinema 'without joy,' and, considered as such, are only of casual and historic interest.

I am confident that the offending dialogue will pass as soon as its showmanship possibilities become exhausted, and the way will be left open for the great sound and visual cinema of the future.<sup>1</sup>

Paul Rotha, 1930

Paul Rotha, producer and critic under the auspices of the British Empire Marketing Board Film Unit, (EMB) directed at that time by the mighty John Grierson, cannot be entirely blamed for his disenchantment with "dialogue sound films." Thirty years of lens and camera technology had generated an extensive visual repertoire for filmmaking which, by 1930, was vulnerable suddenly to an intrusive sensory signal - "a literal non-imaginative auditory command incompatible with visual reality."<sup>2</sup>

In 1929, there were 234 different types of variable-area and variable-density sound systems in the process of becoming standardized down to two sound-on-film systems supplied by RCA and Western Electric.<sup>3</sup> Rotha, and everyone else then, were listening to signals recorded by omnidirectional capacitor microphones (which could be made more directional with six-foot-in-diameter parabolic mirrors)-

signals which were then sent through a large (two pound) amplifier connected to a diaphragm unit wherein the actual signal conversion took place. The sound-recording camera photographed the sound in the same manner as the film camera (except the latter's intermittent claw mechanism was replaced with smoothly rolling drums) and both motors were locked to a synchronizing motor governed by a common power source. The signal was either sent directly to a disc-cutting machine - for back-up safety sound and immediate playback - or just processed and printed prior to editing. Sound recordists were not able to raise studio sync-dialogue levels efficiently above background noise until 1932 - when proper multiple-channel mixing began.<sup>4</sup>

Sound-discs and sound-film were, to Rotha, merely a mechanical convenience - a way to standardize screening facilities as one could not depend on local orchestras to supply consistently high quality musical accompaniment.

Rotha was ostensibly concerned with the distinction between sound and speech - music was an effective emotional accompaniment but the offensive dialogue restricted the camera's visual freedom and imposed real time onto film time in the editing room - where the "dead recorded material came to life."<sup>5</sup> All sync-dialogue was recorded in the studio - where it was especially subject to acting inconsistencies - leaving Rotha only a visual criteria with which to judge non-fiction (shot-in-the-field) movies. "Success", then, was granted to the apt use of a variety of lenses then on the market and to film magic created in the editing room as a result of the

Russian (primarily) montage devices of cut transistions.

50 and 70mm lenses were standard as early as 1900 but, by 1912, Zeiss produced 35 and 40 mm lenses and both Taylor, Taylor, and Hobson and Bausch and Lomb followed with longer lenses by 1925 - 75mm and 100mm - which had working apertures as wide as f3.5.<sup>6</sup> The longer lenses were reserved for wildlife photography or for "the few remaining purely observational documentarians, globe-trotters, big game hunters, scientists, explorers, and other non-professional movie-makers."<sup>7</sup> 'Actuality' films incorporated pans before 1900, tracking shots entered soon thereafter, and all manner of dissolves, masks, vignetting, and some wipes were available, by 1930, for general consumption. Aesthetic discussion centered on: the close-up - artistic emphasis or merely detail?; on the condensation of time; on drama inherent in the association of consecutive shots or within a single scene; on the transporting power of the dissolve; on the psychological implications of the pan and tilt; or even on the dangers of the abuse of such devices - which could "prove to be wearisome and smack of virtuosity".<sup>8</sup>

Flaherty, in particular, attributed his success to his facile use of long lenses. He was criticized for awkward panning and tilting movements in Nanook of the North,<sup>9</sup> but compensated in later films with a battery of lenses, 2", 3", 4", 6", 9", 11", and a 17" telephoto -twice as long as the camera itself, which he conveniently interchanged while covering a scene thereby "saving time and the bother of moving to a new set-up,"<sup>10</sup>

The theorists and makers of non-fiction film of that time,



Vertov, Eisenstein, Ruttmann, Flaherty, were visual theorists for obvious technical reasons and yet elements of spokesman Rotha's anti-speech, anti-natural sound sentiments were strong enough - permanent enough - to remain evident in 1985, despite the eventual elimination of technical impotence in sound.

### III. 1930 to 1959

Sometimes it is useful, of course, to hear what people are saying and see their lips move, but we may take it as a principle guide that whenever we can make the sound add to the general effect we should...

John Grierson, 1946 <sup>11</sup>

In the 1940's, the EMB Film Unit solidified their filmmaking ideals in the form of John Grierson's "mild manifestos." "We believe that the materials and the stories thus taken from the raw can be finer (more real in the philosophic sense) than the acted article."<sup>12</sup> (Parentheses, Grierson's). How should one go about recording such "real stories and materials from the raw?"

1. Gather one's crew: Cameraperson, first and second camera-  
persons, director, unit manager, script girl, sound re-  
corder, mixer, mikeman, and grip.
2. Prepare the camera: Mount the 35mm or 16mm camera onto  
a tripod (total weight - 150lbs) and house the camera in  
its \$1,000.00 sound blimp.
3. Set up the dolly and high hats.
4. Set up the sound-recorder. By 1953, the term "sound-re-  
corder" generically described the entire recording system -  
from the microphone to the mixer to the main amplifier and,  
finally, to the sound-recording camera itself. The mixer  
sat "at a movable console or tea-wagon on the set wearing  
headphones or monitoring from a loudspeaker in the sound

truck" which, in turn, was driven up adjacent to the set; it contained microphone cable drums, a small dark-room, and back-up battery systems.<sup>13</sup>

Needless to say, the 'dialogue film' - which, by 1959 was considered a separate genre altogether - stayed in the studio.

Documentary and its manifold forms; lyrical, argumentative, editorial, even classical, was, by the 50's, thoroughly entangled in an "art-versus-propaganda" debate, stimulated in part by pervasive wars, with aesthetic criticism centered by then on sound tracks - especially on the adroit use of multi-channel mixing - as well as cinematography.

"Natural sound" was rare enough to be mentioned and duly lauded and cautionary criticism of heavy-handed commentary started to appear. But the possibility of improving the filmmakers' technical capacity for connecting non-acting "real" people with their own voice in their own home - was less a consideration than strengthening the emotional impact of the waning documentary using a spectrum of visual and aural means. Grierson acknowledged the problem:

The documentary will do pioneer work for the cinema if it emancipates the microphone from the studio...

and the solution:

and demonstrates at the cutting and re-recording benches how many more dramatic uses can be made of sound than the studios realize.<sup>14</sup>

For some reason, maybe his powers of proselytism, Grierson's solution stuck - as is evidenced by the 1985 Standard TV Documentary - by now a veritable institution.

Prior to 1959 the technical limitations for direct picture and sound recording by a small, unimposing crew were pared down to essentially one - the sound recorders were too heavy to be handled by one person and could not be operated synchronously with a physically separate camera.

The conversion from optical sound to magnetic tape took place throughout the 50's despite, a) the latter's narrower frequency response, b) extra wow and flutter from inadequate sound-head contact and c) the editors' general wariness at the suddenly invisible modulations. (Another paper might consider the present-day parallel with the video-versus-film controversy; some filmmakers intensely dislike the electronics of video, the invisible picture accessible only through the black-box circuitry of the playback recorder and monitor, devices which to them represent the filmmakers ultimate subservience to the tape-eating machine.) Magnetic recording eliminated extraneous sound equipment, had an increased signal-to-noise ratio (about a 5-15db increase) and, of course, provided instantaneous playback. In 1985, optical sound continues to predominate on 16mm release prints - maybe because back in 1953, technicians like Raymond Spottiswoode felt "there is no compelling reason, scientific or otherwise, why movie theaters throughout the world should be converted to magnetic recording." <sup>15</sup> So it goes...

Film historians generally credit World War II as the progenitor of light-weight 16mm cameras and stock. "Their arrows have found a mark not reached by the heavy cannonades of the theater film,"<sup>16</sup>

and research in this area produced cameras which, with small modifications are still used today. The Americans welcomed the German Arriflex combat camera for its reflex viewfinder - which eliminated rack-over viewing and geared lenses and monitor arrangements - and, by 1953, the Cameflex-Eclair entered the market weighing in at only 12 lbs., complete with a rotating viewfinder, 3-lens turret mount, and 200 to 400 foot film-load capacity.<sup>17</sup>

Fixed focal lenses were now as wide as 9.5mm and even 5.7mm (for 16mm cameras); Angenieux produced a 25mm lens which opened to f.95 so that "in conjunction with the fastest black and white film around it was possible to get a picture under just about any lighting conditions."<sup>18</sup> Zoom lenses appeared and started to take over (with not necessarily positive results) in the 50's. Of the three on the market in 1953, Bell and Howell, Astro, and Zoomar (in America, that is) only the last received general acceptance for any period of time. One needed to attach an auxiliary lens to the first set of focal ranges, 17-53mm, to obtain the extra 35-106mm range. The lens had a working aperture maximum of f2.9 although for intercutting zoom footage with that of the prime, one needed to shut the zoom down to a maximum of f7.

Filmmakers, by 1959, had access to greater fields of view, more variety of depths of field, more flexible film stocks - a summarily wide range of lighting conditions with which to film "materials and stories from the raw." The sole remaining limitation, the filmmakers' inability to record sync-dialogue in the field, did not present a

problem to the British with their codified rules of non-fiction cinema:

The British post-war documentary developed written dialogue, studio sets, professional actors, (in addition to the actual people of the situation being filmed), diagrams, multi-voice narration... above all their films preserved the essential British characteristics of understatement, thoroughness, clarity, and humor.

Richard Barsam, 1973<sup>19</sup>

This synopsis, written by a present-day historian, reveals as much with his use of parenthesis as with the statement as a whole. The British overcame their difficulties with non-actors by "rehearsing them as long as they (the non-actors) were willing ... and you felt that their real-life performances could be improved."<sup>20</sup>

Other filmmakers - less interested in the verbal (social) messages of the day and more concerned with the total language of cinema - devised a variety of compensations for their sound problems: Karl Reisz, 1950's editing educator, lauded Flaherty for wholly integrating real sound and picture in the drilling process sequences in Louisiana Story (1948) and for Flaherty's ingenious use of real sound's connotative capacity for "danger" and "magic";<sup>21</sup> Joris Ivens felt the least he could do was drag his composer to the scene so that the music would "come directly from the sounds of the forges and the work songs;"<sup>22</sup> and Humphrey Jennings, (Diary for Timothy (1946), Fires Were Started (1943), and Listen to Britain (1942)) was considered a foremost authority on the application

of sensitive, minimal commentary to predominately real sound.

One could not record real voices but one could develop an intimacy with the subject: by filming over a long period of time (Flaherty); by bringing in as many cameras, and therefore, points of view as possible (Riefenstahl); or "by being a man thin enough to squeeze through a Rumanian keyhole and shoot Prince Carol getting up in his nightshirt."<sup>23</sup> Perhaps, most important, one could "live with the camera at all times" which is how Joris Ivens, with his hand-cranked Devry and Kinamo, shot Rain in 1929. He felt, for the first time, an anxiety to "shoot now or never"<sup>24</sup> - not an insignificant concern when considered against the overall history of non-fiction cinema.

Television, McCarthy, and the American Corporate Sponsor (all large enough subjects to support their own discussion) together helped to standardize the non-fiction movie by 1959. The work of the so-called imagists, romantics, or personal filmmakers, (Flaherty, Jennings, Ivens) was de-emphasized in television in favor of the British ideals of technical polish, emotional content (drama), and potent social message. These ideals better lent themselves to music and sound-effects tracks and eloquent narrators; devices which were developed before the advent of direct sync recording in the field.

The argument with this ideology is not that filmmaking should not explore these areas - indeed, the beauty of the medium is its very plasticity - but that one rather insignificant formal method-

ology, if considered relative to the entire range of possibilities, should now, in 1985, so incessantly prevail - in the minds of the filmmakers, the money-makers and money-givers, and, ultimately, in the minds of the viewer.



#### IV. 1959

In 1959 Ricky Leacock conceived of a way to synchronize separate, portable recording machines - the tape recorder and the camera (in his case, the flat-topped, 100 ft. loading Auricon) - based on a pal's<sup>25</sup> idea to use the steady resonating frequency of a large tuning fork to govern the synchronizing motor of a camera. Mitch Bogdonovitch was technically responsible for taking the 360 Hz pulse from a Bulova Accutron watch's oscillating tuning fork, dividing the signal by 6 (using a series of transistors), converting the signal to a toroidal (square-wave) 120 volt, 60 cycle current, which then powered the synchronous motor on the camera. Synchronous motors eventually increased in efficiency once they were converted to 12 volt direct current (although the advantage of AC accessibility when shooting indoors was lost) which eliminated large and heavy batteries. Portability was the issue at hand. The Accutron tuning fork was used in like fashion on the sound recorder; the 60 cycle pulse was recorded onto the 1/4" magnetic track and was later compared to the AC-originating 60 cycle pulse in the transfer from original tape to 16mm sprocketed magnetic film, thereby insuring frame-for-frame synchronization between sound and picture.

Leacock, Pennebaker, et al, strapped Accutron watches to their recording machines (set to Greenwich mean-time much to the annoyance of fellow TV crew members) in order to check synchron-

ization while recording. Since then, engineers have devised transistors capable of dividing the heretofore inaccessible frequency from a quartz crystal, 245khz, into the requisite 60 hz pulse - a division which, in 1959, would have required an impracticable amount of power to drive the at least 100 or so transistors necessary for such divisions.

The Drew Group; Leacock, Pennebaker, Engle, Bogdonovitch, the Maysles brothers, McCartney-Filgate, were collectively named for organizer and manager, Robert Drew, and, in the early 60's, operated under the aegis of the Ford Foundation's Omnibus Series and then ABC's Close-up Documentary Series.

Their technological coup, in the most immediate sense, made it possible for a two-person crew to record synchronous sound and picture in the field which, in effect, eliminated the last technical barrier to complete filmmaking freedom. (One should also recognize here the simultaneous work by Michel Coutant in France - for his custom-built, hand-holdable, self-blimped Eclair camera - as well as the Swiss and French contributions in the form of portable, battery driven sound recorders). There was nothing left to build - only an entire world to re-explore filled with new truths and revelations.

So it was thought at the time. It is a dictum of nature; the closer one gets to the crux of the issue - in this case, the perfect reality-rendering film - the more precisely one understands what is yet missing - and the more painfully one comprehends its elusiveness. One accepts, instead, a larger number of penultimate

alternatives.

In 1985 we're still looking for this perfect film - given our technical spectrum of near-solutions - but, perhaps with less ardor. We may acknowledge unanswerable intellectual questions about the medium but pay attention instead to our vague, more emotional responses; "I shot it because I liked it, it was fun". We may be weary from the arguments but therein lies a more subtle danger - when the medium becaomes subject to insidious abuse,

## V. 1959 TO THE PRESENT

Technical improvements since 1959 centered on facilitating the two-person sync rig; ever quieter cameras (the big three were the 191b Eclair NPR, with a 360° orientable viewfinder, the Arri-flex, and the Auricon), more agile zooms (Angenieux produced a widely-used 12-120mm zoom in 1963 - with a maximum aperture of f2.3 -it is still heralded for minimal lens distortion throughout its focal length), and Sennheizer designed highly directional microphones in the mid 60's - to accomodate difficult sound recording situations. In 1959 Kudelski's 141b Nagra III prevailed over the French Perfectone in the two-way competition for market dominance in sound recorders; since then, Kudelski has produced pocket-sized versions (SN), a lighter Nagra 4.2 and 4.L and, most recently, the Nagra IS, noted for its improved transport system.<sup>26</sup> (Kudelski's modifications were reletively minor; the Nagra III's recording quality was, and still is, considered the best one needs for analog field recording). Transistor technology throughout the 60's replaced the original Accutron tuning fork pulse with a quartz crystal, but also miniaturized the pre-amp and power supply for the microphones - accessories which could then be stowed compactly into the tape recorder itself. (Video and Super 8 have their own stories to tell; 16mm continues to dominate in the non-fiction world and remains the main focus of this paper.)

Technical gains in filmmaking throughout the 60's were minor

when considered against almost a whole century of filmmaking inventions. The energy was directed instead toward breaking formal rules - those as devised by the British were some of the first to go.

The earliest films from the Drew Group, Yanqui No! (1960) and Primary (1960), shifted the sound track balance to direct sound recording, leaving only sparse narration with no interview material at all. The Maysles brothers shrugged the British (and by now television) imperative for expediency and spent months filming first Showman (1963) and then Salesman (1969) while Alan King's film crew shot over 70 hours of film - about 160,000 feet - for more than three months when filming the Edwards for A Married Couple (1970) -which was condensed to a 112 minute film.<sup>27</sup> As most filmmakers adapted the new technology they, in turn, abandoned the script. Like Flaherty, they "allowed the films to grow organically out of the material at hand"<sup>28</sup> - again, a very un-British, un-TV approach.

In France, Jean Rouch and Chris Marker, central figures in the Cinema Verite movement, included their subjects, Parisians-on-the-street, and their reactions to the filmmaking process in their films, Chronique d'un Ete (1961) and Le Joli Mai (1963), respectively, which represented to them, as critic Brian Winston says, "a healthier, more honest approach."<sup>29</sup>

The Drew Group did away with the filmmaker's last excuse for encountering real people on their own terms and provided, in turn, "new standards of authenticity."<sup>30</sup> Perhaps non-fiction films really

began in 1959? Perhaps the terms, Non-fiction and Documentary, should have been clearly separated? Perhaps they should never have been synonymous in the first place?

These speculations on re-classification were formalized into two separate sub-genres; Direct Cinema and Cinema Verite. Apparently the notion of realism was, according to Andrew Sarris, "only one of the 57 varieties of decoration"<sup>31</sup> -but to others, rich enough to support two vastly contradictory approaches; Brian Winston, writing for Sight and Sound in 1983 tells us:

Direct Cinema is the exact opposite of Cinema Verite. It seeks more completely than any previous mode of documentary production to hide the processes of filmmaking - to pretend to an unblinking objectivity supposedly similar to that possessed by a fly on the wall.<sup>32</sup>

One should be leery of placing any one filmmaker in any one slot - the taxonomy does not help by its simplification but does at least underline the emergence of new questions, new theories, and, ultimately, new abuses, concomitant with the new technology.

The new equipment is virtually fool proof (a well-coordinated layman can learn their intricacies creditably within a few hours) and unobtrusive (subjects, already conditioned to a camera-filled world, hardly notice them).<sup>33</sup>

James Arnold, Marquette University  
Film Professor 1968

Critics in the early 60's decided that filmmakers, in their

zeal for honesty and intimacy, placed technical accuracy second to content; the critics' reproof was conciliatory in nature as they granted filmmakers a certain legitimacy to long takes, boring narrative structure, wiggly camera, and mis-exposure. But these criticisms overrode the considerable number of positive formal explorations then extant.

Filmmakers concentrated on validating the cut-away or point-of-view shot - by including the subject and the object of the subject's interest within the same synchronous take. Or, if warranted by the subject, as in the last scene of Pincus's Panolo - where the hero, in an unpredictable eloquent twist, shows us his home and all it represents and the entire movie unfolds with the continuity of an almost seamless shot (two cuts in seven minutes) - in such a scene as this, multiple, pace-setting cuts would devastate real-time purity and the quiet power of Panolo's tour. The invective, "long boring take" would be, to say the least, irrelevant.

Filmmakers were technically free to choreograph their camera according to rhythms peculiar to the scene - which included contrapuntal movement as well as the more established dogged camera-to-object tracking movement. This was, and is, a sensitive area; the line between interpretive camera movement and that which responds instinctively (but with great accuracy - a far more demanding skill) is very fine. Ultimately, filmmakers were free to demonstrate, in their films, flexibility and an unjaundiced approach to a given subject.

But technical deficiency stuck in the minds of the critics and

and the viewers and came to be associated with "honesty" - despite the positive formal efforts of the filmmakers in the 60's. (This equation is manifested most ludicrously in the purposeful inclusion of quivering cameras or awkward grammar - as a way to "illustrate" the realness of the human error evident in the situation. If one needed "to portray the subjectively unsteady feelings of a person in an emotionally distraught condition then one could find recourse in the hand-held shot."<sup>34</sup>)

The other mis-guided notion about the dictates of Cinema Verite and Direct Cinema concerned subject matter and the role of the filmmaker; the whole world, replete with characters, emotions, and privacies, was potential subject material - including, especially, the filmmaker him or herself.

The most visible proponents of Cinema Verite in France, Rouch and Marker, demonstrated that the filmmaker and his camera could be included in the film so as to complete the cycle of action and reaction between both the filmmaker and the subject - thereby extinguishing the origin of bias. Direct interaction with the camera made critics nervous in the early 60's; the purity of the medium was at stake. The audience saw the subject's eyes cast slightly askew - as they were talking to the sound recordist - but occasionally the eyes flicked over to dead center screen - as the subject monitored the camera's progress. But Dai Vaughn felt that, by 1970 - a decade after the first record-breaking attempts, "a glance at the camera was... an element which, like the use of the zoom lens, had ceased



to affront our sense of reality."<sup>35</sup>

Those who heeded the earliest notions of film purity - the camera eye is an objective eye - sought refuge behind the zoom which, by the mid-60's possessed the requisite optical properties for the filmmaker to frame the subject's face - from the chin to the forehead - while, respectfully and politely, standing 20 feet away. The filmmaker could capture then, an intimacy normally guarded by the subject's everyday defense system.

Other filmmakers eliminated themselves by eliminating their equipment. The Maysles brothers' priority lay in quiet cameras, not so much for the aesthetically desirable clean track, but to decrease the subject's awareness of the filmmaking act; "since the camera was silent and remained in the same position - they couldn't tell."<sup>36</sup> Alan King's idea for A Married Couple was to run the camera empty for the first 3 weeks of shooting so that (to the subject) the all-seeing eyes and all-hearing ears would recede into the wall paper."<sup>37</sup> Granted there was a purpose to this sort of dishonesty (what Brian Winston calls a harbouring of resources<sup>38</sup>), but it was ethically unappealing and also, more concretely, could be reflected in the nature of the footage - despite the filmmakers' deceptive efforts. (Word has it that both King's and the Maysles's films succeeded - deceptions and all). The real danger was, as stated before, when the filmmaker operated on an insidious level - that is, by taking advantage of facile technology to cater to the viewer's new "standards of authenticity" while overtly purporting

the honesty and integrity which Cinema Verite is supposed to represent.

There is no conflict, no hostile elements of nature, no sex, in fact there is precious little to interest the movie-goer.<sup>39</sup>

Richard Barsam, 1973

This criticism was made of Flaherty's Moana (1926) but finds its present-day counterpoint in two ways: 1) the non-fiction movie is chastised for its inept story-telling capabilities - that is, the filmmaker equates reality with flat narrative structure or, 2) reality must mean heightened emotion - the filmmaker's new technical freedoms can deliver real tears, real pain, real ecstasy - "a horrible false kind of 'involvement'."<sup>40</sup> (In current MIT verbiage we call this "10 points for a woman crying, 30 points for a man crying, and 100 points for filming a life-altering (suicide, especially) occasion). This priority for film product over the welfare of the subject has produced acute sensitivity to the exploitative capacities of non-fiction films - which may or may not in fact be the case - the point is, that it is an accusation now firmly equated with Cinema Verite and Direct Cinema, wherein exploitation is indeed technically possible.

The sad irony is that the very virtues which constitute Cinema Verite and Direct Cinema - their potential for getting close to the story - are, in turn, what render them so vulnerable to abuse.

## VI. THE STANDARD TV DOCUMENTARY

The modern Standard TV Documentary format is directly descended from Rotha's ideal of "conveying the dramatic content of a theme" and from Grierson's plan to "arrange, rearrange, and, ultimately, creatively shape natural material."<sup>41</sup>

NOVA is a science documentary series sponsored by Educational TV in Boston; it profits from a technical and ideological adherence to the British dogma of the 30's - indeed, the first three executive producers were nurtured in the British General Post Office Film Unit and were hired to "train Americans in this craft."<sup>42</sup> John Mansfield, the most recent executive producer (he left in 1983) felt his job was to "reconcile the interests of show business and the interests of science;" NOVA currently spends \$250,000.00 per hour-long program to achieve such reconciliation.

In 1984, associate producer Brian Kaufman spent 3 months researching and then three more months interviewing Dr. Victor Weisskopf (with pen and paper) at lunch time in preparation for his documentary:<sup>43</sup> The World According to Weisskopf. Kaufman then spent 2 weeks comprised of 4 hour morning sessions interviewing Weisskopf on film and finished that with 1 or 2 days of "natural activity" shooting - Weisskopf playing the piano, Weisskopf talking to his son about science. For the filming sessions Kaufman brought a camera-person, assistant camera person, sound recordist, grip, and production assistant. The 2-person editing team then assembled the

footage based on typed interview transcripts into suitable verbal structure and inserted, thereafter, archival or computer graphic material - either to enhance the spoken word or to fill in the space created by inadequate sync picture.

WEISSKOPF: You have the hardness of the mountains versus the force of gravity - our equations give you the maximum height of the mountains and it comes out right.

The picture of Weisskopf's face - from chin to forehead - has been replaced with a slow motion pan of the Tetons.

WEISSKOPF: When I think back to when the bomb went off at Alamos I remember only Tchaikovsky's Nutcracker Suite - that was what was on the radio which was carrying the same frequency as our bomb release signal.

This time, accordingly, we leave Weisskopf's face to view slow-motion, colorized, archival footage of the bomb going off and hear, at the same time, the audible provocative strains of the Nutcracker Suite, fading up (one presumes) on Effects Track 7.

This editing and filming procedure does its job; the American Household Audience, all 3 percent of them, 98 percent of whom must be scientifically illiterate, leaves the television screen with a better idea of Weisskopf and some of Weisskopf's agile musings.

A broad category of documentary films dealing with ideas and issues has depended heavily upon the method of Cinema Verite to perk up content....<sup>44</sup>

Daniel Klugherz, TV Documentarian

1967

The Standard TV Documentary, like Cinema Verite, records direct sound from the field - but, inevitably, fades the sync voice out (or worse yet, keeps it at a barely audible level) while fading the voiceover in - preferably the voice of Maureen Stapleton or Burt Lancaster.

The Standard TV Documentary, like Cinema Verite, emphasizes the interview - a real person telling the story from his or her real mouth - but, inevitably, records multiple takes until the correct sentiments are expressed or the plane has passed by.

The Standard TV Documentary, like Cinema Verite, would never impose an artifice on the situation - but, inevitably, "asks the fruit picker to re-pluck the tangerine in the evening when the light is right for color photography."<sup>45</sup>

(These are not the ravings of an elitest cineaste; I'm only trying to emphasize a distinction, one which can't be made often enough if non-fiction film even has a chance to continue to evolve.)

The problem is that television perpetuates the abuses of Cinema Verite, but television is also the only market for documentary dispersal; the two genres, Cinema Verite (or Direct Cinema) and the Standard TV Documentary then become inevitably wedded in the minds of the viewers - it becomes impossible to separate authentic Cinema Verite from TV's ersatz version of the same. The Standard TV Documentary is an entirely specialized format serving a perfectly acceptable purpose - but invalid if used to describe present-day non-fiction filmmaking.

## VII. JEFF AND JOEL

The above paragraphs might purport unwarranted negativism but that, I believe, is the underdog's prerogative. The following discussion of Jeff Kreines and Joel DeMott and their movie, Seventeen (1979-80) is a rather more optimistic digression.

Note: Information on Jeff and Joel's backgrounds, filmmaking and otherwise, as well as on the fate of their opus Seventeen and on their future filmmaking plans, can be found in Appendix B, the transcripts of several interviews with Jeff and Joel. This discussion is concerned only with their shooting methodology and with critical response to Seventeen. All direct quotations are from the transcripts but the rest of the material is based on general acquaintance.

Jeff and Joel, known in Cinema Verite (CV) circles for their uncurbed vehemence and refreshing convictions, work with a single-person shooting rig designed to accomodate their set of filming principles. These principles can be codified if necessary, but, as in the case with all good practioners, Jeff's and Joel's convictions are clearly evident in their work.

"Nothing in our films is ever not sync."

(One presumes the excess negatives indicate a certain degree of defensiveness - possibly to emphasize the prevalence of the alternative). This is a telling statement. It means that Jeff's

and Joel's ideological principles of integrity find their formal counterpart in the filmmakers' absolute use of sync. (What you see and hear is what you get.) Jeff and Joel don't pretend to be purveyors of any final truths, but they will not augment sync footage with film devices - additional voice or music tracks, commentary, non-sync cut-aways - which to them represent an artificial imposition of bias. Bias exists - but must be expressed with the filmmaking act - their relationship with the subject is based on the filmmaking act - and this is what comprises the footage of the finished film.

While affirming their role as filmmakers, Jeff and Joel are not averse to de-emphasizing the "mechanical distractions" which normally accompany the act. Jeff's rig, which was adopted and then adapted by Joel (these rigs, by their very nature, are extremely personal) is a CP16 camera with a Nagra SN clamped to the camera body next to the on-board batteries. The SN shuts on and off with the camera, thereby eliminating slates and reducing syncing time to a matter of minutes. Jeff and Joel use a 10mm prime lens, a Canon 26mm and Leica 35mm still-camera viewfinder respectively, and a mildly directional AKG or Schoepps microphone, held in the left hand and attenuated with a thumb trigger. The rig is solid and compact and specifically enables one person to record sound and picture synchronously with ease. The 10mm prime lens is technically useful for its "large depth of field, low-light requirements, and better image quality (than the zoom)." Also, by

virtue of its smallness, the lens is less "clunky" than the zoom and not as imposing. Both Jeff and Joel feel that one can get just as good, if not better, sound than a 2-person rig - since the filmmaker must be physically close to the subject anyway, this leaves him or her in a "very handy position to get the microphone in tight."

There are more implications though, especially when the 10mm is considered with respect to the zoom. As a consequence of the prime's incessant wide field of view, the filmmaker must move instead of the lens - that is, when filming a close-up (chin to forehead) the filmmaker must stand approximately 1.5 to 2 feet away from the subject - less than the distance normally maintained in everyday conversational posture. (One might recall Flaherty's delight with long lenses - which obviated this very spatial "problem"). The "intimacy" with which we've come to associate the close-up is, with the 10mm, the product of extreme aggressiveness on the part of the filmmaker and requires a concomitant raised level of trust on the part of the subject. The filmmakers' extra physical efforts might be construed as contradictory to the CV ideals for minimal imposition on the subject; in fact, Jeff and Joel feel they reduce this imposition by their very forthrightness:

It depends on your attitude; you can decide you're an aggressive intruder - shoving yourself in front of somebody's face - or you can decide you're just putting yourself in the middle of things - people see you, feel you know that you're a human being, you're not a weirdo, you're not a mechanic, not a techie...they realize that



the relations between you and them are going to be like the relations they have with other people... you're making it possible to be close in a friendly, connected way.

(Joel)

One can get close, but there is a set limit. One is faced with a constancy of perspective - which averages out to about three feet - and which, unlike the zoom, significantly decreases one's editing flexibility. (Jeff and Joel don't consider this a problem or restriction. It's important to realize this.) Shooting solutions include:

1. Perfecting the tracking shot. This can be a beautiful shot if well-executed; it is where the prime works the best - the background pivots fluidly around a strong fore-ground vertical producing, in the viewer, a visceral sense of space.
2. Perfecting the swish-pan. An example would be when a new subject enters the scene off camera. The filmmaker can time his or her reflexes by remaining on the original subject - who at this point is just listening - and then swoop solidly over and lock on to the entering speaker, (Jeff's forte - and not as pre-meditated as it sounds). The editor can then construct a long L-cut or simply leave the pan in - which can be dynamically quite useful.
3. Not bothering at all and letting the jump cuts reflect - honestly - the cramped shooting conditions, or the film-

makers reluctance to comment-while-shooting by moving in during an emotionally-trying scene - a move which is more devastating to both the subject and the empathetic viewer than any "unconventional" jump cut could ever be.

Jeff and Joel produce dimensionality at the editing table - as a way through the three-foot barrier - by concentrating on sound hard cuts (doors slamming, light switches flicking) and by accurately timing the considerable camera movement, which is a product of the 10mm, in coordination with subject movement within the sequence.

But the use of the 10mm lens also means that, inevitably, the filmmaker is an outright character in his or her own movie either by a) being included in an on-camera conversation - which must happen when there are only two people in the room and one of them happens to be filming or by b) the way the filmmaker more subtly conveys his or her peculiar filming vision - which is most evident with the prime lens precisely because of its aforementioned specialized shooting and editing requirements. It is not, by contrast, clear who is shooting with the zoom:

JEFF: Except I like Ricky's (Leacock) zoom shooting - it's sort of unique - he's got these cute little zooms, these twisty things...

JOEL: But with most zoom shooting you don't feel that way at all, pa-tum, pa-tum, pa-tum...zoom in, pull out...

JEFF: Yeah, time for a cut-away...

The invisible camera-eye is still a Hollywood, TV, and other

non-fiction movie convention, but it is a rule which Jeff and Joel are only too happy to break.

Certain situations do not lend themselves to the prime lens - particularly large public events - but Jeff and Joel counter the problem by avoiding it:

I figure if I can't shoot this close then I really shouldn't be there at all...if I'm at a public event I just can't shoot - it doesn't mean anything to me - I don't see a beginning, middle, end...

(Joel)

In Seventeen it is clear that Jeff and Joel wanted to be there. In fact, they spent 9 months in Muncie, Indiana filming 17 year-old Lynn Massie, her family, her high-school, and her pals; since some of her pals happened to be black and some white the film has, of course, provoked noticeable attention, both positive and negative, to racial issues. (The film is one of 6 made in Muncie for PBS - collectively called Middletown Series. Ricky Leacock and Marisa Silver made the only other good one, Community of Praise. Seventeen was not aired on TV with the rest because of disquietude over the racial issues and distribution has, consequently, sapped 4 years of energy out of Jeff and Joel. See Appendix B).

Seventeen tingles with the urgency of headlines not yet written as it catches kids on the run from nothingness... 46

Jay Carr; Boston Globe

Miss DeMott and Mr. Kreines, each equipped with a portable camera and sound rig, moved into the lives of a small group of Muncie teen-agers and their working-class families to record a story that has no artificial narrative

shape. Instead it has the characters and the language - as well as the vitality and honesty - that are the raw material of the best fiction.<sup>47</sup>

Vincent Canby, New York Times

It is heartening to note Canby's connection between Seventeen and fiction - Joel was able, apparently, to find in this case "a beginning, middle, end." Both reviewers describe events in the movie, Canby rather more incisively, and then draw larger conclusions; about vapid mid-America, parent-daughter relationships, and inept high-school education. It is important that a movie work on many levels or "sends us out wanting to know more and feeling that there is more to know"<sup>48</sup> all filmmakers aspire to this. Neither of the reviewers, however, attend to filmmaking methodology other than Canby's mention of the portable rigs - which indicates that they either don't know much about it or that it doesn't matter anyway.

The viewing world continues to judge non-fiction movies according to how "real" they are, which in movies like Seventeen is valid, but fail, at the same time, to recognize the formal level based, in turn, on technical innovation in the first place. Coutard's tracking shots in Godard's Breathless are enough to produce exegesis on the bourgeoisie (historically) -the shots describe an aimless society insensitive to influence.<sup>49</sup> Jeff's and Joel's tracking shots, if referred to at all, are "smooth" at best or "a steady-cam might help" at worst. Godard's jump cuts in Breathless are "brilliantly experimental." Jeff's and Joel's are "a mistake."

Two scenes: We see Lynn in her bedroom and hear party noise in the background. She is counting money which she had just collected from party members and with which she intends to buy more liquid staples. She asks, "Jeff, can I have two bucks?" (This throws the viewer, at least this viewer, who has at this point forgotten about Jeff, the camera-person).

Lynn is in bed and she starts to show us cards: (get well?) "This one's from Tom (?) - he's so sweet..." She croons and chuckles to herself carrying on a private but audible, semi-verbal, monologue. (Lynn can be completely alone and yet thoroughly entertain herself). She alternates between talking to herself and to (what seemed at first) an invisible person. (It is a strange feeling to watch a person talking to us - the viewers - or rather a group of viewers sitting off somewhere in the back left portion of the theater. Lynn is looking at Joel's eyes, of course, which, in turn, are looking through a viewfinder. The parallax error between the viewfinder and lens is more prominent at a close distance with the 10mm lens.)

The camera in both cases is steady and fixed on Lynn. In the second scene the camera is about three and a half feet away so that Lynn nearly fills the frame. Both scenes offer a respite from action in the main stories - Lynn and her multiple boy-friends, Lynn and her mom, Lynn and her Home-ec teacher - and from the rapid, hard-hitting editing pace.

Throughout the whole movie, but particularly in the above two

scenes, the viewer modulates from complete trust in the artifice to possessing an eerie feeling -one that accompanies the idea that "there is a camera person in the room after all; this is being recorded." That sort of tension, derived "from the dual perception required of the viewer" is what good non-fiction movies are all about. That sort of tension only arises when the trust between the filmmaker and the subject is translated into film and so projected out to us.

## VII. CONCLUSION

Jeff's and Joel's solution is not the final solution for everybody, particularly those of us who are making films on experimental astrophysics. But their fundamental working methods are sound. Jeff and Joel are products of MIT - along with the disproportionate number of active and effective filmmakers now working in the real world who have come from this relatively tiny place. They have inherited a special ideology from MIT; the film's must, both technically and aesthetically, reflect the filmmaker's respect for the subject - even at the cost of lost footage - but, also, the movie must be true to the filmmaker's singular way of seeing the world and pay little heed to the reigning aesthetic of the day. Devices will remain just that - devices - unless they are established - the way human beings are established as characters - and integrated into the film as a whole. Dogmatic codification of film "style" will never do.

Jeff and Joel will make fiction films next, which this thesis has tried to suggest, shouldn't be all that surprising. They have recognized the reality of the impossible funding situation and the invincibility of the Standard TV Documentary. They acknowledge that "there are more and better movies to be made" but have decided that technical innovation for filmmaking is over.

I don't subscribe necessarily with Jeff's and Joel's burial of film technology - time-code and digital sound will make a tremendous difference - but I concur that the industrial drive for

film innovation is not there. Polylinear movies and computer interfaces for video editing systems demand, legitimately, considerable time and thought.

The big challenge for those of us who still harbour a peculiar awe from watching linear movies on celluloid, is to make enough "good" movies to counter the present imbalance. It would be nice to have people "lined up around the block" to see one's movie. It would be nicer still to re-discover why one got into the movies in the first place. Now, one might have five minutes of unmitigated joy while filming: everything works; the camera belongs there; the subjects and the filmmaker are actually "close, in a friendly, connected way." The other five hundred and twenty five thousand, five hundred and ninety five minutes of the year will be spent worrying.

These are just the working odds - which can always be beaten.



## APPENDIX A: GRAVITY

Gravity is a film about four graduate students working in an experimental astrophysics lab at MIT. Two of the students, Dan Dewey and Jeff Livas, are trying to measure gravity waves. Lyman Page is trying to pass his "Generals" (Doctoral qualifying exams) and measure, at the same time, the 3° cosmic background radiation in the infrared section of the spectrum. Andy Cummings is also trying to pass the Generals but he will specialize in dynamics. Dr. Rainer Weiss is the head of the lab and proves to be a pervasive character throughout the film.

I would like to preamble any further discussion of this film by noting that in April, 1985, Eastman Kodak decided they were having "production problems" with 7222, Black and white, double X negative. In short, Kodak ran out of film and have not made specific plans for future production. In the first part of this thesis I explained that some of our present problems in non-fiction movie-making had to do with aesthetic judgements made way back in the 30's. Recently I've decided that some of our present problems in non-fiction movie-making have to do with film stock and the lack thereof. Theory is currently irrelevant.

I entered MIT babbling about my heart-felt aesthetic aspirations coupled with a more intellectually-stimulated curiosity of science. It was easy to disabuse myself of the idea of making "science documentary" once I began to understand the medium of film -

for film's sake only. (If there's is one thing I've codified as far as aesthetic argument is concerned, it is that the "best" - most valid, honest, etc., etc. - products of any medium - the one's that "work" as they say - succeed because they are first and foremost, formally and thematically, about that medium; a painting is a painting and only then is about George Washington crossing the Delaware, or man's inherited guilt, or the soul, or complementary colors, or flatness, or multiple perspectives of anxiety, or whatever.) So I have to learn, and will always have to learn, the medium first. It is helpful to have a subject for this learning process; I am most interested in how people do what they do, especially if they're good at what they do, and why they think the way they think, and how they look at the world. Science provides a legitimate and rigorous way of looking at the world,

The members of the lab spent a month deciding whether I would be a "good" alien or a "bad" alien with a camera; I started filming right away - once they gave me a tentative "go-ahead" - and would say that they accepted me by camera rolls 16, 17, and 18 - about \$2,368.00 of the way into the film. I was standing 2 feet away from Jeff Livas, who is so shy I can barely talk to him without a camera, and he was staring off into space looking at something inside his head which, of course, he didn't bother to point out, and I shot the glaze in his eyes. I considered it a victory of sorts, when the lab members understood that I was really concerned with how they were - boring or otherwise.

Shooting Gravity taught me a hard lesson: no one solution satisfies all conditions. One has to discover one's technical and aesthetic capabilities and then keep them in mind while trying to figure out the best solution for a given problem. This thesis is concerned most with film-style dogma - which theoretically should not exist given our current technical freedoms. And, on a superficial level at least, I will use many of the Standard TV Documentary's bag of tricks - as well as Jeff's and Joel's shooting methodology. But my hopes are that the film will testify to a fundamental distinction to be made between itself and the Standard TV Documentary - a distinction which is most evident at the point of "intent". Standard TV Documentarians want to make films on larger subjects - science, for example - and they do so by extracting and then reassembling information from many sources and then "shaping" it into dramatic (albeit verbal) fashion. I'm interested in just what's there - the lab, the students - the fact that they are looking for gravity waves provides then a helpful perspective through which one might learn more about Jeff and Lyman and Dan and Andy - and that's all. The following paragraphs will elaborate on my shooting methodology:

I used Jeff's and Joel's CP16 one-person rig for these reasons:

1. to eliminate a sound person; I didn't want to hang around the lab all day and night and, as Jeff says, "worry about where the dummy with the microphone is," or, as Joel says, "worry about whether the sound per-

son is bored, having fun, or even interested."

Also, working with the lab members one-on-one made it easier to develop a working relationship based on mutual trust.

2. so I could look at the subject with both eyes when filming and not worry about fastening the right eye to a reflex viewfinder. This was necessary when filming Jeff Livas. I was not trying to disguise the act of filming - but I had to convey to Jeff, with both eyes, that he was as important as his film character; the other students picked this up seeing just one of my eyes.
3. because it was the only rig available.

The film is about Lyman, Andy, Dan, and Jeff, but it is also about science to some degree. The science must be in the film in some fashion - if only to provide a legitimate basis for dismissal. The hardest part about filming this non-visual subject is to provide a reason for the viewer to care about the science in the first place. This requires empathy for both the scientists as people and for what they're doing. But these scientists aren't cooking fish - they're trying to find out when the universe will end - they're trying to measure a minute warp in space caused by a cataclysmic event which happened gillions of years ago.

The Aaton, the Angenieux 9.5-57mm, the Zeiss 12 and 16mm primes, helped out. The four graduate students were separated by a barricade

of instrumentation - oscilloscopes, spectrometers, computers. It was necessary to at least film this graphic level - which required accurate framing with a reflex viewfinder and longer lenses - because they served as conduits to larger questions beyond the realm of the visual and aural. I've included, also, some footage of Victor Weisskopf (context-setting material - best appreciated with respect to the Standard TV Documentary's treatment of the same) and will then include precise scientific detail as provided by a working theoretical physicist who isn't so keenly aware of the human issues connected with science, but who is capable of using words to convey what has become, since Einstein, un-intuitive phenomena.

I was aware of the "experimental" aspect of the graduate students' work - they talked little but acted a lot. They built things to relax, to think, to solve problems, to have fun. But my job was to bring the hidden side - the thinking side into the film - the side which the graduate students were not able to convey with words.

The film then is not "real" in the sense that Weisskopf and the theoretical physicist are not sitting in a room adjacent to the lab talking and thinking about the four graduate students and their work. It is not "real" when I put absurd disco music under pictures of Lyman sawing a metal sheet in half or Jeff welding copper pipes. It is not "real" when I interject on another track trying to explain what just happened, scientifically. But the film is "real" if it is ultimately about my struggle, as a layperson and an outsider, to

understand what the scientists are doing and thinking. It is difficult to accept that I am overtly a part of the film; unfortunately, the most honest part of the film is the story of how a rote-newcomer is accepted into a strange environment. The new-comer just happens, also, to be the filmmaker.

APPENDIX B: JEFF AND JOEL TRANSCRIPTS

Weekend Seminar, May 7, 1985. (Excerpts from a conversation between Jeff and Joel, students, and teachers at MIT. "Glor" = Gloriana Davenport; "Rick" = Ricky Leacock; "Caro" = Carol Strohecker.)

Jeff: A lot of things that led us to develop our system are things similar to video shooting.

Joel: But video tape is cut differently, the seeing is different. I think a leisurely hour making a film cut is fun - the closest thing I can think of to looking at a video fine-cut. The assemblage is far too loose.

Joel: What I hate about film is feeling like an investment banker, with camera costs, film costs, the huge process afterwards. Our filming in the 70's was very much like shooting video now - it didn't cost a lot, we had these junky cameras... This sense of being an investment banker keeps you away from the moments that matter.

Jeff: We figure it's a \$1.00 if we turn the camera on for 3 seconds.

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Joel: I'd never worked with a real sound person - usually just a pick-up friend. Then I was more worried about them socially - were they bored, were they having a good time, and then the whole difficulty of being a girl camera person telling a boy sound person that his sound sucked... I mean people really have to work together nicely. They both have to feel like they're making the movie...

Jeff: Basically, it's nice not to have to worry about where the dummy with the microphone is...

Glor: How much did you pre-plan for the social studies classroom scene in Seventeen where there were obviously two cameras; one to get the students passing notes, one for the teacher?

Joel: I was loading mags and I got interested in this note-passing business and started shooting it...

Jeff: I saw Joel picking up on it so I went to cover the teacher, then she ran out of film so I went over to finish the note passing.

Jeff: The sound is real - it was a very hard scene to cut, everybody thought we'd cheated.

MJ: I wasn't sure the teacher was sync...

Jeff: (And Joel) Of course he's sync.

Jeff: Nothing in our movies is ever not sync.

MJ: Why did you use the zoom for the basketball game - and on just one occasion?

Jeff: We rented the damn lens for four months - we had to take one shot at least. We went through all sorts of possibilities - I built a one-person zoom rig for the Aaton which had the mic on the camera.

Joel: We rented a nagra for awhile, and even tried 2-person shooting - we went crazy - we said "either forget it or just part for awhile."

Jeff: We just wanted to see if you could get something different.

Glor: You're sense of reality is much different if you don't use a zoom.

Jeff: In a big way... I've learned to shoot with a zoom- I can do it - it's great if you're shooting a conference and you don't want to be a pain in the ass, or there's someone at a podium- otherwise I don't like the way... I like Ricky's zoom shooting, it's sort of unique - he's got these cute little zooms, these twisty things,,,

Joel: But you never feel that Ricky's 90 feet away.

Jeff: Also, you're looking at how a very certain person looks at something which is not what you usually see because most of them use a zoom.

Joel: With Ricky and Penny, there's a different style of shooting and looking - you're very conscious that it's a particular person shooting this way but with most zoom shooting you don't feel that way at all, pa-tum, pa-tum, pa-tum, zoom in pull out...

Jeff: Yeah, time for a cutaway.

Joel: I feel that way about the Maysles too. In Grey Gardens, they're there in spite of the shooting.



Jeff: The shooting's horrendous -

Joel: When I think of Grey Gardens, I think of four weird people and the filmmakers were right up there - that was the good part - there was a certain dogged connection between the filmmakers and the people in the film.

Jeff: Kindred souls.

MJ: How did you get started with the prime lens in the first place?

Jeff: I used it initially because it's what I had - I'd always wanted a zoom - just couldn't afford one. I had this Bell and Howell with a 10mm on it which was wonderful because you could do all these walking shots with swoops and everything since the camera wasn't on your shoulder but in front of you. I got to like the lens then, and when I got a sync camera I stuck it on 'cause it was all I had and learned to live with it.

Joel: By the time you got to MIT...

Jeff: I still wanted a zoom in the back of my head - but I liked the prime a lot.

Joel: Well, your rhetoric sure was, that the 10mm was the lens of choice...

Jeff: OK, 90% of what I wanted to do was with the 10, and now it's 100% of what I want to do really... Our cameras are the film equivalents of all these still photographers with Leicas and 35mm lenses, because it's roughly the same field of view. In fact, Joel uses a 35mm Leica viewfinder. It's like shooting with a Leica instead of a Nikon, to make a still photography analogy.

Joel: I figure if I can't shoot this close then I really shouldn't be there at all... If I'm at a public event - I just can't shoot. It doesn't mean anything to me - I don't see a beginning, middle, end...

Jeff: Like when Joel was shooting Lee Iacocca... we don't usually shoot for others but occasionally we do some for Penny... so here we were shooting this auto convention with Iacocca and these 10,000 guys - and we've got this 10mm lens and Joel's up there shooting a foot and a half from the podium for 10 minutes - drove the guy nuts... Then she ran out so I went up and shot him for awhile...

Jeff: It was sort of a fuck-you gesture.

Joel: It was our way of saying, Iacocca's just like anybody else, you just go up there and shoot them...

Jeff: Plus, what else can he do?

Joel: That's really testing the limits though... There are some people you just can't film.

Jeff: Not in Seventeen really, it's usually a type of person, more like a corporate kind of person.

Glor: Like Lee Iacocca, if 10,000 people weren't sitting there.

Joel: There just are people you're not any good at filming - you're not right for them and they're not right for you.

Rick: Especially in Cambridge... A high percentage of people here feel it's a CIA plot to film them...

(Discussion ensues over the matter of showing rushes to subjects.)

Joel: The point is, you're making the film - no one else in the world will see the subject in the same way. When you're filming, you're giving something to them, the people know that you're interested in them, you consider their lives of significance, you feel they're funny or lively or interesting. Everybody feels that way about their own life, but to have somebody say that- or be there always saying that- by the act of filming- is very strange - and when you split up it's awful for both the filmmaker and the subject. It's a failed relationship if you're kicked out - even if you're not close.

Jeff: Even anthropologists get thrown out...

Joel: So it's funny - it's not the camera either... people just get sick of them.

Jeff: Understandable.

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Jeff: Once I was at MIT, Ed (Pincus) said "Go make a CV film." (Which we all found rather ironic (Joel)), so I got together 40 rolls of film and went home and used a sound person for 30% of the time. I had my flat-topped Auricon, a Nagra 4.2 strapped around my waist, a shotgun mic, and

my 10mm lens. The camera had this real noisy footage counter - it clicked for every foot of film that went by... Practically speaking, I couldn't bring a sound person home with me.

Joel: It was different when I went home, then when Jeff went home with a sync rig - he'd always had a camera and the family just regarded this filming with the attitude "Oh, there's Jeff again with his toy." My parents had a lot to get used to - it wasn't that my family gave me any more leeway than anyone else.

Joel: I think women take in the camera better than men do - it will change though - as women learn to lose their good manners for handling social situations. Home is not necessarily a haven.

(Discussion followed: On Anthropologists)

Jeff: People have written papers on Ricky and Rocky. The anthropologists would say, "you can't have irony in Cinema Verite unless you're an asshole." I would say. "What about Happy Mother's Day?" The anthropologists were jerks but they did use the films to teach with...

Joel: They wanted a record that's proper as opposed to a record of somebodys response to what's going on.

Jeff: They have these conferences on the "ethics of image-making" - they're basically saying, "you're all ass-holes if you go out and make movies about people because obviously you must be exploiting them right?"

Joel: You can only not exploit them if instead of the movie being how you see what's going on - you allow everybody in the movie to edit it. I think it's a real weird line to take that everytime you take the camera out it's an exploitative act.

Caro: So how do you explain it?

Joel: You mean, what do I say to them or to myself? It's a big difference. It's not that you're lying to them- it changes from film to film.

Jeff: Part of it is, I mean, the camera is a great excuse to be places where otherwise... I mean, why would you be at someone's home while they're getting ready for their wedding? Just to hang out? It is an excuse. Outwardly every thinks,

"yes, there is a reason for them to be there." These films are very subjective.

Joel: I would disagree that anything is objective.

Caro: But you call yourselves documentarians - maybe the people who say you're exploiting your subjects have an argument?

Joel: If you say it's purely your view. But why does that make it exploitative? Simply because you're taking something for yourself? The notion is, - "you wind up with a film- they wind up with shit;" by "shit" I mean as in "nothing"- and that's a crazy way of looking at things...

Glor: It's usually other people who say you're ripping them off- the people being filmed never seem to mind as much.

Joel: People on the outside are absolutely incapable of understanding that the people in the film think the same things are funny as the people who are watching the film - that's what pisses me off.

Jeff: The outsiders see themselves as being superior to the people being filmed, and are therefore laughing at them- and think everyone is laughing at them -

Joel: It depends on the class difference between the subjects and the viewers - which tends to blow the whole exploitation theory apart.

Rick: In Happy Mother's Day, for example, you can laugh. My own feeling is , is that it's high time we started laughing at each other.

#### FOOTNOTES

1. Paul Rotha, The Film Till Now: A Survey of the Cinema (London: Jonathon Cape, 1930), pp. 308, 311.
2. Ibid, p. 305.
3. Brian Coe, The History of Movie Photography (London: Ash and Grant, 1981), p. 106.
4. Barry Salt, Film Style and Technology: History and Analysis (London: Starword, 1983), pp. 229-81.
5. Pudovkin, as quoted in, Rotha, The Film Till Now, p. 292.
6. Salt, op. cit., pp. 42, 87, 153.
7. Lewis Jacobs, The Documentary Tradition: From Nanook to Woodstock (New York: Hopkinson and Blake, 1971), p. 3.
8. Rotha, op. cit., p. 275.
9. Richard Meran Barsam, ed., Nonfiction Film: Theory and Criticism (New York: E. P. Dutton, 1976), p. 135.
10. Robert Flaherty, as quoted in, Jacobs, The Documentary Tradition, p. 98.
11. John Grierson, Grierson on Documentary (London: Collins, 1946), p. 92.
12. Ibid, p. 80.
13. Raymond Spottiswoode, Film and Its Techniques (Berkeley: University of California Press, 1953), pp. 434-66.
14. Grierson, op. cit., p. 96.
15. Spottiswoode, op. cit., pp. 276
16. Ibid, p. 1.
17. Ibid, p. 71.
18. Salt, op. cit., p. 313.
19. Barsam, op. cit., p. 210.
20. Herbert Kline, as quoted in, Jacobs, The Documentary Tradition, p. 152.

21. Karel Reisz and Gavin Millar, The Technique of Film Editing (New York: Hastings House Publishers, 1972), p. 155.
22. Sidney Meyers and Jay Leyda, as quoted in, Jacobs, The Documentary Tradition, p. 161.
23. Boris Kaufman, as quoted in, Jacobs, The Documentary Tradition, p. 77.
24. Joris Ivens, as quoted in, Jacobs, The Documentary Tradition, p. 63.
25. This entire chapter is based on conversations with Ricky Leacock; he couldn't remember "his pal's" name.
26. Salt, op. cit., pp. 331-340.
27. Ron Blumer, as quoted in, Jacobs, The Documentary Tradition, p. 471.
28. Barsam, op. cit., p. 139.
29. Brian Winston, "Documentary: I Think We Are In Trouble," Sight and Sound, Winter, 1978-79, p. 4.
30. Daniel Klugherz, as quoted in, Jacobs, The Documentary Tradition, p. 456.
31. Andrew Sarris, as quoted in, David Manning White and Richard Averson, eds., Sight, Sound, and Society: Motion Pictures and Television in America (Boston: Beacon Press, 1968), p. 205.
32. Brian Winston, "Hell of a Good Sail... Sorry, No Whales," Sight and Sound, Autumn, 1983, pp. 238.
33. James Arnold, as quoted in, Jacobs, The Documentary Tradition, p. 483.
34. Roy Paul Madsen, The Impact of Film (New York: MacMillan Publishing Co., 1973), p. 31.
35. Dai Vaughan, as quoted in, Jacobs, The Documentary Tradition, p. 59.
36. Al Maysles, as quoted in, Charles Reynolds, "Focus on Al Maysles," Popular Photography, May, 1964, pp. 129.
37. Ron Blumer, as quoted in, Jacobs, The Documentary Tradition, p. 471.

38. Winston, "Hell of a Good Sail...", p. 238.
39. Barsam, op. cit., p. 139.
40. Pauline Kael, Deeper Into Movies (Boston: Little, Brown and Co., 1969-73), p. 21.
41. Rotha, op. cit., p. 269, and Grierson, op. cit., p. 79.
42. Alice van Buren, "The Lonely Mission of Science on TV: NOVA's First Decade," The Boston Globe Magazine, Nov. 14, 1982. p. 62.
43. This account is based on personal conversation with Dr. Victor Weisskopf, and from my own experience as an intern at NOVA in 1982-83.
44. Daniel Klugherz, as quoted in, Jacobs, The Documentary Tradition, p. 457.
45. Madsen, op. cit., p. 331.
46. Jay Carr, "A Grim Message From Muncie," The Boston Globe, April 17, 1985.
47. Vincent Canby, "Growing Up Mis-Understood in Today's America," The New York Times, April, 1985.
48. Kael, op. cit., p. 24.
49. Brian Henderson, as quoted in, Gerald Mast and Marshall Cohen, eds., Film Theory and Criticism (Oxford: Oxford University Press, 1979), p. 832.

## BIBLIOGRAPHY

### Books

- Barnouw, Erik, Documentary: A History of the Nonfiction Film, New York: Oxford University Press, 1974.
- Barsam, Richard Meran, Nonfiction Film: A Critical History, New York: E. P. Dutton and Co., 1973.
- Barsam, Richard Meran, ed., Nonfiction Film: Theory and Criticism, New York: E. P. Dutton and Co., 1976.
- Brunel, Adrian, Film Production, London: Newnes, 1936.
- Coe, Brian, The History of Movie Photography, London: Ash and Grant, 1981.
- Geduld, Harry M., Filmmakers on Filmmaking, Bloomington: Indiana University Press, 1967.
- Grierson, John, Grierson on Documentary, edited and with an introduction by Forsyth Hardy, London: Collins, 1946.
- Jacobs, Lewis, The Documentary Tradition: From Nanook to Woodstock; selected, arranged, and introduced, New York: Hopkinson and Blake, 1971.
- Kael, Pauline, Deeper Into Movies, Boston: An Atlantic Monthly Press Book; Little, Brown, and Co., 1969-73.
- Madsen, Roy Paul, The Impact of Film, New York: MacMillan Publishing Co., 1973.
- Manuell, Roger, ed., Experiment in the Film, London: The Grey Walls Press, 1949.
- Mast, Gerald, and Cohen, Marshall, eds., Film Theory and Criticism: Introductory Readings, second edition, Oxford: Oxford University Press, 1979.
- Reisz, Karel and Millar, Gavin, The Technique of Film Editing, New York: Hastings House Publishers, 1972.
- Rotha, Paul, The Film Till Now: A Survey of the Cinema, London: Jonathan Cape, 1930.



Salt, Barry, Film Style and Technology: History and Analysis,  
London: Starword, 1983.

Spottiswoode, Raymond, Film and Its Techniques, Berkeley: Uni-  
versity of California Press, 1953.

Periodicals

Canby, Vincent, "Growing Up Misunderstood in Today's America,"  
The New York Times, April, 1985.

Carr, Jay, "A Grim Message From Muncie," The Boston Globe,  
April 17, 1985.

Van Buren, Alice, "The Lonely Mission of Science on TV: NOVA's  
First Decade," The Boston Globe Magazine, Nov. 14, 1982.

Winston, Brian, "Documentary: I Think We Are In Trouble," Sight  
and Sound, Winter, 1978-79.

Winston, Brian, "Hell of a Good Sail... Sorry No Whales,"  
Sight and Sound, Autumn, 1983.