Remarks on the Film Industry

Excerpted from *Marxism and Film* by Gary Zabel

The technology of still photography was a necessary prerequisite of cinema. Before video and digital imaging, cinema required the use of a camera to focus light on a surface coated in a chemically sensitive emulsion, and the fixation, by chemical means, of the resulting image on a second light-sensitive surface. But obviously, there is more to cinema than photographic technology. Three further technical developments were necessary for its creation. The first was the invention of a material medium for recording and printing images that was flexible enough to be wound on a reel or some other feeding device, and sturdy enough to resist degradation by motion. The medium that won out over competing candidates was celluloid cut into thin, translucent strips. The second development consisted in the invention of a source of illumination stronger and steadier than a candle flame, a light source that became available with the invention of the incandescent bulb. These two breakthroughs occurred in the United States, each an invention of Thomas Edison's laboratories in West Orange, New Jersey. The third development was rather complex, and is credited to more than one inventor. Motion pictures required a method for generating mechanical motion, and conveying that motion at a uniform speed to a flexible celluloid strip gently enough to avoid tearing it. To begin with, the light-sensitive strip had to be exposed, frame-by-frame, to light focused by the lens of a camera. After the first strip was developed and a print made, the print, also in the form of a celluloid strip, had to be fed through a projector at the same speed that the original strip moved through the camera (initially sixteen frames per second, now twenty-four frames per second). This in turn required a source of power, a method of converting the power into uniform motion, a device for conveying that motion to the celluloid strip while guiding its path before the illumination source, and finally a means of projecting the images in sequence onto a screen. In competition with one another, Edison and his staff in the United States, the Lumière Brothers and their staff in France, and a number of unaffiliated inventors solved the technical problems involved. First, they used hand-cranked motors as the power source for cameras and projectors (though the Edison lab also invented a stationary, electrically driven camera and projector), while developing gear arrangements that both transmitted and stabilized the motion generated by the motors. Second, they developed mechanical "claws" and similar devices to grip sprockets cut into the edges of the celluloid strip, allowing it to be fed past camera lens on the one hand, and projector illumination source on the other. Third, they developed a combination of lens and shutter, permitting the exposure

and projection of images frame-by-frame that is necessary for creating the illusion of motion.

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Cinema distinguishes itself from still photography through the creation of an illusion of motion by means of the transition from one image to another. For a long time, film theorists thought the illusion was the result of the "persistence of vision," and even now it is not uncommon to find this idea in introductory texts on film. According to the theory, each image projected on the movie screen is supposed to linger on the viewer's retina long enough to overlap with the succeeding image, thereby creating a hybrid image that is the vehicle of the illusion of motion. As early as 1912, however, the founder of Gestalt psychology, Max Wertheimer, demonstrated the fallacy involved in this theory. The retina does not record images in a way analogous to photographic film. Instead, it transmits messages, by way of the optic nerve, to interior structures of the brain, where the messages are processed. There is no visual image at all until the processing takes place. Even now, the causes of the illusion of motion are not well understood, but whatever its causes, the illusion of motion is itself something real, and it is what distinguishes the art of cinema from the other plastic arts.

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It is common to talk about the "movie industry," but not so common to use that phrase with the seriousness it deserves. Cinema is an industry, not merely in the general sense that it is a sector of economic activity (like the fishing industry, for example), but in the specific sense that it is a process of industrial production. We have already seen that the invention of cinema required advances in the electrical and chemical industries, including incandescent light bulbs and translucent celluloid strips, to which we might add the machine-made parts used in motors. Cinema is possible only if a larger industrial system is already in place, and a relatively advanced system at that. The movies have their origin in the era of electricity and chemicals, not in the epoch of the steam engine and the power loom; they are the product of the Second Industrial Revolution, not the First. But the fact that cinema is embedded in a more comprehensive and relatively advanced industrial system is not the only thing that makes it an industry. Considered by itself, cinema also exhibits the technical structure of an industrial process.

In *Capital, Volume One*, Marx distinguishes what he calls "modern industry" from the stage of manufacture that precedes it. (Marx 1992, ch. 15) As the earliest form of the factory system, manufacture arises when an owner of capital assembles traditional craft workers under a common roof, while supplying them with the tools and raw materials necessary to ply their trade, and a wage in exchange for the products they make. When manufacture first appears, each craft worker makes a finished product, just as he did in traditional guild production. In distinction from the guild system, however, the capitalist instead of

the craftsman owns that product. As manufacture develops, the owner of capital introduces into the factory a division of labor in which each worker specializes in a single part of the whole production process. Instead of making a finished product, the worker now performs only a part of the work necessary to produce it. As a specialist in a single operation, the manufacturing worker is able to execute the assigned task in a shorter period of time than his or her predecessor, who carried out the whole series of operations necessary to make the product. The productivity of labor increases as a result of such specialization. When productivity increases take hold of the consumer goods industries, they reduce the wage bill per unit of output, and so cheapen the cost of the items necessary for the workers' subsistence. In other words, the value, and therefore the price, of consumer goods fall. This permits reduction in the real wage in all industries, since workers can now survive at a lower cost, and a corresponding increase in the profits that accrue to the capitalists who own those industries. Still, such increases in productivity are restricted by biology. The division of labor alone is unable to press beyond the limited energy, speed, and accuracy of the human body. The substitution of machinery for human beings removes such inherent biological limitations.

For Marx, the machine has a tripartite character that distinguishes it from the simple tool. Every machine consists in a source of motive power, a transmission mechanism, and a tool, or more likely, multiple tools operated by the machine rather than the worker. The division of labor that made human beings one-sided appendages of the organized labor process in manufacture reaches its ultimate expression in mechanized industry, especially when mechanization proceeds to the point where multiple machines are driven by a single power source, to which they are connected by a unified, factory-wide transmission mechanism. At this stage of development, the machines are arranged in a series in which material is processed sequentially. Raw material is processed by the first machine; the partially processed material is handed off to the second machine, which conducts a higher level of processing; then it is fed into a third machine for even more advanced processing; and so on, until the final machine completes its task, resulting in the finished product. Marx calls such a system an "automaton," in reference to its self-moving nature. The system is a form of "perpetual motion" able to shape matter on scales grand and small, while vastly multiplying the number of products that can be turned out in a given period of time. It is, in Marx's words, a "demonic" assemblage of processes that reduces workers to the level of appendages of the self-moving system of mechanized production. Workers no longer transform raw materials into a finished product, but rather feed those materials to the mechanical "monsters" (another of Marx's expressions), service the machines, and correct their errors. Here the inversion in the relationship between human makers and their products that Marx analyzed under the abstract rubric of commodity fetishism becomes physically substantial. The relations between workers in the mechanized productive process take on the phantasmagorical form of relations between machines.

The film industry approximates to this description, but does not completely conform to it. It is not a form of fully mechanized production, but rather a partially mechanized industry with significant craft elements. Cameras, light meters, dollies, microphones, sound recording devices, sound mixers, continuous film processors, printers, film synchronizers, film splicers, and projectors are all machines in use in the film industry, at least in the contemporary period. Moreover, as in fully mechanized factory production, these machines perform their operations sequentially, in an order determined by the technical requirements involved in proceeding from raw material to finished product. The film as raw material must first acquire the latent images that result from photographic exposure (cameras, light meters, and dollies). The exposed film must be developed (continuous film processors) and then printed (printers) in order to make the latent images visually explicit. At this point, the film, in the sense of the sequence of visual images recorded by the camera, can be edited (film synchronizers, film splicers), and paired with a sound track, itself constructed by "mixing" sounds, whether synchronously or asynchronously recorded (microphones, sound recording devices, mixers). Only then can the filmmaker arrange for the distribution and projection (projectors) of the "release print" of the movie.

The mechanized workflow is similar to that of the modern factory, with the important proviso that the filmmaker is not an appendage of an automated process. This is because the process cannot be fully automated. The filmmaker must exercise craft and sometimes artistic judgment in shooting and editing the film. Even in such cases of experimental filmmaking as Michael Snow's *The Central Region*, where the camera is attached to a programmed robotic arm, the decision to automate the camera is the result of an aesthetic choice on the part of the filmmaker, rather than a technical demand of the production process.

The craft element involved in making movies is most pronounced in the case of the independent filmmaker working on a small budget. With limited financial means (though sometimes as a matter of choice), the filmmaker may perform all of the various tasks that are divided among specialized workers in better-funded and more conventional forms of film production. The independent filmmaker may act as producer, director, cinematographer, camera operator, sound engineer, editor, and even distributor, so that he or she is the sole maker of a single, integrated product. This is precisely what characterizes craftwork in the earliest stage of manufacture, before the division of labor confines workers to a single part of what was once a unitary process of making.

Even when better financed and more conventional filmmaking occurs, the division of labor between producer, director, cinematographer, camera operator, and so on fails to abolish the craft-like faculty of sensitive, discerning judgment that is necessary for performing even specialized tasks, and that must be acquired over long periods of training and practical experience. The continuing existence of guilds and apprenticeships in the film industry indicates as much. Directors generally start as assistant directors, editors as assistant editors, and

camera operators as camera assistants. Something of the old masterjourneyman relationship is preserved in this way. But now we are closer to the second period in the development of manufacture, where the traditional crafts are fragmented into partial crafts, each of which, nevertheless, requires the mentality of a craftsman rather than that of a machine tender.

What is fascinating about the crafts of the film industry is that they involve the operation of machines. The machine replaces the tool as the instrument of craftwork. This is a momentous development in the history of art, because it breaks with the manual character that the visual arts retained even after Renaissance artists succeeded in their bid to achieve a status similar to that of scholars, poets, and musicians. What we might call "the collective filmmaker" (on analogy with Marx's phrase, "the collective worker") is freed from the necessity of working on raw material with its organic, bodily appendages. The tool communicates bodily motion to raw material in the act of shaping it, but the machine intervenes between bodies and the material that must be worked. The collective filmmaker deploys, adjusts, and operates machines with all the sensitive discernment of craft skill, but the machines are the agents that move, stage-by-stage, from unexposed film to release print. Moreover, just as in fully mechanized factory production, the result of the process of film production is not a single product, but a vast number of products, in this case, a vast number of copies of the release print.

Each copy of the print is a commodity, an object meant for exchange. More precisely, each viewing of the print by a member of the movie theater audience is a commodity, since the price of admission exchanges for the opportunity to view the print. The sum of the prices of all theater tickets (and DVDs, etc.) sold for a particular film constitutes gross receipts. The film, *Avatar*, now holds the record at nearly three billion dollars in gross theater receipts alone. When the costs of production are subtracted from gross receipts, the profit that accrues to the film's investors remains. What drives the movie industry is, of course, the desire to maximize profits, the same imperative that drives all capitalist industry. Avantgarde film and experimental film exist in the margins of this system, supported by grants, visiting artist fellowships, and a handful of small investors, often including the filmmakers themselves. Famously, Michael More sold his bed in order to fund his first film, *Roger and Me*.

In the commercial, profit-maximizing movie industry, the key to economic success is the number of tickets (and home viewing opportunities) sold. But large audiences are attracted by expensive movie stars and high visual and auditory production values, so that the biggest box office hits require substantial investment funds. *Avatar* cost around 300 million dollars to make, and around 150 million to promote. Considerable investment capital was risked, in this case at a rate of profit far higher than that of other industries. In order to reduce risk, investors must be able to control the factors that enable a film project to make money. This includes, not only substantial outlays on promotion, but also a considerable amount of market research. The result is a formulaic

standardization of film content; reliance upon what has worked in the past. Innovation is more likely to be technical than artistic in character. The main reason for *Avatar's* success is its highly sophisticated use of 3D technology. Its narrative, on the other hand, is so formulaic (a love story embedded in a futuristic version of the "New Western") that it barely reaches the level of an episode in a run of the mill television science fiction series. Plenty of *Star Trek* episodes are more interesting.

Theodor Adorno was the first thinker in the Marxist tradition to discuss the standardization of the film commodity by introducing the concept of the "culture" industry" in a book he wrote with Max Horkheimer, Dialectic of Enlightenment, first published in 1944. He offered the concept as a replacement for the idea of popular culture, by pointing out that movies, radio programs, hit songs, and so on are not creations of the people at all, but rather the products of giant economic concerns. In 1944, Adorno was living in Hollywood, and even attending Hollywood parties. He collaborated with the composer, Hans Eisler, on a book titled, Composing for Film. To some extent, he was able to observe the film industry from the inside. What he saw was the mass production of standardized products, like automobiles coming off an assembly line. Variations in film prototypes are like car models, different enough to intrigue the consumer, but essentially marginal variations on a single theme. Ease of reception guides standardization in film, like standardization in other branches of the culture industry. Since the mass audience turns to film as a form of entertainment, and thus as a respite from alienated work, it rejects anything that requires an effort of understanding. According to Adorno, this consumer demand is not "natural;" it is created by the pressures of capitalism in the form of the mental and physical exhaustion of the working day. By meeting the demand for effortless entertainment, the film industry produces a kind of pleasure that ties the mass audience to the very system that exhausts them in the work process, thereby generating the need for 'relaxation" in the first place. In so doing, it encourages and deepens a psychological infantilism that incorporates the film audience even more securely into the dominant social order.

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From its dual beginnings in France and the United States down to the present day, cinema has been produced for a world market. Less than five years after the invention of cinema, movies were already being filmed and exhibited outside France by the Lumière Brothers, who sent their cameramen and business representatives to the four corners of the planet. Silent movies were especially easy to market globally, because only a handful of intertitles needed to be translated for each film. Witness the enormous appeal the physical comedy of Chaplin's movies had across national boundaries prior to the Second World War. Directors in particular have been bound together transnationally, as indicated, for example, by the role D.W. Griffith played at the origin of Soviet film, and the reciprocal influence of Soviet film on American and British directors. But neither

are movies innocent travelers on the circuits of global exchange. As the U.S. rose to preeminence after the Second World War, so did the American film industry conquer the world market. Even today, after the emergence of important film industries in India, China, Brazil, Iran, Thailand, Cuba, and elsewhere, Hollywood movies draw huge audiences, and commensurate box office receipts, whenever they are screened in these countries. The cultural domination by Hollywood cinema of much of what used to be called the "Third World" is reflected in the surprising discovery by some new immigrants to the United States that its streets are not "paved with gold." American movies are ideological as well as economic emissaries to other countries.