

The Love of Look

D. W. Leitner on Cameras Past, Present, and Future

Had I. M. Singer been interested in photography, he might have invented the motion picture camera himself. He already knew a thing or two about machines that, upon threading, feed a length of flexible material in short bursts along the path of a reciprocating pin.

Instead, 40 years later, it was Edison who, in August 1891, applied to patent the 35mm Kinetograph camera, a wooden box with a lens, rotating shutter, pull-down sprocket, drive belt, aperture gate, and rawstock flanges.

A mere four months after that, Edison applied to patent "a means of *transmitting signals electrically . . . without the use of wires*" for wireless telegraphy — the so-called Edison effect. Amidst the birth of motion pictures and other *fin de siècle* marvels — autos, airplanes, electric lights, recorded music, batteries, X-rays, snapshot cameras, plastics, telephones — the seeds of the electronic revolution had been loosed.

Today, at the millennium's doorstep, the sails of invention no longer fill with winds electromechanical or chemical. Our *fin de siècle* is decisively electronic, soon to be optical, even biological. Recent centennials celebrate motion picture technology as 100 years old, descended from a time of steam power and empire-building. As good a time as any to ask: Is another 100 years really in the cards?

Not to worry, just yet. TV, a half century young, remains stubbornly adolescent, all awkward growth spurts and identity crises — *what am I? . . . microwave, broadcast, K-band, DBS, cable, VCR, telcos, Internet, wide-screen, compressed, composite, component, digital, analog, high-definition, 4:3, 16:9, scalable, NTSC, PAL, MPEG, JPEG, D-1, D-2 . . . D-5?!!!* — while its infant sibling, computer imaging, ventures a few wobbly first steps.

What a welcome relief, then, the renewed vigor in the venerable domain

of motion picture cameras, lenses, and support gear, much of it fostered by computer-aided design and integrated microprocessors. If the recent rush of inventiveness can continue into the next century, perhaps we can count on threading cameras by hand for some time to come.

The Very Pulse of the Machine

Remarkably, the rudiments of Edison's Kinetograph, *sans* pull-down sprocket, survive today intact. Enhancements since then include reflex viewing by means of a 45° angled spinning mirror shutter, first employed in the 1937 Arriflex (German wartime newsreel camera of choice); and, in the early 1960s, self-blimped bodies for whisper quietness, and crystal-sync motors for freedom from Nagra sync cables. Electronic goodies like video assists, light metering, film time code, variable precision frame rates, and LED status displays arrived with the 1970s.

Something else that hasn't changed: professional motion picture cameras, unlike autos and snapshot cameras, were never mass produced on an assembly line, even in the heyday of newsreels. To this day parts are milled in small quantities, vetted by hand, and painstakingly fitted together. It takes 70 hours alone to assemble the movement for one Arriflex 535. In that sense, acquiring even the least expensive sync film camera is akin to purchasing a hand-tooled Bentley rather than a production-line Ford. OK, not wholly one-of-a-kind, but possessing a certain individuality, even personality (unlike cloned and soulless camcorders).

It's a Rental World

Electronics and microprocessors, which confer a measure of high-tech cachet, can inflict severe sticker shock. One respected camera dealer recently went online to decry the fact that a sync 16mm camera body can't be bought new for less than \$45,000, double its cost a decade ago. With lenses, extra mags, and basic accessories, the minimum tab for a new 16mm sync rig

easily reaches \$80,000 (cost of a used Bentley Turbo) and can top \$100,000. A Betacam-sized 35mm Aaton 35 III? Magazines \$14,000 a pop, the body a cool hundred grand. Unfortunately, lofty price tags push worthwhile innovations beyond the pale of many innovative filmmakers (think film time code). This, at a time when the unit volume of sales would scarcely seem to justify aggressive R&D efforts. In the mid-1960s, for instance, Arri in Munich assembled 120 16mm BLs a month; now it's more like 20 to 25 SR-3s a month and five to six 35mm 535s. Numbers like that — not unique to Arri, typical of the industry as the whole — scarcely seem to ensure the long-term capitalization needed for new product cycles and industry well being — unless, of course, prices remain sky high.

Camera Redux

If old cameras work just fine, and accept the latest fast filmstock from Eastman or Fuji — why new ones? Indeed many vintage cameras have been renovated with crystal-sync motors, improved movements, PL lens mounts (standardized by Arri), brighter viewfinders, even video taps. There's a cottage industry modifying and fabricating specialty cameras: high-speed, time-lapse, crash-proof, miniature, large format, etc. But late-model silent sync-sound cameras from the surviving major manufacturers — Arriflex, Panavision, Moviecam, and Aaton (Bavarian, Californian, Viennese, and French Alpine, respectively) — at once fuse so many innovations in design and technology that, for the first time since the coming of sound, *they redefine what film cameras should be.*

Size, Compactness, and Balance

16mm Arri SR and Aaton designs of the early 1970s set new standards for size, ergonomics, and modularity. Both were symmetrical (viewed overhead), with swing-over viewfinders for right or left-side viewing (Aaton was forced to drop this feature for several years

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under patent lawsuit by Arri), and compact coaxial cassette magazines. Coaxial mags are compact because feed and take-up rolls lie cheek-to-cheek on the same axis, unlike the traditional Mickey Mouse ears arrangement. The Aaton, in particular, exemplified ergonomic design. When joined, the camera body and magazine throat formed a recess to clasp the shoulder. The coaxial magazine extended behind the operator's head and offset the stubby camera body and lens cantilevered over the chest. With no vertical magazine rising above the camera like a dorsal fin, the profile was low, sleek, laterally balanced — a distinctly modern silhouette.

Arri SRs and Aatons were initially conceived as hand-held newsgathering cameras (precamcorder era), so balance and compactness were paramount. Fortuitously, the same qualities were given impetus all over again by the arrival of Steadicam in the late 1970s. To achieve compactness in 35mm cameras, two complementary approaches emerged: miniature and modular, the latter stripped down to essentials and reconfigured with small magazines for Steadicam use.

Panavision, whose first silent reflex camera in 1960 was an upgraded yet bulky studio Mitchell BNCR, introduced a new compact camera in 1971, the Panaflex. This boxy camera accepted 250-ft, 500-ft, and 1000-ft displacement magazines (like Mickey Mouse ears but more compact, with the takeup roll progressively occupying the space of the shrinking feed roll) either atop or at the rear, where it counterbalanced the lens and camera body.

In 1972 Arri served up its radically shaped 35 BL. With a compact body vaguely Jugendstil in its fluid form and a rear-mounted coaxial mag like a fat Michelin radial, the 35 BL was — a first among 35mm cameras — low, long, and ergonomical for handholding, especially when fitted with its smaller mags (400 ft and 1000 ft).



Photos: Above clockwise from top: Panaflex lightweight on steadicam; Moskinop 35H; Arriflex 435; Aaton 35 III; Aaton Keylink.

Likewise compact — 27 lb with lens and 400 ft of film — was Fritz Gabriel Bauer's Moviemcam, introduced at the end of the 1970s. Like the boxy Panaflex, a 500-ft or 1000-ft magazine hung off the rear for balance. New, however, was what hung at the sides: an electronic control module for programmable speed changes from one to 50 frames/sec with automatic iris compensation, a "Vidicam" module that attached to a built-in video tap to display the viewfinder for the assistant on a wee 1.5-in. video monitor, an EBU film time code module, even a module to diagnose the individual operation of the many solid-state control circuits and microprocessors Bauer relied on.

As the 1980s arrived, electronics and small high-efficiency motors enabled true miniaturization, from Ken Richter's palm-size 16mm EMP (2.6 lb with battery) to two 35mm designs, the 9-lb Feathercam CM-35 (which didn't survive); and its look-alike, the 11-lb Aaton 8-35, commissioned in 1977 by

Jean-Luc Godard, who had inquired why a 35mm camera shouldn't be as easy to use as a Super-8 camera.

(For his film, *Passion*, Godard personally filmed the shaky hand-held opening shot, an aircraft's white contrail against a cerulean sky. Relishing the result, Aaton inventor Jean-Pierre Beauviala once remarked to me, "This is why you have this movement like eyes in the sky; it's not the professional cameraman who is able to do that!")

Grand Pas de Steadicam

As the next-generation Master series Steadicam — a shapely aerodynamic contraption in a high-tech smoky gray finish that would be at home in a Sharper Image catalogue — readies itself in the wings, an ideal partner is still being courted.

The little 8-35 Aaton from 1981 has grown into this year's Aaton 35 III, virtually a dead ringer in size and shape for its 16mm little brother. At 16 lb with a 400-ft magazine and battery, it's

only 3 lb heavier than the 16mm, and it shares the same cassette-style instant magazine and registration: a single pull-down claw that dwells at the end of its downstroke to maintain perfect steadiness. The 400-ft magazine achieves its remarkably small size by "active displacement," using small motors to move aside the feed hub as the take-up roll expands.

(In Clairmont Camera's current ad for the Aaton 35 III, an A.C. brags about twice slipping the camera in and out of Brazil for a Nike commercial without notifying the authorities, presumably as a carry-on. Godard would have approved.)

Like all the other state-of-the-art compact 35mm cameras described below, the Aaton 35 III features user-adjustable pitch for quieter running, an adjustable shutter, flicker-free color video assist, optional 3-perf pulldown, and (drawing upon Aaton's long lead in creating convertible 16/Super-16 cameras) easy conversion between 35mm and Super-35mm.

In 1989 Panavision introduced a Panaflex Lightweight customized for Steadicam (Panavision no longer rents its house brand, Panaglide), with lightweight rear 500-ft magazines and integral video assist. To complete the ensemble, six months ago Panavision introduced a remarkable 27 to 68mm T 2.8 lightweight zoom, 4 1/4 in. long, with focus, T-stop, and zoom controllable by wireless remote. (Panavision began in 1954 as a lens firm.)

The 1990 Moviecam Compact eclipsed the prior Moviecam Super America Mark II model in compactness, modularity, and reliability. Due to its versatility — it's a studio A-camera that rapidly strips down to 25 lb — the Compact has of late grown quite popular for Steadicam.

Not to be outdone by Aaton, Moviecam designer Bauer, a former cameraman and art student, unveiled a completely new Moviecam, the Super Light, at last September's [1994] ShowBiz Expo in Munich. Retaining the Compact's pin-registered movement, he shrunk the body, using lightweight Kevlar for sound damping and structuring (presumably bulletproofing too).

The result looks like a baby Compact, matching the Aaton 35 III at 16 lb.

There are two styles of 400-ft mags: a Steadicam version in which film is actively displaced from top to bottom, and a conventional rear version. With a small adapter, the normal Moviecam 1000-ft magazine as well fits the back. A handful of the SLs are expected to be delivered this year, anticipating larger production runs in 1996.

Arri hasn't been resting on its laurels either. After three versions of its 35 BL design spanning two decades, Arri introduced in 1990 a totally new, thoroughly high-tech 35 silent camera, the Arri 535. Sculpturally resembling an assemblage of rounded formal volumes (the perfect complement to a modernist Gwathmey Siegel sound stage, if such a thing existed), it announces with confidence: film is the future.

Both inside and outside, virtually every function has been reworked, improved, and streamlined. New movement, new time code, larger and brighter viewfinder exit pupil, swing-over for right and left viewing, 100% video assist module for Steadicam, new 400-ft magnesium/carbon fiber lightweight displacement mags for Steadicam, extensive electronic control, and modular mechanical design for quick changeover from gearhead to Steadicam.

Arri hasn't forsaken its MOS legacy either. The small Arri III, introduced in the early 1980s as replacement for the classic 2C, is still a current product, but at June's [1995] ShowBiz Expo in L.A., Arri revealed the first models of its new 435 camera — an MOS cousin to the 535 in design, technology, and compatibility. Same electronically adjustable shutter, swingover viewfinder, built-in time code, 100% video finder module, large LCD displays, convertibility to Super-35, etc. While the 435's movement is necessarily different — in lieu of the 535's two-pin pull-down, a noisier yet more precise four-pin arrangement for high speed (1 to 150 frames/sec) and plate photography — many accessories are shared, including remote control devices.

Computers

In fact, although Aatons and Moviecams have been extensively microprocessor controlled since the 1970s, the 535 takes electronic integration to new heights. For example,

frame rate can be changed in-shot without effecting exposure. An electronically driven variable shutter automatically compensates. All variable camera parameters, including frame rate, forward/reverse, shutter angle, shot duration, film sensitivity, phase shifting to match computer monitors, and time code can be programmed from an Apple Powerbook with Arri's System 7 compatible software (a Windows version is on its way). If a Powerbook is not at hand, Arri also makes a handheld remote-control unit, the RCU-I, which looks like an upside-down Spectra Pro lightmeter, with a frames/sec shuttle knob where the white diffuser would be.

In addition to creating a database of camera status information, Arri Laptop Camera Controller (LCC) software also does filmstock accounting and prints camera reports. Part of the beauty of the new Arri system is that the same software suffices to control identical functions of the 435, 535, and SR 3.

Film Time Code

No sooner had SMPTE and the European Broadcasting Union standardized a universal video time code in 1975 than the EBU turned its sights on creating a comparable time code for synchronizing 16mm film and double-system 1/4-in. audio. By May 1976 the Institut für Rundfunktechnik in Munich developed the first EBU technical standards, and Arri was advertising 16mm SRs fitted with film time code modules the following year.

At that same time Aaton in Grenoble was marching to the beat of a different drummer, one Jean-Pierre Beauviala. Beauviala envisioned a technology to expose the real time of day in low-tech eye-readable characters on the edge of 16mm film for eye-syncing to similarly marked fullcoat.

Aaton marketed such systems by the end of the 1970s. As it is with techniques ahead of their time, Beauviala's time marking and time code systems were largely passed over by the mainstream. But in the process of seeking a better method of marking his alphanumeric characters on film in the camera gate, he happened upon a brilliant LED/fiber-optic solution that is the basis of the AatonCode installed in most Aaton XTRs, Aaton 35 IIIs, and

Panavision cameras, both 16mm and 35mm. Today's Aaton Code, basically a hot-rodded version of SMPTE/EBU time code, is both machine and eye readable.

The times have since caught up with film time code, and much of Beauviala's thinking now looks obvious rather than visionary. As early as 1979, for instance, he created a script supervising device with an integral crystal clock for correlating time code to takes. Although it has taken a couple of decades for the early bird to get his worm, Aaton's sustained time code efforts have resulted in the maturation of the Aaton Keylink, a computerized telecine reader and database management system (AatonBase) for film time code (both Aaton's and Arri's), Keycode, and video time code. Created in 1985 and field-tested in the ten years since, Aaton Keylink is becoming a *de facto* industry standard. At April's [1995] NAB in Las Vegas, Aaton announced that Rank Cintel Inc. would take on distribution of Aaton Keylink for its telecines in the U.S.

Going back to the future, Aaton has lately developed a DOS-based laptop system, ScriptLink, which enables a script supervisor to enter scene and take numbers and comments, which in turn are automatically and precisely matched to the AatonCode in all cameras and audio recorders working on the set. Time code is fed into the laptop by a tiny SMPTE time code generating module, the Aaton GMT-I. At the end of the day a diskette from the ScriptLink is taken to the telecine and inserted in the Aaton Keylink. All of the entered data — film title, scene/take numbers, camera ID, good/NG decisions, film and audio types, roll numbers, and comments — are automatically burned into a frame of video called a "virtual slate" at the head of each take during transfer of video dailies.

The Little Format that Could

Beauviala's other crusade was, of course, Super-16. His original Aaton prototype was Super-16; he subsequently made the camera convertible to standard 16. As a result Aaton and Super-16 have been virtually synonymous since the late 1970s.

With the advent of 16:9 TV — high definition or otherwise — Super-16 has

finally been embraced by the mainstream. All three state-of-the-art production 16mm cameras feature ready conversion between 16mm and Super-16: the new Arri 16mm SR 3, Aaton's 16mm XTRprod, and the Panaflex-16.

What they also feature in common: time code (SMPTE for SR 3, AatonCode for XTRprod and Panaflex-16); selectable crystal speeds (5 to 75 frames/sec for SR 3, 5 to 50 frames/sec for high-speed SR 3, 2 to 75 frames/sec for XTRprod, 4 to 50 frames/sec for Panaflex-16); variable shutters (six positions for SR 3, three positions for XTRprod, variable in-shot from 50 to 200° for Panaflex-16); brilliant viewfinder optics; integral video taps; dedicated microprocessor control; and sundry systematized accessories.

The Arri SR 3 shares the spirit of the 535, if not the size. Materials, finish, color, and electronic interface are the same. In silhouette it's almost identical to its early 1970s progenitor, the original SR, as is the Aaton XTRprod to the LTR 7. Both SR 3 and XTRprod remain superb handheld cameras, but both have grown up to become versatile, fully featured studio cameras as well.

The Panaflex-16 is somewhat in a category by itself. It was the pet project of Jac Holzman, founder of Elektra/Nonesuch Records and former chief technologist at Panavision's then-parent company, Warner Communications, who took over chairmanship of Panavision in 1982 after popular predecessor Robert Gottschalk was killed. Holzman pulled out all the stops. He wanted to create the finest, most advanced studio 16mm system ever. And he did. And he got Warners to pony up \$5 million to do it with.

After buying and dissecting SRs, Aatons, and Eclairs, Holzman and his designers built a camera unlike any other: dual pin registration above and below the frame; viewfinder with contrast filters and illuminated markings; extension finder with 20x magnifier; variable focal plane shutter; three mag sizes, 200 ft, 400 ft and 1200 ft; etc. Mags that can be mounted on top or at the rear. In other words, a little Panaflex.

Ultimately the Panaflex-16, code-named and still sometimes called the "Elaine" after employee Elaine Collins, who then worked in the billing depart-

ment, was made in limited numbers for a limited period of time. Like all Panavision cameras, it is never sold, only rented. Bob Harvey, Panavision's Director of Marketing, says Panavision-16s are used mostly for TV, music videos, and industrials, and confirms: "They are always rented, always. Very difficult to get."

Video Assist

The original 16mm Aaton design was the first to integrate a video tap into the body, another insight of the former electronics professor from Grenoble. In the early 1970s Steadicam was still five years in the offing, as were remote-head jibs and cranes, so the original purpose of video assist was to enable observing the viewfinder image by those other than the operator. For the first ten years of video assist, most systems consisted of a boxy little single-tube Philips black-and-white camera grafted onto, sometimes supplanting, the viewfinder optics.

Viewfinders, of course, flicker from spinning mirror shutters. The next challenge in video-assist technology was to produce a flicker-free output. In 1985 Arri introduced the Arri-VAFE, or video assisted film editing system. VAFE combined a 35mm camera capable of generating and recording 80-bit SMPTE time code on film (either a 35 BL III or 35 IIL), a single-tube color video assist camera, a frame store for holding and repeating viewfinder images during the dark half of the flicker cycle, a character inserter for superimposing the camera's time code over the video assist's output, and an on-location video deck to record the results.

The idea was to make preemptive edit decisions, even a pre-edit, using the flickerless on-location output of the video assist, with film time code as the common reference. Arri-VAFE was forward-thinking, but didn't take off for numerous reasons. However, the die was cast. Avid, its MediaRecorder attached to the color video-assist output of a 535, has picked up where Arri left off.

In the last few years Arri, Aaton, Moviecam, and Panavision have all produced color, flickerless, CCD-based video assist systems — all marvelous to behold, pricey to rent.

Quietness

When Moviecam debuted in the late 1970s, it boasted an unprecedented 18 dB of noise while running film. By comparison, the 16mm Aaton LTR of the day guaranteed 26 dB, the same as the Arri 35mm BL II. Since the dB scale is logarithmic and each 3 dB represents a doubling of volume, 26 dB is almost eight times noisier than 18 dB. In those days, 27 dB was considered the ceiling for camera noise in sync-sound filming.

Today's 16mm Aaton XTRprods and Arri SR 3s are rated at about 20 dB, while the 35mm Arri 535B is less than 20 dB. Moviecam Compacts and Panaflexes, 16mm and 35mm, are in the same basic near-silent range.

Although the miniaturized 35mm cameras from Aaton and Moviecam are sync, they're hardly silent. Officially the Aaton 35-III is rated at 33 dB for 4-perf pulldown, 31 dB with a soft barney (a soft barney for a 35mm camera!), and 30 dB for 3-perf pulldown. Peter Abel, of Abel Cine Tech in New York, feels it's closer to 29 to 30 dB. But there's no question it's too noisy for A-camera work. A new expression, "low-noise camera," has resulted.

As for the Moviecam SL, according to Denny Clairmont of Hollywood's Clairmont Cameras, "Right now they're talking 25 dB. I think it's going to be used as a B-camera. You won't be able to use it for the close-up of a sensitive love scene — maybe you *will* be able to use it, we'll see. The old 35 BLIs and BLIIs were running 26 to 28 dB, which is much louder . . ."

Viewfinders

As films and lenses have gotten faster, lights smaller, and budgets tighter, shooting in low light and available gloom has grown commonplace. Sharper, brighter viewfinders with more legible markings are one of the most critical improvements distinguishing today's cameras from their predecessors.

Light-gathering fiber-optic viewing screens, brighter and more acute than earlier ground glasses, began to appear in 16mm Aatons and Arri SRs in the mid-1970s. Almost simultaneously super-speed lenses from Zeiss and others arrived, and it soon became obvious

that the two innovations were interdependent. But how to see dark reticle marks against a pitch-black frame when filming at night? Panavision solved this in 1978 with Panaglow; frame lines and other markings glowing bright red and clearly distinguishable, even in no light.

Although many of the innovations discussed in this article originated in 16mm equipment and trickled up, glowing reticles and 2x magnifiers in eyepiece extenders were always associated with 35mm cameras. Moviecam had Movielite back in the late 1970s, 35 BLs had Arriglow. Now 16mm Aaton XTRprods boast Aatonglow, and Arri SR 3s have a magnificent finder system, 25% brighter than SR 2s, with Arriglow *and* a 2x magnifier in the extender.

Price of Progress

High technology comes at a price. The more functionality, the more there is to learn. Technophobes and Luddites, alienated and lost in a world of video and computer argot, are unlikely to concede the value of electronics within their mechanical redoubt of belts, sprockets, and perforation holes. They certainly won't pick up the tab that accompanies the privilege.

Arri's new camera technology is stunning — in both senses. But perhaps Arri fears it went overboard a bit. For mere sync dialogue scenes, who needs the costly technology required to electronically ramp shutter openings? The company has introduced a "lite" edition of both the 435 and 535, labeled 435B and 535B. In both cases, the electronically driven variable shutter has been replaced by a simpler mechanical version and elaborate viewfinder optics simplified. As a result, compared to the original, now designated the 535A, the 535B has shed 8 lb and almost \$49,000 from the original price of the body alone. Sales have reportedly responded.

The Russians are Coming, The Russians are Coming

The Soviets kick-started a national motion picture industry in 1918, building cameras ever since. Over the years the State Scientific Research Cinema Institute (NIKFI) and various design bureaus in Moscow and Leningrad drove cinema technology deep into the experimental wilds of widescreen,

70mm, and 3-D. One result was a surprising mix of homegrown models: Moskvass, Rodinas, Druzhbas, Mirs, Sputniks, Kohbacs, etc.

According to Jonathan Kitzen, whose MKA Inc. has grown into the leading importer of Russian cameras since 1992, there remain two main present-day sources. Camera manufacturer Moskinop, now defunct, had cloned two 35mm cameras, a late-1950s Eclair CM-3, which they called an 8-M, and a Moviecam Super America knock-off, called a 35H. MKA sells the 8-M with mags and lenses for \$3,995, the 35-H with mags and lenses for \$15,000 to \$25,000.

Moskinop also built an original 16mm camera, the Kinor, for news-gathering. "We still import a few [Kinors]," he says, "and convert them to an Arri mount and American-made crystal sync motor for those who want a cheap crystal sync camera. We call it Uglicam. It's one of the ugliest cameras in the world, with a beauty only the Russians could appreciate."

The most celebrated Russian camera — written up in the Style Section of the Sunday *New York Times* last March — is the Krasnogorsk-3, a 16mm spring-driven camera made by Zenit, "the Nikon of Russia," known chiefly for amateur photo equipment. The K-3, a 1979 design still in production, is not very popular in Russian markets, according to Kitzen. He says he currently consumes about 90 to 95% of the actual production run. The most salient feature of the K-3 is its \$465 price, which includes a removable 17 to 69 T 1.9 zoom, five filters, shoulder brace, pistol grip, lens shade, cable release for single-frame animation, and six-month warranty.

Kitzen does, however, offer pro versions of the K-3, tricked out with a custom crystal sync motor (12, 24, 48 frames/sec, accepts speed control), matte box, video assist, intervalometer, and Arri bayonet mount system for camera and lens. When asked whether the accessories cost more than the camera: "Most of them do!"

"In some ways I'd say that the K-3 is a lot better in quality than a lot of the professional [Russian] stuff. It has a good rotating mirror reflex viewing system; hell, the lens alone is worth \$500."

Who buys these cameras? "Fifty percent are people who make an *excellent* living in the film business. A lot of guys who have SR 3s and lots of equipment. They can shoot these risky scenes with the K-3, use it as a disposable or crash camera. We've probably sold a hundred to MTV. Suicidal Tendencies, Spin Doctors . . . there's no way you can exist and not have seen footage of a K-3.

"Predominantly we supply independent filmmakers and a lot of first-time filmmakers, the other 40 to 50% of our market. For whatever niche we've carved out, which is certainly a niche that didn't really exist before — I wasn't there five years ago—there is one now."

Three thousand cameras sold over the last three years is a niche, alright. Kitzen can legitimately claim, "By volume we're the largest camera dealer in the world."

What's next? Kitzen grows excited. "We're now importing things from Asia, from Hong Kong, Taiwan, China, and Korea. We've discovered a whole other source of cameras which no one really knows about, and the quality control is excellent, the manufacturing absolutely top notch."

Like what? "We just introduced, at the L.A. ShowBiz Expo in June [1995], a new Chinese 35mm Arri 2-C clone with a variable shutter, and *it's got pin registration*. [Not so, an authentic Arri 2-C.] It's Arri compatible; the mags will interchange with an Arriflex and it's available in PL mount. Under \$8,000 for a brand new camera. That includes a matte box, mags, cases, cables, and variable speed motor. I would say it's Western quality, the stuff I've seen so far. I was expecting one thing, and what I got was completely other."

If the fashion industry thinks it has a major headache with *pret-a-porter* knock-offs: "They make a copy of an Aaton. It's pretty amusing, it's an exact knock-off. It's going to be the next big thing."

How quiet or reliable can such a camera be? Kitzen replies, "I don't think anyone will ever be able to complete against the Germans or the Austrians in the high-end blimped market. They never will be able to do it. It's just not going to happen. It just takes too much.

It is kind of a high-tech, hand-finished field, and it's very competitive." He adds therefore, "I don't threaten any of the high-end guys. I can't compete against them, and I don't plan on it."

It's perhaps helpful to recall that products of Soviet industry were somehow never mistaken as Swiss or German, or even French. With regard to the K-3 phenomenon, at such comically low prices (as low as \$150 from some dealers), one really can't lose much, at least at the outset. It costs more to buy and develop the roll of film. But a recent furious back-and-forth in the Hollywood Below-the-Line section of America Online restoked the issue: Are these cameras economical VW bugs or buggy Yugos?

There's an old business school maxim: There's the price, then there's the cost. Will Chinese cameras be any different?

Indie Lifeline

Panavision's Bob Harvey suggests a possible alternative to scrounging for cheap cameras. "There is no other company in this industry that does more for film students, first-time directors, first-time cameramen. We have a full-time person who deals with the schools and runs an official program called First-Time Filmmakers."

Denny Clairmont of Hollywood's Clairmont Cameras, widely considered the most innovative rental house in the business, concurs: "I doubt if anybody helps [students] as much as we do. Just today we had four, maybe five shows from USC prepping camera equipment here, and they got all the equipment totally free."

What about filmmakers who don't circulate in L.A.'s industry film school orbit? Harvey says, "We will call our agent in the area and see what we can do. A lot of it is based on availability of equipment, but we really go out of our way to help young aspiring filmmakers." On the East Coast? "For years our agent in New York (formerly General Camera) was independent. It's now called Panavision New York. Now we're co-owners, and they're trying to change their image. They're much easier to work with than they ever were.

"We sponsor the IFP's Spirit Awards every year and supply cameras to four films from the Sundance Institute.

There's a sense at this company that we are an important part of an industry and therefore have an obligation to help seed the industry. That's the way an industry stays healthy. I don't want it to seem like anybody who calls gets a free camera, but I'll tell you something, if they make a good case and they're able to pitch their project — we think they believe in it — they do pretty well with us."

Rebirth

Is the market for film cameras shrinking in the face of cost-effective electronic imaging? Or is the ocean of media swelling so fast, all vessels are floated higher?

Peter Abel of New York's Abel Cine Tech, East Coast Aaton agent and rental house, says, "I think every camera manufacturer's production is pretty high right now. Last year I asked [Aaton] to double their production. Each year we doubled the year before in actual sales, and I just see that we have a window of a couple more years with a very busy 16mm market."

Window? "Because in 16mm we've seen it almost go away completely in the late '80s, when Aaton's production was down to a trickle. I'm sure at Arri they were debating whether they should even put out an SR 3. Now imagine if that happened, what would 16 production be like today? With this rebirth we now have Super-16, time code, and every end of the production process as automated as the technology allows."

Denny Clairmont also waxes upbeat: "I have almost 60 new cameras on order from Arriflex, Moviecam, and Aaton, and a tremendous number of lenses from Angenieux and Cooke, so we have total faith in the growth of motion picture, as opposed to video, industry. I've talked to my colleagues in almost every country, and it's growing everywhere." Clairmont is opening a new facility, his third, in Toronto.

Panavision's Bob Harvey shares their guarded optimism. "We do better every year. But we only do better when we continually come out with new items. We control our own destiny to a certain extent because we do our own R&D. As far as the overall rental business, I have no reason to believe it isn't going to stay healthy as long as the film industry stays healthy."