Business and Economic History
On-Line
Vol. 2 2004

Matter Matters to Authority: Some Aspects of Soviet Industrial Management in the 1930s from a Multi-Sited Perspective

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Scholars of action and management rarely contemplate the role of matter in creating authority. In this paper, I intend to examine if and how actors use organized matter (tools, machines, plants, order in the space, landscape, and so forth) to contribute to the formation of distributed authority. Paradoxically, in the most intense years of Stalin's rule over Soviet industry, matter did not play its usual role of contributing to the guidance of human action. Because planning proved unable to foresee all the necessary relations, the intricate and intertwining hierarchies were unable to maintain the continuity of the productive flow, which, in turn, could not act as a material basis for authority. So, more than anywhere else, the leaders were "leading with their vocal cords." Institutions put into play to prevent repetitive breakdowns in the flow of production, such as the law, were unable to fulfill the task, and were in turn subject to a loss of authority. Even very technical tools of management, such as dispatching, could not solve basic problems plaguing Soviet industry. Nevertheless, the authority of matter had an effect through the press and information tools—that is, as images. Only war, removing all controls and rigidity, gave leeway to the necessary spontaneous coordination relationships resting on the knowledge of emergency that formed under the harshest elements of Stalin's rule.

In this paper, I raise a question about authority. This is a small, first, and tentative essay on a limited aspect of the vast question of authority, part of a larger project on the history of authority in the first half of the twentieth century. Such a project has to precisely capture what "authority" meant and to rethink how to grasp this elusive phenomenon.[1] Most studies of authority do not consider the role of matter. Such is the case for Max Weber and his followers, who contend there are three sources of authority:

[1] I am very grateful to Miriam Levin, Valérie Pozner, Dilip Subramanian, and my seminar participants for their invaluable help in preparing this paper.

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ehess.fr/centres/crh/pages/chercheurs/cohen/cohen-fiche.html

tradition, bureaucratic rationality, and personal charisma.[2] I do not mean that they are indifferent to technology and its role in the building of society. The notion of matter is broader than that of technology. If it does not include here such tools of authority as the stick, the baton, or the whistle, nor such symbols as uniform, epaulette, or even the telephone (also equipment for the leader), it does encompass organized matter like artifacts, machines, and also manufacturing plants at every scale, the productive flow, organized landscapes. From a Weberian standpoint, this kind of materiality does not take part in constituting authority itself. I will not consider all the dimensions of the more theoretical sociological discussion, but, rather, draw more from management in practice. From this point of view, matter matters a great deal in what could be termed the "distributed authority" of the industrial order.

Material Authority

There is actually a long tradition conferring authority on Nature or Divinity because of their stability and permanency.[3] Better to rest upon them than upon human action. Hannah Arendt recalls in *The Origins of Totalitarianism*:

> Nature or Divinity as the source of authority for positive laws were thought of as permanent and eternal; positive laws were changing and changeable according to circumstances, but they possessed a relative permanence as compared with the much more rapidly changing actions of men; and they derived this permanence from the eternal presence of their source of authority. Positive laws, therefore, are primarily designed to function as stabilizing factors for the ever changing movements of men.[4]

It seems that the materiality of industrial order inherited the power of Nature as opposed to Culture and human action. Among many formulas, Spengler's expressed that with those words in 1931: "*Der Herr der Erde wird zum Sklav der Maschine*."[5]

The authority attributed to organized matter may be more or less direct. An artifact can "guide" human action with imbedded commands. Ken Alder cites the French Eighteenth Century engineer Le Blond stating,

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[2] Max Weber, *Economy and Society: An Outline of Interpretive Sociology* (Berkeley, Calif., 1978); Reinhard Bendix, *Work and Authority in Industry: Ideologies of Management in the Course of Industrialization* (Berkeley, Calif., 1974).

[3] E.g., Lorraine Daston and Fernando Vidal, eds., *The Moral Authority of Nature* (Chicago, 2004).

[4] Hannah Arendt, *The Origins of Totalitarianism* (1951, New York, 1973), 463.

[5] Oswald Spengler, *Der Mensch und die Technik, Beitrag zu einer Philosophie des Lebens* (Munich, 1931).

"the gun was itself an instrument which guided its own proper use."[6] One century later, Emile Cheysson, another leading French engineer, wrote, "the worker's task is precisely defined by the machine he is driving."[7]

Moreover, managers expect the material order of things to have a disciplinary effect on workers. Henry Ford wrote in the mid-1920s:

> Cleanliness is an integral part of our plan.... Give a man a good tool—a fancy polished tool—and he will learn to take care of it. Good work is difficult excepting with good tools used in clean surroundings. These are not unimportant points; they are fundamental. They make for the working spirit. They are as important as the wages.[8]

The French automobile engineer Ernest Mattern, one of the main architects of action management systems in the automobile industry, when arriving in a new plant, used to intervene first on "the visible order of things." His first recorded intervention of this sort took place in 1912 in the Peugeot factory at Audincourt (Doubs). He explained in his 1925 book:

> For a new director, the good method consists of tackling things before tackling people, and issuing commands to instill order everywhere. The personnel will be successfully surprised by this change that can only be attributed to the change in the management. When visible things have stroked all minds, the leader [chef] will then be able to tackle the people and the inner organization; he will be assured in advance that he will meet less resistance if the *visible transformation* done at the beginning have been quickly managed.[9]

In the twentieth century, the assembly line epitomized the commanding power of matter. This is well known, of course, but my point is the interpretation of the vocabulary of command by all the actors, an interpretation that still persists.

It arose first in the case of the workers and the politicians of the workers' movement. An article appeared in the communist French newspaper *L'Humanité* in 1936 concerning the Renault assembly plant in the île Seguin, close to Paris, that the line was "driving the workers at a

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[6] Guillaume Le Blond, "Artillerie," in *Supplément à l'Encyclopédie* (Amsterdam, 1776), 1, 617 in Ken Alder, *Engineering the Revolution: Arms and Enlightenment in France, 1763-1815* (Princeton, N.J., 1997), 89.

[7] Emile Cheysson, *Le Rôle social de l'ingénieur* (1897)*, in Œuvres Choisies* (Paris, 1911), 2, 32.

[8] Henry Ford with Samuel Crowther, *Today and Tomorrow* (Garden City, N.J., 1926), 198.

[9] Ernest Mattern, *Création, organisation et direction des usines* (Paris, 1925), 250 (emphasis added).

furious rate [...] always faster [...] to exhaustion."[10] The Soviet writer Ilia Erenburg, in his novel written from Citroën, did not miss the point:

> Pierre stopped commanding the machine; the machine began to command him. Now, he is fixing the stirrups. He has forgotten human fraternity. He understood one thing: it is impossible to change anything. The line is working. Against it, all arguments are powerless.[11]

It was not only workers, politicians, and writers, but also sociologists who used the vocabulary of command and control. In a conference held in Toulouse in 1941, Georges Friedmann, the founder of the French sociology of labor, pointed out:

> One might suppose that this fragmented work with a compulsory rate, not bringing into play the worker's personality, will seem unpleasant and boring to all the operators, whatever their character. Now, many of them declared themselves pleased, because the constraint of the pace triggered off to them a saving of voluntary decisions that are very tiring. They like this economy that is restful to them. When the work is fixed in this way by a collective rate, the belt itself is holding the role that, in a bicycle team, the head cyclist, driving his fellows, is playing, that of the *leader*. ...The belt is playing the role of a sort of an artificial *leader* that drives its team and spares him any expense of will.[12]

Thus *auctoritates* are not only written texts, they are also material entities as tools, artifacts, machines, plants, and buildings. A dictator like

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[10] P. Delon, *L'Humanité*, 29 Nov. 1936, quoted by Aimée Moutet, *La rationalisation industrielle dans l'économie française au XXe siècle. Étude sur les rapports entre changements d'organisation technique et problèmes sociaux (1900-1939)* (Ph.D. diss., Université Paris, X-Nanterre, 1992), 1442.

[11] Ilya Ehrenbourg, *10 C. V.* (Paris, 1930), 47. A writer who had long been a worker, particularly in the Berliet, Renault and Citroën automobile plants during the 1920s and 1930s described the rate of the machines as opposed to the authority of the masters: "Still more than the insistence of the managers and masters [chefs], the tremendous tom-tom of the machines sped our gestures," Georges Navel, *Travaux* (1945, Paris, 1979), 101.

[12] Georges Friedmann, "Esquisse d'une psycho-sociologie du travail à la chaîne," *Journal de Psychologie normale et pathologique* 41 (1948): 134. One can find the same vocabulary in very recent historical and sociological works, such as this by Nicolas Hatzfeld: "All institutions are forming a powerful network of instructions. This network may go through installations, as the productive flow, or be strictly hierarchical," Nicolas Hatzfeld, *Les gens d'usine: 50 ans d'histoire à Peugeot-Sochaux* (Paris, 2002), 67. See also Yves Clot, Jean-Yves Rochex and Yves Schwartz, *Les caprices du flux. Les mutations technologiques du point de vue de ceux qui les vivent* (Vigneux, 1990); and Stéphane Beaud and Michel Pialoux, *Retour sur la condition ouvrière: Enquête aux usines Peugeot de Sochaux-Montbéliard* (Paris, 1999).

Hitler did not ignore this and even used it as a technology to increase his global authority. In presenting Speer's and others architectural projects in 1937, he declared: "Our buildings are rising in order to increase our authority."[13] Authority is not only human; it has a circular effect. In addition, I have long had the impression that, in the history of the Soviet Union, matter, organized matter, or in Chandlerian terms, the organizational capabilities (the association of materiality and knowledge) were unable to hold society as strongly as in capitalist countries.[14] Of course, this brings to mind the socio-technical networks of Bruno Latour and Michel Callon.[15] The 2004 Business History Conference meeting theme, "Networks," prompted me to apply actor-network theory to authority, insofar as one can speak of it as an "application." It is not difficult to find in human actors' discourse recognition of the agency of artifacts as part of the command system and authority. Scripts and artifacts are not equivalent and do not act the same way. The authority of the material cannot be interpreted as "symbolic," or at least as only symbolic: the working principle is far from being made only of symbols. If buildings above all and the material order of things may also be designed as symbols, there is a combination with a very material agency and some kind of an esthetical effect.[16] I would disagree that there is a perfect symmetry between humans and non-humans. Artifacts have no discourse, but a material impact (and, among other effects, they have their share in the circulation of authority). The "spokespersons" (in Latourian terms) of

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[13] Speech at the Kulturtagung of the Nur.g Parteitag of 1937, published in Norman H. Baynes, ed., *The Speeches of Adolf Hitler, April 1922-August 1939,* 2 vols. (London, 1942), 1: 593, quoted by Eric Michaud, *The Cult of Art in Nazi Germany* (Stanford, Calif., 2004), 14 (thanks to Eric Michaud for this reference).

[14] Alfred D. Chandler, Jr., *Scale and Scope*: *the Dynamics of Industrial Capitalism* (Cambridge, Mass., 1990).

[15] Michel Callon and John Law, "L'irruption des non-humains dans les sciences humaines: quelques leçons tirées de la sociologie des sciences et des techniques," in *Les limites de la rationalité,* vol. 2. *Les figures du collectif*, ed. Bénédicte Reynaud (Paris, 1997). Bruno Latour, *L'espoir de Pandore: Pour une version réaliste de l'activité scientifique* (Paris, 2001) and "Une sociologie sans objet? Remarques sur l'interobjectivité," *Sociologie du travail* 36 (October-Dec. 1994): 587-609. See also the very suggestive Madeleine Akrich, "Les objets techniques et leurs utilisateurs: De la conception à l'action," in *Les objets dans l'action*, ed. Bernard Conein, Nicolas Dodier, and Laurent Thévenot (Paris, 1993), 35-58.

[16] The authors may have explicitly thought of the tidiness of the shops as symbolic. So Bergery, master of industrial education and modern management, wrote as early as 1831: "The material order of the shops, well arranged, tidy, swept out twice a day, symbolizes the good organization of the company," Claude-Lucien Bergery, *Économie industrielle [ou Science de l'industrie] (*Metz, 1831), quoted by Michelle Perrot, "Travailler et produire: Claude-Lucien Bergery et les débuts du management en France," in *Mélanges d'Histoire sociale offerts à Jean Maitron* (Paris, 1976), 189.

both humans and artifacts are, indeed, human, but the artifacts have no power to choose or elect them: there is no symmetry there.

Nowadays, to a large extent, the disappearance of the classical industrial landscape also means the loss of a source of authority that is likely to be a part of the much-acclaimed crisis of authority.[17] The visible order of industrial production is vanishing. Huge, ordinary industrial plants helped give order to societies. Now, the disorder of things is simply less visible, hidden as it is in the depths of our computer memories and hard disks or of our ignorance of system management. A new order is probably looking to succeed it or to accompany the industrial. It is worth noticing that the latter is weakening at a time when Nature has lost her own stability.

Continuous Flow, Continuous Authority, and the Soviet Problem

The Soviet experience led us to focus more on the specific problem of the continuity of production flow. Discontinuity was a constant, major problem for Soviet industrial management at every level, from the factory floor to the very top (to Stalin and his companions) right to the end. My most important assumption is that if the over-centralized Stalinist rule provoked constant discontinuity in production throughout the country, this discontinuity, in turn, hampered the stability of human and organizational authority. The latter could not derive strength from, or depend on, the material flow. This helped authority remain more personal, more "domestic" as the sociologists Luc Boltanski and Laurent Thévenot would write: the less matter could be trusted, the more authority rested on human relationships.[18]

To clarify, I present the construction of a continuous industrial authority to preserve the continuity of production flow, in particular through the experience of the French engineer Fayol in the late nineteenth century. Then I depict the Soviet rulers' problems at the end of the 1920s and during the 1930s. The initial difficulty was the plan itself and the arbitrary management from Stalin *en personne*. This had direct effects at both the firm and shop floor levels. I see the search for solutions during the 1930s as either recourse to criminal justice to help industry continuity, or recourse to technical management devices such as dispatching. Finally, I believe that a large part of the authority effect of industrial materiality that could not come from its physical presence to act directly on people, had to come from the representation of authority through the enlistment

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[17] On the contrary, on the machine and workplace levels, material leadership, through a great diversity of entangled hard and soft devices, seems to be far tighter. See Shoshana Zuboff, *In the Age of the Smart Machine: The Future of Work and Power* (New York, 1988); Hatzfeld, *Les gens d'usine*.

[18] Luc Boltanskiand and Laurent Thévenot, *De la justification: Les économies de la grandeur* (Paris, 1991).

of the media (using the press and artistic aids such as photographs or films) at least until the war.

Fayol and the Two Continuities

Contrary to the permanency of Nature, the continuity of productive throughput is far from natural: it must be built using very complex coordination devices, both material and human. Thus, not only the material order, but also the continuity of the production flow has to be closely maintained and protected. There is a close relationship between the continuity of the flow and industrial authority from the very beginning of the building of a new order, the industrial one. Briefly, in order to maintain the flow, not only authority but also continuity is needed. This institutional continuity can be thought of as short of the diversity of the administrative structures Alfred Chandler studied, because this made the industrial order as such.

Alfred Chandler has shown American industrial managers' fundamental concern for administrative coordination during the second half of the nineteenth century.[19] The research of Henri Fayol (1841-1925), one of the main proponents of an administrative science, was first concerned, as early as the beginning of the 1860s, not only with administrative coordination but also with an unceasing administrative presence. This is important: it was not only concern for form or structure, but for administrative activity to directly maintain continuous flow.[20] Substitute posts were established for every position. One of the phrases Fayol noted in the 1860s read: "The authority must always be represented." There had been an incident in a mining pit in May 1861. Fayol, a young engineer, could not replace a horse with a broken leg, because this required the signature of the director, who was absent. The mining activity was interrupted.[21] From then on, Fayol developed a pattern of action, that can be summarized by the following operations: a) establish substitute posts for every position, b) secure the constant presence of a manager close to productive activity, c) inform and report to the absent manager, d) systematically train substitutes through mutual assistance, e) this leading to the conception of an executive staff. For continuous flow, authority had to be permanent and ever-present, with all its consequences. Fayol, in his position, like other managers, was instituting industrial order. The interaction between both continuities, material and administrative, with their specific but, hopefully, closely

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[19] Alfred D. Chandler, Jr., *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, Mass., 1977).

[20] Henri Fayol, *Industrial and General Administration* (1st French publication, 1916) (London, 1930).

[21] Henri Fayol, "Observations et expériences personnelles (1916)," in *Henri Fayol: Inventeur des outils de gestion*, ed. Jean-Louis Peaucelle (Paris, 2003), 90-1.

connected operations, built the specificity of the industrial order vis-à-vis the political, the military, the trade, or the family.[22]

Planning and Arbitrary Against the Flow

In the West as long as the administrative framework is operating continuously, there is no apparent problem with the continuity of the flow of production. No one would question the reality of the throughput and its regularity as long as the management was working hard to maintain it. This is not an easy task, as business history researchers have demonstrated. However, in the West regular throughput was almost an unquestionable reality. For the Soviets, from the launch of the First Five Year Plan in 1929, the point was to build a communist industrial order. It was the building of the relevant public order that was primary in this industrial effort, not the maintenance of the material productive flow. This priority led to a completely different set of problems: the insuperable and obscure entanglement of multiple hierarchies; the impossibility of maintaining productive continuity because of the nature of both the planning itself and of the arbitrary rule from the top; and, as a result, organized matter could not guide human action.

From the very beginning, the plan proved unable to seriously plan all economic activities. For example, by the time the plan was adopted, in May 1929, it had already been rendered obsolete by new directives. With respect to agriculture, it had proposed modest measures and had not envisaged the collectivization that was accelerated and radicalized beginning in 1929. This, of course, had a direct effect on all industrial planning.[23] Once launched, the plan posed a major problem for managers that plagued all efforts to fulfill its obligations for materials procurement. The procurement problem induced managers to permanently set a "safety factor in the production program." It was not enough. As the first scholar of the history of Soviet management pointed out, "the Soviet system expects a man to foresee all irregularities, which is impossible." "Prudence therefore requires the manager to anticipate interruptions in the flow of his supplies."[24] This phenomenon urged managers to reintroduce market relations into the system in order to operate the plan. The Stalinist leadership refused to recognize these practices as legal, notwithstanding

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[22] Yves Cohen, "Fayol, un instituteur de l'ordre industriel," *Entreprises et histoire*, 34 (Dec. 2003) : 29-67. Many of these orders also coupled an institutional continuity principle with an action sphere.

[23] Eugène Zaleski, *Planning for Economic Growth in Soviet Union, 1918-1932* (Chapel Hill, N.C., 1971).

[24] Joseph S. Berliner, *Factory and Manager in the USSR* (Cambridge, Mass., 1957), 88, 91. Also David Granick, *The Management of the Industrial Firm in the USSR: A Study in Soviet Economic Planning* (New York, 1954).

fierce internal discussions. The plan hardly constituted actual planning, but it remained as a symbolic, political, legal, and propaganda beacon.[25]

Spontaneous adjustment was not only illegal, but also extremely haphazard. As Berliner brilliantly established, an intermediary social layer, the *tolkachi*, pushers, formed to help the factories obtain materials and parts that were missing or in short supply; thus helping factories to fulfill their plans and in de-organizing the other factories' plans.[26] Berliner narrated the story of a manager (his informant) walking with him in the streets of Munich, amazed whenever they passed a retail hardware store: "It was the idea that one could simply go into any hardware store and buy anything he needed that represented the most striking contrast between two economic systems. The fascination with the fact that in other countries one can simply 'pick up the phone' and get anything from a repair job to a keg of nails is from time to time reflected even in Soviet writings."[27] This Soviet experience helps us understand how those micro market adjustments are as necessary to the success of establishing organized continuous throughput as Fayol's continuous hierarchy or subcontracting relations.

Commands from the top were highly disruptive of the flow, as illustrated by two examples from the Putilov Works in Leningrad. In the course of the First Five Year Plan, which foresaw a maximum of 5,000 units per year, the factory was ordered to produce 3000 Fordson tractors in 1929, 12,000 in 1930 (the demand for 10,000, which came very late in 1929, was abruptly increased to 12,000 in December), and 32,000 in 1931.

Subsequently, Soviet tractor manufacturing was transferred to new, huge, specialized factories in Stalingrad and Cheliabinsk. Putilov decided to use its experience in "mass" manufacturing Fordsons to convert its workshops into an assembly line and produce a Buick model. A few dozen cars were made in 1932 before production was suddenly stopped. Stalin himself interrupted automobile production because there was no question of releasing three million rubles of hard currency for the equipment needed by the workshops. It was the manufacture of tanks that would finally solve the problem of reviving the idle tractor shops, with assembling the T-26, quickly followed by the T-28.[28]

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[25] Moshe Lewin, "The Disappearance of Planning in the Plan," *Slavic Review* 32 (June 1973): 271-287.

[26] Berliner, *Factory and Manager in the USSR*, 297-231, Granick, *Management of the Industrial Firm*, 147. Also Robert W. Davies, *The Soviet Economy in Turmoil, 1929-1930* (Cambridge, Mass., 1989), 485n. Barrington Moore, Jr., *Terror and Progress: USSR* (Cambridge, Mass., 1954), compared the *tolkachi* with the expediters of the U.S. Army.

[27] Berliner, *Factory and Manager in the USSR*, 77.

[28] O. Hlevnûk, R. U. Devis, L. P. Košeleva, E. A. Ris, and L. A. Rogovaâ, *Stalin i Kaganovič: Perepiska, 1931-1936 gg (Stalin and Kaganovič: Correspondence, 1931-1936)* (Moscow, 2001), 191; Yves Cohen, "The Soviet Fordson: Between the Politics of Stalin and the Philosophy of Ford, 1924-1932," in *Ford, 1903-2003:*

Thus, the upper echelons could intervene at will and provoke major disruptions in the factories' productive capacity. Management at the factory level engaged in similar behavior. In the years surrounding 1930, there was a deep and wide-ranging debate among managers about what management signified. In the press, this debate was full of slogans and accusations, mostly reflecting pressure from the top, often from Stalin himself. Within factories, managers were tackling concrete problems and trying to find their way, their own vocabulary, and to create or adapt solutions. This effort did not take place in a peaceful atmosphere. For example, summer 1930 was a time of terror for the engineers trained under the Old Regime. There were many arrests, and the "Industrial Party" trial produced some death sentences.[29] Arrests also occurred at the Putilov Factory and internal discussion became increasingly strained.[30] The competition between vertical hierarchy and functional norm bureaus was at the core of the debate. As in all spheres of the Soviet production apparatus, work norms have been vigorously criticized because they were allegedly established without any relation to the actual production process.[31] One of these discussions was held on August 30, 1930, when less than a third of the planned objective for tractor manufacturing had been attained. In terms much like Fayol's, a representative of some Leningrad industrial bureaucracy criticized the action of the Putilov Technical Norms Bureaus (TNB) and the production management:

> There is no *permanent* management. … You could understand that *summoning* norm setters separately for discussion is no management. The management has to consist of a *permanent* staff of instructors, of periodic listening of *reports* from the shop TNB about the plan that has to be set and, among other things, there has to be a *constant supervision* of the work. Maybe it would be necessary to *visit* the shop floor more often and to *summon* more often the managerial staff for an *exchange of experiences*. So, this is the way I understand management [*rukovodstvo*]. …[The TNB] are running their work in

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The European History, ed. Hubert Bonin, Yannick Lung, and Steven Tolliday (Paris, 2003), 531-558.

[29] Kendall E. Bailes, *Technology and Society under Lenin and Stalin (1917-1941)* (Princeton, N.J., 1978); Nicolas Lampert, *The Technical Intelligentsia and the Soviet State: A Study of Soviet Managers and Technicians, 1928-1935* (London, 1979).

[30] Clayton Black, *Answering for Bacchanalia: Management, Authority, and the Putilov Tractor Program* (Pittsburgh, Pa., 2002).

[31] Lewis H. Siegelbaum, "Soviet Norm Determination in Theory and Practice, 1917-1941," *Soviet Studies* 36 (Jan. 1984): 45-68.

> following the events arising in the shops, so the planned and periodical works, they do not carry them out.[32]

This is a very accurate depiction of actual Soviet industrial management at other levels. The Fayolist (although there was no direct link to Fayol) question of management continuity, with all its consequences, was crucial not just with regard to securing the continuity of production flow, but for any production. Of course, nobody raised questions concerning Stalin's personal actions.[33]

I will no longer insist on the extremely complex intricacies of the multiple intertwining hierarchies having or gaining their say in factory affairs, which made the entire industrial hierarchical structure unstable, unreliable, and definitely poorly liable.[34] Any factory had to bear the more or less permanent encroachments of various bureaucratic structures of economic, control, inspection, police, and judicial natures.[35]

Therefore, fundamental institutional reasons peculiar to the Soviet situation in the1930s made it extremely difficult to maintain the flow. This in turn meant that the flow could not help to secure authority. We are far removed from the late nineteenth-century American "uniformity system" described by David Noble:

> The performance criteria of uniformity necessitated the establishment of *command* over all productive operations, heretofore relatively autonomous. This was affected by the establishment of an ongoing bureaucracy, in Smith's words, for the "specific regulations of the total production process from the initial distribution of stock to the final accounting of costs." The whole system came to be viewed as a "complex machine." And, at the heart of the system were the *modern methods* of manufacture, the physical embodiment of "fixed orders:" the hardened steel gauges, the patterns, the special machines and fixtures, which replaced human craft skill in

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[32] Central'nyj Gosudarstvennyj Arhiv Sankt-Peterburga [Central State Archive of St-Petersburg], 1788/23/123/256, Stenographic account of the meeting of the Labor Economics Department staff (Red Putilov), 30 Aug. 1930, 4 (emphasis added).

[33] For hints on Stalin gaining some "realism" in setting the Second Five Year Plan, see R. W. Davies, "The Management of Soviet Industry," in *Social Dimensions of Soviet Industrialization,* ed. William G. Rosenberg and Lewis H. Siegelbaum (Bloomington, Ind., 1993), 104-123.

[34] Hiroaki Kuromiya, *Stalin's Industrial Revolution: Politics and Workers: 1928-1932* (Cambridge, U.K., 1988); David R. Shearer, *Industry, State, and Society in Stalin's Russia, 1926-1934* (Ithaca, N.Y., 1996).

[35] E. g., David R. Shearer, "Factories within Factories. Changes in the Structure of work and Management in Soviet Machine Building Factories, 1926-1934," in *Social Dimensions of Soviet Industrialization,* ed. William G. Rosenberg and Lewis H. Siegelbaum (Bloomington, Ind., 1993), 193-222.

> producing, testing, and evaluating parts, and thereby eliminated human error and ensured uniformity.[36]

In addition, not only was materiality incapable of guiding action, it was expressly deprived of any authority—all of this, of course, was rather paradoxical in a country that was officially led by a materialist ideology.

It is somewhat surprising that the negation of "objective conditions" was actually one of the philosophical foundations of Stalin's modus operandi. There was a clearly pragmatic reason for this: denying matter any responsibility provided sound reasons for always accusing people. In autumn 1929, in an atmosphere of intense mobilization, the "staff" of the Machine chief administration in the Supreme Economic Council "received their 'fighting orders,'" as David Shearer tells:

> Their instructions were to place orders, regardless of circumstance. "Listen to no excuses… about 'objective conditions,' Tolokontsev [head of this administration] instructed them, "accept no arguments about the lack of labor, metal, or technical personnel. We're familiar with the deaf resistance of our factory directors, and it cannot be tolerated."[37]

Life at the Putilov Works provides many similar examples.

This attitude culminated in 1935 with the repression of managers and members of the high technical and academic staff in the railway system who were defending what the Stalinist leadership called the "anti-state theory of the limit." The Stalinists were arguing that a daily loading of 66,000 wagons throughout the Union was quite feasible in 1936, compared to 55,717 in 1934. The railway administration and research institute countered that 58,000 wagons "was a maximum limit, given the state of track and rolling stock" and that there was no way to improve performance unless substantial investments were made. Stalin himself intervened in the debate. Just talking about objective limits was ruinous.[38] Thus, the matter had to be authorized by an appropriately authoritative human voice. A. Rees remarks that it was at this point in time that the

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[36] David F. Noble, "Command Performance: A Perspective on Military Enterprise and Technological Change," in *Military Enterprise and Technological Change* ed. Merritt Roe Smith (Cambridge, Mass., 1985), 336, quoting M. R. Smith, "Army Ordnance and the "American system" of Manufacturing, 1815-1861," ibid., 74 (emphasis is Noble's). Costly high productivity American machine-tools, imported at the expense of some 6 million peasants dead from hunger, were often left gathering rust in the courtyards throughout the Soviet Union.

[37] Shearer, *Industry*, 100.

[38] E. A. Rees, "The People's Commissariat of Transport (Railways)," in *Decision-making in the Stalinist Command Economy, 1932-37*, ed. E. A. Rees (London, 1997), 220. See also E. A. Rees, *Stalinism and Soviet Rail Transport, 1928-1941* (London, 1995); Francesco Benvenuti, *Stakhanovism and Stalinism, 1934-1938* (University of Birmingham, CREES Discussion Papers, Soviet Industrialisation Project Series, no. 30, 1989), 19.

1931 slogan "Technology decides everything" was replaced by "Cadres decide everything," because it was necessary to "master the technology."

Vocal Cords, Rules, and Matter

There was failure on all sides. Organized matter was not reliable and could not be used for enforcement. Neither were rules, which were constantly disputed by human disruption. In my reading of the scholarly literature devoted to the Soviet industrial management, I have been struck by a sentence which Robert W. Davies reported from the account of a former Soviet engineer in 1967, Tochinsky. The latter was reminded that he told Ordžonikidze, the head of the Supreme Council for Economy, in 1931, "that many leaders of industry 'led with their vocal cords' but were afraid to reveal the real position."[39] If they led with their vocal cords, what did not they lead with? It seems to me that there was a lack of stability everywhere, which would help in leading and consolidating authority.

First, from the perspective of the rules, those describing the functions of the enterprise and of the diverse officials were constantly competing with voices from the top and from a number of more or less repressive bureaucracies, which can also be placed within the whole party-police-state system. So, on the one hand, as Berliner emphasized, "differences in personalities [were] extremely important in the explanation of the actions of individual enterprises." The character of an enterprise and the role of the various officials depended on individual personalities and their actions.[40] On the other hand, the actual productive performance of the enterprise was of no help: either it was impossible to reach the planned objectives or it was possible, but only through illegal practices and fictitious reporting. As Tochinsky noted: "A psychological situation is created; you won't reach the plan, and so you don't care whether you get 80 percent or 60 percent." Thus, a material process with fixed objectives could not serve as support, but involved a much more complex situation including reporting, that no market could verify or judge. This gave more importance to individual actions and dependence on personalities. More than elsewhere, the human and personal authority, at every level, must always (with no enduring institutional or material support) recapture and resolve the failures of the flow.[41] Only the "vocal cords" were left for leading. Actually, vocal cords are also material: they are a part of the materiality of the human physical commitment to action, that deals with the linguistic—not only the phonetic (another aspect is physical movement or any kind of spatial act such as summoning or visiting, as already discussed).

Because of the weaknesses of both institutions and material support, to make the industrial process more accountable and reliable and

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[39] Quoted by Davies, "The Management," 113.
[40] Berliner, *Factory and Manager in the USSR,* 355, n. 12.
[41] Quoted by Davies, "The Management," 113.

to restore the continuity of productive flow, there was innovative recourse to unusual institutions and materiality. Industrial business being a state activity, the Law was fully put into play, which was perfectly logical because everything rested on the managers' personal responsibility. In addition, dispatching, as a very material managerial tool, was commonly utilized. Of course, those two examples do not presume to exhaust the extent of the Soviet management problems and solutions.

Criminal Justice into Play

Law must be considered only a part of the complex framework that comprised industry's institutional side. It was not only the government's distinctive control apparatus (shared with the party) that supervised industrial activity with the advent of Soviet power, but also the political police who were inducted into this task starting at the end of the 1920s.[42] As early as 1928, Lazar Kaganovič, a secretary of the party Central Committee close to Stalin, proposed that the general secretary install permanent representatives of the GPU (the political police) within the industrial trusts in order to exert a continuous supervision on the "economic institutions."[43] It was another aspect of the search for institutional continuity. Much has been written about the management of the Soviet Union as an enterprise. However, not only has the end goal of industrial activity (which was not capitalist profit) yet to be unequivocally established, but it also can be said that the Soviet system was infinitely more intricate than any enterprise.[44] The study of the police, of the state and party control, of justice, of Stalin's personal ruling practice, all the closely dedicated state and party institutions, even of art and the press, as we shall see, are part of the study of industrial management.

Thus, the First Five Year Plan led to closer insertion of the law. As Peter Solomon wrote:

> Since the factories, new and old, were owned and managed by the state, the criminal sanction was readily available as a tool of management. In fact, the criminal law offered a natural supplement to the disciplinary sanctions available to the owners and managers of private firms in other countries, especially when the man in charge of the industrialization drive was Joseph Stalin.[45]

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[42] E. A. Rees, *State Control in Soviet Russia*: *The Rise and Fall of the Workers' and Peasants' Inspectorate, 1920-34* (London, 1987).

[43] Rossijskij Gosudarstvennyj Arhiv Social'no-Političeskoj Istorij [Russian State Archive of Socio-Political History], 81/3/120/51-4, Harkov, letter of Lazar Kaganovič to Stalin, 26 April 1928.

[44] One of the first proposals was Alfred Meyer's "USSR Incorporated," *Slavic Review* 20 (Sept. 1961): 369-376.

[45] Peter R. Solomon, *Soviet Criminal Justice under Stalin* (Cambridge, U.K., 1996), 137. See also, Peter R. Solomon "Criminal Justice and the Industrial

There was a progressive criminalization of ordinary productive acts: with accidents and poor quality goods, production breakdowns were the main motives for judicial prosecution.

Beginning in the second half of 1929, it became a crime to deliver defective or substandard goods. Even the damaging of machines, which often occurred because many workers came directly from the countryside and had never seen a machine tool before, became "petty wrecking." Criminal justice was encouraged to create industrial departments of regional procurement offices. Procurers had to form regular connections with the managing staff of important factories. Visits to these factories were organized specifically to check potential reasons for breakdowns; assistant groups were created within factories to provide relevant signals. As Peter R. Solomon puts it, "the conduct of these on-site visits to factories, known colloquially as 'surveys' or 'mass check ups' or 'raids,' became part of the procuracy's function of general supervision."[46] More generally, this activity became part of the state permanent supervision that was the institutional aspect of industrial management. Actually, the procuracies had so much to do throughout the country in the juncture of collectivization and industrialization drives that this integration of criminal justice in day-to-day management proved very difficult to develop. Only some regions, such as Leningrad, effectively and seriously implemented this reform.

The tasks were further complicated by fluctuations in the prosecution policy against "specialists." Beginning in 1931, the engineers were protected from political attacks. The number of accused persons decreased; "middle and lower level 'officials' (shop foremen, supervisors of railway depots) received the brunt of industrial prosecutions" rather than the bosses.[47] Some judges even complained that managers enjoyed too much protection. The concern for continuity of the production process led to cases such as one in which a manager "had received a year's corrective work for the rape of a 14-year-old maid, as the judge put it, 'so as to avoid a break from production.'"[48]

Taken as a whole, the intervention of criminal justice was a failure: "Overall, though, the Soviet government lacked the capacity to police industry for failures in the production process."[49] Not only did criminal repression prove unable to restore efficiency, continuity, and trust in production, but this failure in turn contributed to affecting the authority of the law, at a lower level than did its role in forced collectivization. Peter

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Front," in *Social Dimensions of Soviet Industrialization,* ed. William G. Rosenberg and Lewis H. Siegelbaum (Bloomington, Ind., 1993), 223-247. This paragraph is drawn from these two works.

[46] Solomon, *Soviet Criminal Justice*, 141.

[47] Ibid., 142.

[48] Ibid.

[49] Ibid.

Solomon argued, "the main function [of criminal repression] turned out to be explanatory or symbolic in character."[50]

This was a failure of the government institutional side of the industrial authority problem. Industrial management was also responsible for restoring the continuity of productive flow, and here, too, there was a failure: of the implementation of dispatching as a major management tool in the factories during the1930s. Here, if I may say so, the endeavor consisted of making the management material.

The Material Ideal of Automatic Administration

I am always struck when visiting Russia, as well as when studying its industrial history, by the importance of dispatching and dispatchers as very familiar phenomena and persona in ordinary life, much more, it seems to me than elsewhere. Actually, dispatching became prominent in the thirties. It was intended to solve acute management problems and was tentatively generalized during 1937-1938, at the highest point of mass repression.[51] Dispatching has been given much more space and a much higher position in the factory than in capitalist firms. The chief-dispatcher was very often the production manager with the title of factory deputy director. This position gained control of the factory planning departments that were very decisive organs in Soviet companies.[52] In the West, dispatching offices or departments were more often under the supervision of planning departments.[53]

The main question to be solved by dispatching was the extreme difficulty of coordinating production within factories because of chronic irregularities in procurement. In a book written at the time on the implementation of dispatching in the pioneering region of Leningrad, G. V. Cihotskij underlined critical decreases in internal written communication, the cost cuts, jolts and breakdowns, and the fall of the ration of uncompleted end-products when the system worked well enough.[54] What one would actually conclude from an historical inquiry is not known.

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[50] Solomon, "Criminal Justice," 223.

[51] Mark R. Beissinger, *Scientific Management, Socialist Discipline, and Soviet Power* (Cambridge, Mass., 1988), 145.

[52] Yves Cohen, "Administration, politique et techniques: Réflexions sur la matérialité des pratiques administratives dans la Russie stalinienne (1922-1940)," *Cahiers du monde russe* 44 (August-Sept. 2003): 269-307.

[53] See Dexter S. Kimball, *Principles of Industrial Organization* (1913, New York, 1933), § 123; William B. Cornell, *Organization and Management in Industry and Business* (1928, New York, 1947), 670 and following pages.

[54] G. V. Cihotskij, "Dispetcherizatsia v tiazheloi promyshlennosti" [The Dispatching in Heavy Industry], in N. L. Zaitsev, ed., *Dispetcherizatsia v leningradskoi promyshlennosti* [Dispatching in Leningrad's Industry] (Leningrad, 1935), 54-72.

What can be said is that dispatching had some advantages. First, it was conceived of as a system to organize the implementation of a plan that could not have meaning in the Soviet context of the1930s. Secondly, just as with functional organization, it was an import from America; but unlike functional organization, dispatching enhanced the verticality of the administration and command system. It was depicted as a "centralized, complex and operational production management system." At the beginning of the1930s, there was a coordinated attack from the very top against functional organization. *Funcionalka* had been implemented in the entire industrial system during the 1920s, at a time when the scientific management craze was more widespread that it has been in any country. The Stalinist leadership concluded in the end that the functional system was a very bureaucratic practice that complicated and hampered operational management. Dispatching appeared as the next panacea, with the advantage of being highly centralized: "With the dispatching, there is no more side management of the shops."[55]

During the Great Terror of 1937 to 1938, dispatching became the main axis of industrial management reform and the dispatcher was considered as its "central figure." The People's Commissariat of Heavy Industry was reorganized; new departments were created in their main organs. Dispatchers peopled these departments. They had to go and stay relatively long at their branch factories in order to install dispatching systems. These dispatchers were very young engineers, and they replaced victims of repression who were, at that time, mostly managers and engineers trained during the Soviet era. Dispatching epitomized the verticality of the power within the factory (power outside was strictly vertical as well).[56]

However, dispatching had an important third feature: it was a very material management tool. Not only was it composed of cards and boards in various locations, giving new embodiment to the file systems the Bolshevik administrators were fond of, but the orders also had to (hopefully) be conveyed by electric signal systems. This might provide an incarnation of the ideal of automatic administration. To secure the continuity of flow, trust was moved to the materiality of the file systems and the communication switches: cards and signals should have shown enough authority to do away with interruptions.[57] Effective throughput

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[55] Ibid., 66.

[56] Rossijskij Gosudarstvennyj Arhiv Ekonomiki [Russian State Archive of the Economy], 7297/28/40a/8, report of Nikolaev, head of the People's Commissariat of Heavy Industry Control and Inspection Central Group to L. Kaganovič, the Commissar, without date (after May 1938).

[57] Long and costly research and development was devoted to signal systems in continuous and non-continuous production plants already in the early1930s, Cihotskij, "Dispetcherizatsia v tiazheloi promyshlennosti," 56.

was supposed to be materialized by a very modern material management system.

Dispatching had no more success than criminal justice in restoring fluidity. Just as had every "system" in the Soviet environment, it dissolved, unable to overcome the chaos it was supposed to fight. The dispatcher remained a familiar figure in economic and administrative institutions. In industry, it often merely transformed into a form of a *pusher*, that is the person in charge of finding missing materials and parts, as we have seen.[58] Materiality as well as institutions proved unable to save the continuity of production flow.

A Display Industry

Within the framework of Stalinist rule, industry was part of a political landscape or, more accurately, of a political offensive against internal and external enemies. Its efficiency did not only have to be material. It had to first be political. In creating this efficiency, the materiality of industrial success mattered even less than its image. If the image had been able to convey the materiality of success, the end would have been attained.

This affected the understanding of modern production systems, such as the assembly line and more. In concert with the plan's criteria, the priority of image led to a focus only on the output. The question was not only the image of factories and production processes. Citroën built a new assembly plant in Paris in 1933, *quai de Javel*. There was an actual *Inszenierung* of the final two assembly lines that were coming to the Seine in a huge new assembly hall that also functioned as an exhibition space. Citroën rebuilt the entire production system with its complex material coordination and interdependencies as carefully as he designed this hall and published photographs of it taken from his office located in the axis on the second floor. There was a consistency between image and material reality.[59]

All commentators on Soviet Fordism have underlined an interesting phenomenon. They all point out that the Russians found it very difficult to understand the principles and lessons of large-scale production and remained stuck on only the most visible aspects. Frank Bennet, a Ford executive who was sent to the factory at Nijni Novgorod when it began production, noted that the Russians did not understand that a problem in even a small operation affected the entire line. They were not concerned with the necessary cohesion of the whole, down to the smallest details; all efforts were directed towards producing the maximum number at any cost.

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[58] Granick, *Management of the Industrial Firm*, 110-9.

[59] Olivier Cinqualbre and Yves Cohen, "L'usine de la grande série: André Citroën, quai de Javel," *Monuments Historiques* 134 (Aug.-Sept. 1984): 15-22. Yves Cohen, "The Modernization of Production in the French Automobile Industry Between the Wars: A Photographic Essay," *Business History Review* 65 (Winter 1991): 754-780.

The primary requirement was quantity. The most striking part of the Fordist system had always been the assembly line. All the material interdependencies essential for its smooth operation were hardly visible.[60] What immediately impressed the fascinated gaze of those who saw the constant rolling out of products was only the most external face of the Ford phenomenon.

A number of examples can be found to illustrate this point. One of the fundamental tenets of the Ford system is the minimization of hard manual labor and its replacement by machines. The Russians, however, had a very different outlook on manual labor, which was traditionally greatly respected. They could not come to grips with the fundamental Ford concept of the mechanization and elimination of all possible human effort. The Soviet "rationalizers" latched onto the backbone of the American production system without taking into account the other necessary requirements, for example in the field of handling work. As a consequence, it often happened that handling workers were paid more than semi-skilled workers.[61] Here we have a borrowing of production techniques, but these techniques were not "applied:" first, they were translated and interpreted within pre-existing and entangled practices and conceptions; second they were inserted into an industry display policy.[62]

The production of the Fordson tractor by the Leningrad factory Red Putilov provides another illustration. Even if this tractor was not the best suited to Russia's immense fields, it had to be produced because it was Ford's, the hero of the new production world. Until 1931, its parts were not interchangeable, even when the assembly line was put in motion at that time. Compared side-by-side, a Fordson and a Fordzon-Putilovets were like brothers. The external resemblance was enough for Stalin to establish the glory of the American tractor in the Soviet fields and to fulfill his political goal to collectivize the countryside and eradicate the kulaks. No matter if the tractor was constantly breaking down because of its extremely poorly manufactured crankshafts and worm drives.[63]

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[60] Mira Wilkins and Frank Ernest Hill, *American Business Abroad: Ford on Six Continents* (Detroit, 1964), 221.

[61] Shearer, *Industry*, 215 and S. Shvedov, "Obraz Genri Ford v sovetskoi publitsistike 1920-1930-kh godov: vospriiatie i transformatsiia tsennostei chuzhoi kul'tury" [The Image of Henry Ford in Soviet books and the Press during the Years 1920-1930: Acquisition and Transformation of Values from a Foreign Culture], in O. E. Tuganova, ed., *Vzaimodeistvie kul'tur SSSR i SShA XVIII-XX vv* [Reciprocal Action between the Cultures of the USSR and the United States between the Eighteenth and Twentieth Centuries] (Moscow, 1987), 138-9.

[62] Jonathan Zeitlin, "Productive Alternatives: Flexibility, Governance, and Strategic Choice in Industrial History," in *Business History Around the World at the End of the Twentieth Century*, ed. Franco Amatori and Geoffrey Jones (New York, 2003).

[63] Cohen, "The Soviet Fordson."

Here is a final illustration: given the acute scarcity of resources and the breakneck pace of industrialization, selecting among priorities was done in accordance with this representation of the production process. Viktor Kravčenko, who had been an engineer and factory director, told in *I Chose Freedom* how managers were accused of wrecking because they were obliged by the center to focus only on the backbone of production, with no possibility of carefully building the necessary interdependencies within the auxiliary capabilities.

In a scene from 1938, the chief of the local political police, "Comrade Parshin," questioned an arrested former director, Kravčenko who was summoned with the expectation that he would contradict his colleague:

> "Second question," [Comrade Parshin] declaimed, turning again to the prisoner. "Why did you build a large pipe-making shop without galvanic, thermic and mechanical departments, without a base for repairs and without facilities for making the necessary precision instruments?"
>
> "The project was for a large, modern combinat," the prisoner replied. "All of the departments you mention were to be outside the main shops, centralized in special service shops. The State Planning Commission and the Commissariat failed to provide the money, materials and equipment for these supplementary service shops. Thus it happened that the main plant was finished before the others were more than started. Then to our surprise we were ordered to start production, which I considered highly undesirable, and later I was arrested."
>
> Whatever his thirteen months of suffering might have done to this man's mind, it worked well enough on professional questions. A first rate engineering brain, I found myself thinking.
>
> "What do you say to that?" the chief asked me.
>
> "The prisoner is entirely right. The factory was started long ahead of schedule. Even now it is far from complete. If we were to wait until everything is finished according to the original plan, we would not be able to work for another year. Personally I think it was a mistake not to build the service sections in the main plant, but that's a decision made in Moscow. The completion of the main installations before the accessory portions certainly was not sabotage."[64]

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[64] Viktor Kravčenko, *I Chose Freedom: The Personal and Political Life of a Soviet Official* (Garden City, N.J., 1947), 290.

Thus, the materiality of production corresponded to an expected image of efficiency, that is, to an image of what technology is about.[65]

The Objectivity of the Object as a Photographic Construction

The relevant materiality of industry for the Soviet leadership was very narrowly conceived. The press was in charge of conveying the power of this materiality. In fact, in the Soviet Union, the efficiency of industry was not only a corporate or factory business. It was a state business, the business of a communist state. The logic of Soviet technology has to be understood within such a framework. In turn, the regime of industrial efficiency was a part of the political regime of state efficiency. In particular, managing industry meant managing the public sphere, as well as manufacturing goods.

Thus, as a logical consequence, the press was also a management tool. The communist party used it at every level in order to bring a pressure to bear on big firms' managers on behalf of an alleged mobilization of the masses and of the interest of the Party and the construction of socialism. The press was not only a mobilization instrument, as in Western companies, but also a tool to direct managers.[66] The factory managers spent a great deal of time answering to articles that criticized them. The questioning by *Pravda* was of course fierce, stressful, and constraining. The use of *Pravda* and other press organs for management purpose was quite deliberate. For example, in June 1932, Stalin asked his closest deputy Kaganovič to force *Pravda* to publish everyday reports on the achievements of the two largest automobile factories in the Union: "It is the only real means to stimulate these factories and the People's Commissariat of Heavy Industry that does not supply them with metals. Once again, force *Pravda*."[67] With such publicity given to the factories' results, *Pravda* was set up as an industrial institution and as a major authority in industrial management: another kind of authority whose action unfolds in the public sphere. Furthermore, Pravda proved to be the ultimate validation of the factories' activity. The economic validation by the market was replaced by the administrative validation of the Communist Party.

I shall not address the problem of evaluating the actual achievements of Soviet industrial development, neither from a present point of view nor from the actors' one. It has been very well researched, and it is clear that there are continuing difficulties in appraising the reality

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[65] This might be, in Russia and in the Soviet Union, a question of might and its tools. It is actually another question to be researched. On the Cold War and the image question, see Paul N. Edwards, *The Closed World: Computers and the Politics of Discourse in Cold War America* (Cambridge, Mass., 1998).

[66] For France, see Catherine Malaval, *La presse d'entreprise française au XXe siècle*: *histoire d'un pouvoir* (Paris, 2001).

[67] Hlevnûk, *Stalin i Kaganovič*, 141.

because of an enduring tendency to cheat and a deeply rooted culture of exaggerating data.[68]

Not only were both the political and corporate press involved. A special press was organized just for the purpose of showcasing the successes of industrialization and collectivization. It allowed evocation of the image in conveying the effect of materiality. In this context image gained a particular status. Because of the problems mentioned, because of the constitutive habits of secrecy, and because the Soviet Union was voluntarily mostly out of the world market for its own industrial products, verifiable information was lacking.

By 1929, there was already a journal, *Naši dostiženiâ* [Our Achievements] intended to show the Soviet audience the successes of Socialist construction throughout the country. Maksim Gorki was among its founders. In his words,

> This magazine is needed to sharply differentiate our good from our bad. There is much that is good, but there is more of the bad. And, since the bad is more prevalent, the good is not visible enough.
>
> That's why it's necessary to set apart the good, so that even those people who do not adequately understand the enormous significance of our labor and the greatness of our aims will see what we have already achieved and how we succeed in building the new life.
>
> We will learn from the good. Only upon it may we build our new morality, those rules of conduct which will further elevate and define our labor energy and will compel us to fully sense the joy of creative life.[69]

Making "the good" "visible" in order to shape the masses' judgment on what they were building was the aim of this journal. What is still more interesting, it is that an illustrated complement was quickly envisioned for the actual visibility of the demonstration.[70] The supplement became the widely renowned journal *USSR in Construction*, of which the first issue was published in 1930. It was published in Russian and several Western languages: English, French, German, and Spanish. Its main characteristics were that it was uniquely based on photographs. With the

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[68] Among many others, see Robert W. Davies, Mark Harrison and S. G. Wheatcroft, eds., *The Economic Transformation of the Soviet Union*: *1913-1945* (Cambridge, U.K., 1994).

[69] Maksim Gor'kij, "O 'malen'kih' lûdâh i velikoj ih rabote," [On Little People and Their Great Work], *Naši dostiženiâ* [Our Achievements] 1 (1929): 10, quoted by Erika Wolf, "When Photographs Speak, to Whom Do They Talk? The Origins and Audience of SSSR na stroike (*USSR in Construction*)," *Left History* 7 (Summer 2000): 53-82. Most of the information on *USSR in Construction* comes from the Wolf's excellent article.

[70] Wolf, "When Photographs Speak."

exception of the editorial, the only text was captions. Some of the best Soviet photographers were working for the journal, most of whom were constructivists and fond of showing constructivist architecture, which was still tolerated. Every photograph was credited. These were images of the repeated and quick successes of the industrialization drive of Soviet economy and organization: new factories, construction sites, shop floors with machines, foreign or not, welfare installations, power plants, and so forth. The first issue displayed a dozen industrial sites. The images conformed to a set pattern: one or more views of the construction site, then the interior with machines and workers at work. What was indispensable was the image of modern architecture: aligned sheds covering aligned machines with aligned looms or reels or crankshafts and aligned workers, the captions indicating that they were trained in the very Taylorist Central Institute of Labor in Moscow.[71] The stress was on serial construction for mass production. The most powerful impression was as expected from Albert Kahn's (Ford's architect) works for Soviet auto and tractor factories during the First Five Year Plan. Electrification and agriculture were not forgotten.

The implied philosophy of photography in those publications is worth examining. The first foreign language issues were explicatory: "The State Publishing House has chosen the photo as a method to illustrate socialist construction, for the photo speaks much more convincingly in many cases than even the most brilliantly written article."[72] In Russian, the statement is much more explicit, and I reproduce here what Erika Wolf quoted in her article:

> In order to rob our enemies inside and outside the Soviet Union of the ability to distort and discredit the display of words and numbers, we decided to turn to drawing with light [*svetopis*], to the work of the sun -- to photography. You do not accuse the sun of distortions, the sun illuminates what exists as it exists.
>
> We should bring photography and cinema to the service of our construction. Photography and cinema are fully able to graphically and concisely present the enormous scale of construction work being carried out by the proletariat in the land of the Soviets.
>
> Such films as *Turksib, The Murmansk Road* and others, in spite of their number of shortcomings, brilliantly solve the task. It is necessary that cinema be closely occupied with the artistic representation of our construction. But photography should also be devoted to the service of construction not randomly, without system, but systematically and constantly. Photographic representations

[71] *URSS en construction* 2, 1930: 5.
[72] Quoted by Wolf, "When Photographs Speak."

> of our construction—dynamic representation at that—should be accessible to all interested in our construction. The magazine *USSR in Construction* puts before itself precisely the task of the systematic representation of the dynamics of our construction by means of drawing with light [*svetopis*].[73]

So, objects are objective and photography does not bring any distortion: Nature is speaking directly with all its authority. Industry, in the guise of Nature, may in this way gain authority, weighed down with all the objectivity of the photographic media, a quality that historians of science and cultural studies have already widely researched.[74]

I would like to stress another aspect: a task was set for both cinema and photography, not only to "dynamically" represent the "dynamics of our construction," but to do it "systematically" and, I emphasize, "constantly." Photography as well as cinema had to become, in turn, permanent institutions of the construction of socialism, that is, of industry as well as merely of communism. Not only did the institutions have to be administrative or political, they had to be a matter of the policy of the images, with the common feature of being permanent, as we have already seen with respect to Fayol, management, government, and also *Pravda*. This is managing the public sphere, and cannot be understood, as we may naturally tend to, as merely propaganda.[75]

USSR in Construction was intended for a Soviet audience as well as a foreign one. As Erika Wolf showed, in the Soviet Union it increasingly became a journal for the elite. Abroad, the audience was not only sympathetic intellectuals and workers in capitalist countries, but partners for trade, export or import, bankers, industrialists, and politicians. The combined run of all editions, deluxe and standard, reached 60,000 copies per issue during the 1930s.

The objectives were apparently met. Edsel Ford himself, for example, responded to a solicitation by the journal: "I will be glad if you will continue to send me the magazine, which provides us the possibility to be up to date on the progress of your construction program." The Director of the Reichsbank Fuchs in Berlin suggested that diagrams be included, "since they testify to progress in the most visual way." A member of the British parliament remarked: "Among us, it provokes astonishment and

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[73] Wolf's comment: "S*vetopis*, a word that was not in common usage in 1930, is comparable to the English "heliography," an archaic term for photography that literally means "sun drawing." The use of this term evokes the early years of photography, when it was accepted as an utterly objective, unmediated form of representation of external reality, a mirror of nature". in "When Photographs Speak," 61, 79 n. 20.

[74] See Daston, for example.

[75] Gabor T. Rittersporn, Malte Rolf and Jan C. Behrends, eds., *Shären von Öffentlichkeit in Gesellschaften sowjetischen Typs: Zwischen partei-staatlicher Selbstinszenierung und kirchlichen Gegenwelten* (Berne, 2003).

interest that in the USSR under Soviet power a factory or building has been constructed, where earlier there was just an empty space." A British adviser of the Soviet government: "I congratulate you on the first issue of *SSSR na stroike*. One of its merits is its absolutely objective character. It goes without saying that I will do everything so that it will be seen by the greatest number of people."[76]

Thanks to photography, industrial construction gained authority. The effectiveness of industrial success could not otherwise have been demonstrated to inner as well as outer eyes; everyone in the Soviet Union and abroad shared the same values about the naturalistic objectivity of photography. Not only was industry a command industry, it became a show industry. Materiality, impossible to attain directly, was conveyed by the naturally objective image; it served not only for partners and friends, but also for self-conviction. Maybe the authority of matter through image was due to the transmission of some distinctive objectivity of the artifact. However, nobody would ask the photographs to answer for the lack of continuity of production, the persistent procurement problems, bad quality of the goods, inadequate work norms, or the awful working, living, and housing conditions the workers "enjoyed" during the first two Five Year Plans. The absence of the interchangeability of parts was invisible in the photographs even to the Soviet leadership; the politician managers were ordered to focus only on the backbone of production and to neglect the auxiliary equipment. The impossible-to-master complexity of modern technology was no matter of photography. Nevertheless, photography evidenced its mastery.

In effect, theories of the representation of the object in cinema as well as in photography were already developing in the Soviet Union during the 1920s. This has to be understood within the wider framework of world cinema. Lev Kulešov, the notorious filmmaker, theoretician, and teacher, was already thinking of Americanism in 1920 in the same terms as the French sculptor Jean Arp: Americanism meant a simplification that rested on the representation of mechanical processes, not of nature: nature was too complex; it was easier to represent a bridge than an autumnal landscape with a ruined shack, some clouds, and a pond in the neighborhood. The proper cinematographic material, according to Kulešov, was technological. It might be work, the organized work process, filmed with authentic workers, not actors. Locomotives, tractors, factories, dams, concrete, airplanes, telegraphs, and telephones were thought of as material actors, a phenomenon that many films exemplified. The "actorship" of artifacts was also a theoretical matter that was not extraneous to the international circulation of films and which played a major role in Soviet cinema and photography. It was in thinking about a

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[76] Gosudarstvennyj Arhiv Rossijskoj Federacij [State Archive of the Russian Federation], 5283/2/63/93-102, quoted by Wolf, "When Photographs Speak," 65-69.

scene from *Intolerance* that Kulešov wrote that the objects were "playing:" "In the cinema, the meaning of the model and of the object, thanks to a skilful editing, may be value equivalent."[77] Cinematography as well as Americanization led to showing artifacts, which became actors. The technologies of the show industry were also a type of Americanization, exactly as was production technology: the apparent borrowing did not dissimulate the local elaboration of something completely original. What was pretty much local not only owed some to borrowing; it had to be thought of as borrowing, at least during the 1920s.

Thus, objects and artifacts have more of a cinematographic and photographic power than a theatrical power, as François Albera, a Swiss historian of cinema stresses, adding that it is their intimate link to the close-up that gives them the status of personified characters.[78] This might be thought of as an experiment in pragmatics. Albera very subtly analyzes the various modes of the presence of objects in cinema. Beginning with the Actor's Studio pioneering theory of acting in relation with an object that is not a sign, Albera shows that the object may form various configurations: it may be a classical extension of oneself, or support a symbolic usage, or be an actor itself, developing its own meaning. For Kazan, the last represents a "basic technology" he used as an "objectal strategy." Not an instrument nor an extension nor a sign: in this case it is also Kulešov's conception, "the artifact does not symbolize anything. It does not even condense the balance of power (as for DeMille), it is the lever, the support for an attitude and for the authority relationship."[79] I could not put it better. Among all the *auctoritates* we are considering here, there is not only matter, organized matter, machines, plants, buildings, Nature, and so forth. There is the artifact as displayed through technologies that make it exist; that was pretty much a twentieth Century phenomenon that the Soviet society advanced. Redoubled technology: the *artifact* "in the age of *mechanical* reproduction," in Benjamin's terms. Tripled technology: redoubled technology used as a public sphere managing technology. This study of artifacts as a source of authority, either immediately or by virtue of media, links up in a very specific way to earlier studies of management and government technologies connected

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[77] The "model" is the human actor. Lev Kulešov, *Sobranie sočinenij v treh tomah. 1. Teoriâ, kritika, pedagogika* [Collected Works in Three Volumes: Theory, Critic, Pedagogy] (Moscow, 1987), 174-5 (1929), 80 (1920). Lev Koulechov, *L'art du cinéma et autres écrits* (Lausanne, 1994), 60, n.13 (translation and footnotes of Valerie Posener [Pozner], to whom I owe my introduction to this literature).

[78] François Albera, "L'Ob-jeu," paper presented to International Film Studies Conference in Udine, Italy, March 2001.

[79] Ibid.

with images, such as advertising, accounting, charting, controlling, and the like.[80]

Conclusions

Erika Wolf writes that *USSR in Construction* also presented the new Stalinist elite rising in the 1930s "with an image of Soviet society and industrialization that bolstered their sense of mastery and leadership"—something that the reality of industry was incapable of giving them. They were still condemned to keep "leading with their vocal cords," unable to rest on embodied rules and material stability. It now remains to establish whether or not this was specific to communism (and identical in all forms of communism) as well as to demonstrate historically that this problem lasted right up to the end to the Soviet Union, as some sociological studies published in the 1980s hint.[81] I hope I have shown how the interplay among matter, the order of things, artifacts, the continuity of the production flow, technologies of objectivity, object-acting, and presence mattered to authority in the middle of the twentieth century.

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[80] Brigitte Schroeder-Gudehus, Eckhard Bolenz and Anne Rasmussen, eds., *Industrial Society and its Museums, 1890-1990*: *Social Aspirations and Cultural Politics* (Chur, Switzerland, 1993); Theodore M. Porter, *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life* (Princeton, 1995); Philip Scranton and Roger Horowitz, "'The Future of Business History': An Introduction," *Business and Economic History* 26 (Fall 1997): 1-4; David Nye, ed., *Technologies of Landscape: From Reaping To Recycling* (Amherst, Mass., 1999); Miriam R. Levin, ed., *Cultures of Control* (Amsterdam, 2000); André Grelon, Françoise Chamozzi, and Ina Wagner, eds., *Alliage* (Le spectacle de la technique) 50-51 (Special issue, Spring-Summer 2003).

[81] Collectif Urgense, "Un taylorisme arythmique dans les économies planifiées du centre," *Critiques de l'économie politique* 19 (April-June 1982): 99-146.