



Volume 5. Wilhelmine Germany and the First World War, 1890-1918 On Controlling the Workforce (1915)

Controlling labor in large factories was of utmost importance to industrialists and their managers. Their ability to regulate workers' hours and monitor their productivity increased with the appearance of new technological innovations, including increasingly sophisticated time clocks. Such devices represented a major tool of social control in the modern period.

The economic life of today is marked by intense competition, which can only be engaged in successfully if, along with the use of all rational work methods, careful attention is also paid to the maximum utilization of work time. Monitoring workers is the means to the latter. [. . .]

The most widespread method is probably token monitoring [*Markenkontrolle*] [. . .]. The oldest and simplest form of token monitoring is when boards are mounted at the factory entrance and every entering or exiting worker hangs his token on the board or removes it. A second, identical token board is usually found in the work area proper, usually close to where the foreman is positioned, so that he can scan the board easily for monitoring. Once work has begun, the porter has the gates closed, so that every worker who arrives late has to report to him to obtain a token. It is practical if the board has a wire grate that can be placed over the tokens once the gate has been locked to prevent any unauthorized person from having access to them. Every worker who arrives late will be noted as such by the porter when he asks for his token; the same will be done for a later countercheck by the foreman in charge, to whom the tardy worker has to report in person when depositing his token. The procedure is quite similar, only reversed, when a worker leaves the work site early. The porter notes the absence of workers from the tokens left hanging, while the foreman records the same on the basis of the empty token numbers. At the end of work, the procedure is reversed: the foreman opens the token board, from which every worker leaving the shop takes his token in order to hang it on the porter's board at the main gate. If a token is left behind with the foreman, it must be assumed that the worker has not yet left the worksite. In an especially dangerous factory, it is not unreasonable to assume that there may have been an accident that was not yet noticed, and an immediate investigation is called for. Of course, it is usually the case that the worker has left the workplace without removing his token, and the reasons for this must be ascertained. The work monitoring records of the porter and the foreman must be checked for agreement, a task that is usually done by the wage office. In large enterprises it is advisable to reserve certain numbers for individual categories of craftsmen or workers; for example, the numbers 1-100 are set aside for the lathe operators, the numbers 100-200 for the joiners, which makes it possible to readily and easily determine the sort of work an individual does. [. . .] In companies with a large workforce the constant monitoring that is necessary several times a day requires the corresponding personnel, since the porter cannot record the large number of notes all by himself. To address this difficulty, so-called token collection machines have been built, and they perform their task in a useful way. [. . .]

The technique of worker monitoring has not stood still but has advanced, and this brings us to the control clocks, which themselves are actually quite old. The key apparatus [*Schlüsselapparat*], which one can characterize as a larger wall clock, should be considered the oldest and simplest control apparatus. Every worker has a key with a control number at the bit end. Upon commencing or leaving work, every worker inserts his key into a keyhole located below the clock face, where, once the key has been turned, the control number, the hour, and the minute are mechanically pressed onto a strip of paper that is rolled inside the clock. In this way, the strip of paper continuously records every worker who presents himself for monitoring. The keys, similar to the tokens, hang on a numbered board. The rest of the procedure corresponds to the token system, that is to say, [there is] a second board with the foreman and the recording of missing workers on the basis of the keys that have remained hanging. The control clock usually marks the time or departure by impressing a star next to the time. For that purpose, the porter must throw a switch on the clock before the monitoring begins. After the monitoring is over, the strip of paper can be removed from the clock at any time in order to be used for entries into the wage book. In general, one cannot process more than 300 workers within five minutes with a control clock. There are also control clocks that do not require the key to be turned, instead, the mere insertion of the key is sufficient for registration.

Further progress came with the so-called “lever machines” [*Hebelapparate*], which by nature are also control clocks. These machines possess a visible, circular dial with numbers. To activate the monitoring, one guides a moveable lever to the control number in question, where there is a hole into which one pushes the stylus of the lever. The clock then automatically notes the number and time on a strip of paper that runs over an interior drum. The mechanism of these machines is very finely wrought, and the strip has categories for entry, exit, morning, noon, evening, and so on, which allows for a very precise record. The required categories can be set both by hand and automatically. The lever apparatuses are also made with a two-color strip, so that instances of tardiness, for example, are printed in red, which stands out sharply when it comes to making entries in the wage book. A worker’s absence appears on the paper strip as a blank space. These lever machines are usually built in four sizes, namely for 50, 100, 150, and 200 persons. Since up to 42 registrations can be performed, the recording can be done continuously for a week or fourteen days. In general, though, these machines work with a daily strip. The great advantage of the lever machines lies in the fact that one can see all records for each control number together.

The latest that the technology of worker monitoring has produced is punch clocks, which have indeed reached a high degree of perfection in automated time control. For the punch clock, each worker is provided with a card which, for control purposes, has a corresponding pre-printed form on it. The punch clock corresponds in its construction to a control clock, into which the card is inserted via a mouthpiece. Once that has been done, the worker pushes a button, which prints a time – precise to the minute – onto the card. The adjustment of the mouthpiece from one slot to the other, from “Coming” and “Going,” is done by hand or automatically. The adjustment from one day to the next is done automatically by the very precise clock. Above the machine hangs a clock that runs parallel to the control clock, so that the worker can instantly verify the accuracy of the automatic record. The cards are inserted, with only the name visible, in a specially made board, which is found both at the factory entrance and at the worksite. In many cases, the cards have a pre-printed form on them, which allows them to be used for payroll accounting, which makes the use of a wage book superfluous. Unused slots on the board are conveniently covered with black cards; red cards have worked well for slots of workers on leave or out sick. The only flaw in the cards is that they dirty easily. In companies

where the actual workplace is located far from the factory gate, the control machines are not usually located at the factory entrance, but at the entrance to the workplace itself, so that the time control refers solely to the workplace proper. It is reckoned that on average, 30-50 men can pass through each machine per minute, so that one machine is sufficient for about 200 persons. Practical experience has made clear that, after the introduction of automatic monitoring, the work period was often increased by 15 minutes per day for individual workers. Especially in large companies, the wage savings generated by this over a year can be quite considerable.

Source: P. Martell, "Über Arbeiterkontrolle" ["On Controlling the Workforce"], in *Zeitschrift für Sozialwissenschaft* [*Journal for the Social Sciences*], Leipzig, new version, 6 (1915), pp. 185-88.

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