

Automatons, sales-floor control and the constitution of authority

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Asaf Darr

University of Haifa, Israel

Abstract

Workplace authority in contemporary contexts is increasingly being constituted through online automatons, internet platforms whose logic is diametrically opposed to the notion of hierarchical knowledge. They govern the organization of work and derive legitimacy from three principles: (1) the streaming of information into a network composed of all workers; (2) the transparency of the information and measurements they provide to workers; and (3) their automatic self-regulation, which obscures the role of management in their design. Via interviews and on-site observation in a large computer chain store, I examined how one automaton controls workers through a complex system of sales contests. To lure workers into active engagement with the automaton, management offers hefty prizes to contest winners and also strives to legitimate the automaton's operation by presenting the contests as fair and just. Through the behavioural scripts inscribed into it, the automaton fosters belief in markets as efficient means of resource allocation and promotes self-interested behaviour and arm's-length social ties. Smart artefacts like this automaton, which foster belief and generate authority through workers' prescribed engagement with them, are, I argue, emerging as effective managerial tools in a variety of work contexts, part of a pattern of increasing automation of workplace authority.

Keywords

allelopticon, automation of workplace authority, automatons, internet and work, new technology, objects of belief, organizational theory, sales and service work, workplace authority

Corresponding author:

Asaf Darr, Department of Sociology, University of Haifa, Mount Carmel, Haifa 31905, Israel.

Email: adarr@univ.haifa.ac.il

Introduction

Salespeople, the foot soldiers of capitalism, are stationed at market frontiers, bridging supply and demand, and they reproduce markets and boost consumption through daily encounters with potential buyers (Clark and Pinch, 1995; Pruss, 1989). Management-orchestrated contests among salespeople have long been part of sales cultures in diverse historical and cultural settings (e.g. Darr, 2006; Ridgway, 1957). Through participation in contests, salespeople experience both the excitement associated with proximity to market exchange and potentially unlimited opportunities to sell and to make hefty commissions. Contests are motivational, individuate a sales force, constitute a form of output control and focus salespeople's attention on clients and closing deals (Darr and Pinch, 2013).

Work organizations have increasingly implemented various information technologies and internet platforms in areas such as administration (Scott and Wagner, 2003), informal training (Garcia-Penalvo et al., 2012) and coordination and control (Rennstam, 2012; Sewell, 1998). In recent years, employers have introduced internet platforms into sales organizations, and the online management of sales contests in large retail chains has gained particular prominence. This article explores the consequences of conducting contests, a deeply engrained sales practice, in cyberspace. In particular, it demonstrates how online platforms that govern sales contests establish sales-floor control and how that control can be legitimized through the application of these platforms and transformed into authority.

My theoretical argument in this study is three pronged. First, I argue that the social affordance of internet platforms reconstructs the sales contest as an 'automaton', here defined as a self-regulating system operating according to a logic that is diametrically opposed to the notion of hierarchical knowledge. The three main principles underpinning the automaton and its organization of sales work include (1) the streaming of information into a network composed of all salespeople in a company; (2) the transparency of system-generated information and measurements to all workers, regardless of rank; and (3) the system's automatic self-regulation, which obscures the role of management in designing it.

Second, I argue that the control capabilities of the sales-contest automaton are much broader in scope and penetration than is the case for the offline sales contest. The automaton's creation of a large-scale community of salespeople, the expanded range of sales-performance figures it formulates and streams, the ability of salespeople to examine the performances of all other members of the community and the variety of contests it oversees make it a uniquely effective managerial tool. The automaton bears certain similarities to Rennstam's (2012) notion of 'object-control', in which managerial interests are vested in an artefact and employees are lured to adhere to these interests through engagement with the object and participation in the activities and behavioural scripts it generates. As in 'object-control', the automaton implements control as an integral part of the labour process and shifts attention from direct ties between management and workers to ties between itself and individual workers (Rennstam, 2012: 1085). Yet, unlike the process of 'object-control', automatons can function outside knowledge sectors, and they locate control in the ability of members of a large virtual community of workers,

constituted by management, to enact 'alleloptic vision'. This term alludes to the classical Greek idea of 'mutual viewing' and refers to the ability of employees to view one another's work performance measures online at all times. Finally, unlike 'object-control', operation of the automaton does not promote extensive bilateral communication between workers and the artefact or the extraction of hands-on knowledge. Instead, it motivates salespeople to follow certain behavioural scripts and promotes norms and values through engagement with individual salespersons.

Third, I argue that the emergence of automatons in sales organizations signals a shift in the locus of workplace authority. This study goes beyond a depiction of automatons as mechanisms of control and suggests that they operate at times as objects that foster authority. To transform control into authority, management strives to render the operation of the automaton legitimate by presenting the many sales contests it governs as fair and just. Authority is constituted when the automaton can operate as an 'object of belief' (Fleming and Spicer, 2005); that is, when 'belief changes from something that is sited within the subject to something located in an external arrangement of objects and rituals' (Fleming and Spicer, 2005: 189). Specifically, this study suggests that the automaton generates belief in markets as efficient means of resource allocation, in mass consumption and in arm's-length market ties, a depiction propagated by economic and business scholars and largely grasped by Kunda and Ailon-Souday (2005: 201) as 'market rationalism'. Adherence by the sales force to the behavioural scripts embedded in the automaton and salespeople's perception of its rules for engaging with one another and with clients as fair and just not only increase the automaton's control of the sales force but also reinforce its legitimacy and, through this legitimization process, strengthen its sales-floor authority.

Automatons exist in different sectors of the economy. This study focuses specifically on a self-regulating internet platform that governs an array of sales contests among employees of a retail chain that sells computers and computer accessories. All of the chain's sales workers, about 400 in number, compete against one another for hefty prizes. The currency in these competitions is credit assigned to salespeople when they close deals. Those who sell the most merchandise win prizes, usually products offered for sale by the chain. Information on each sale travels freely on the internet platform, and the automaton translates the sales figures of each salesperson into sophisticated measures, such as the amount of sales per hour or per customer entering the store, compares them to those of other salespeople and orders and displays them online in real time. Thus, the virtual identity of each salesperson is reduced to a series of work performance figures that are presented to all of the chain's salespeople, who rarely know each other personally.

The following section offers a review of the literature on objects that act as independent control agents. The review then focuses on a neglected analytic distinction between control and authority and highlights the need to pay closer attention to the way the constitution of workplace authority can be automated through online shop-floor contests governed by internet platforms.

Artefacts as carriers of workplace control

During the 1970s, labour-process literature highlighted artefacts' potential to become carriers of class interests and to reduce the skill levels and autonomy of workers. The

dynamic between attempts to control the workforce and shop-floor resistance looms large in Edwards's (1981) expansion of Braverman's (1974) deskilling argument. Edwards argues that direct control of workers by foremen during the industrial revolution was partly replaced in the early 20th century by technological control in the form of the assembly line and other workplace artefacts. Bureaucratic control then became dominant in large and widely dispersed work organizations in the mid-20th century. While Edwards never claimed that the three forms of workplace control were mutually exclusive, the role of objects as control agents was gradually downplayed in academic research and interest shifted almost exclusively during the late 1980s to normative forms of control and attempts by employers to shape workers' subjectivity and self-identity (Alvesson and Willmott, 2002; Kunda, 1992). What underpins the rise of normative control, this literature argues, is the growing prominence of knowledge-intensive firms, in which management needs to elicit workers' creativity and devotion rather than simply control their behaviour, as in the case of the industrial worker (Barley and Kunda, 1992; Rennstam, 2012).

The rise of high-tech industry also prompted a renewed interest in objects of control. A distinction between 'technical objects' and 'knowledge objects' figures prominently in recent studies of organizational artefacts (Knorr-Cetina, 1997) and emerging forms of workplace control (Rennstam, 2012). The assembly line associated with early notions of technical control (Edwards, 1981) is presented as a 'technical object', which promotes standardization, constrains workers' behaviour and allows little reciprocity in the worker-artefact interface. A 'knowledge object', by contrast, is an artefact (e.g. a micro-processor) that promotes interactive relationships between itself and knowledge workers such as development engineers. Knowledge objects are unstable and ever changing (Latour, 2000), and they elicit knowledge from professional workers through an interactive process (Knorr-Cetina, 1997) in which they enable and constrain certain lines of action (Rennstam, 2012).

The automaton, as defined in this study, constitutes a hybrid form, challenging the dichotomy between technical and knowledge objects and combining elements of both. The flexibility and interactivity of the automaton are much broader than displayed by the assembly line. The agency of the automaton is thus much stronger. Yet the automaton falls short of being a 'knowledge object', as defined by Rennstam (2012), since it fails to elicit knowledge from workers and its basic attributes are stable rather than continuously evolving and depend only on management's, and not workers', inputs. The automaton also serves as an output-control mechanism, unlike the 'knowledge object', which controls process. Finally, unlike the assembly line, the automaton enables management to inscribe normative elements and diverse behavioural scripts into its operation, making it an object that can propagate systems of meaning. Such entities are coined 'objects of belief' in recent literature (Fleming and Spicer, 2005).

The turn to materiality in the organizational-control literature, and specifically writings on objects of belief, was a reaction to the normative-control literature. Contemporary writers criticize notions of normative control for focusing on the symbolic realm and neglecting objects as carriers of organizational norms and identities. This critique has deep roots in sociology, for example, in Althusser's (1971) notion of interpellation. Fleming and Spicer (2005: 183) draw on this tradition when they fault the normative-control literature

for over-emphasizing internalization and for claiming that the effectiveness of such control hinges on workers' deep absorption of organizational norms, identities and systems of belief. The emerging literature argues that objects, through dynamic engagement with workers, can enact identities, beliefs and norms aligned with the interests of the employing organization, without any need for internalization on the part of workers. But how can we discuss belief systems without assuming internalization? As Fleming and Spicer (2005: 190) put it, 'belief may be performed by objects' through worker engagement with them. This means that workers can act as believers when engaging with objects of belief, without the need to absorb the underlying norms. Importantly, these authors suggest that for the 'object of belief' to be effective, workers must retain a certain amount of agency, in the form of public critique and even occasional resistance.

The idea that artefacts can carry belief systems and that they can engender worker belief has important implications for the way management can legitimize its control over the workforce through smart objects and internet platforms. For example, if automatons are perceived as legitimate means of coordination and control, they can promote values that adhere to management's views by forcing workers to engage with and to behave as if they believe in these ideas.

The foundations of workplace authority

The constitution of workplace authority, defined here as the legitimate exercise of power by firm owners and managers, is a pillar of industrial organization (Weber, 1946). During the industrial revolution, the constitution of workplace authority became a major managerial challenge, a fact echoed in the work of the founding fathers of organizational sociology (Bendix, 1956; Weber, 1946). They and other scholars demonstrate how workplace authority was supported at the beginning of the 20th century by deeply entrenched social institutions that enjoyed wide legitimacy, such as religion and science (Bendix, 1956; Taylor, 1947). Rational-legal bureaucracies were also means of constituting managerial authority (Weber, 1946). A different attempt to establish employers' authority over workers during early industrialization was predicated on the enshrining of entrepreneurs, new cultural protagonists who risked their fortunes and were therefore entitled to exercise authority over the workforce (Bendix, 1956).

Within traditional bureaucracies, authority is defined 'as the given right to perform roles; such rights are legitimated by consensual decisions codified in institutions, contracts, charters, rulings, and other accepted institutional sanctions' (Kahn and Kram, 1994: 17). Contemporary scholars describe new means of constituting workplace authority that are no longer dependent on formal rationality or external socio-cultural institutions but rather are increasingly embedded in organizational procedures, structures and incentive schemes. The ideology of empowerment and teamwork, which re-locates control in team members who supervise each other (Barker, 1993), is but one example. Yet the most relevant means of constituting authority are production games (Burawoy, 1979; Roy, 1952), which generate authority through participation.

Game playing has been a persistent metaphor in workplace studies to depict shop-floor practices and artefacts that generate authority (Burawoy, 1979; Crozier, 1964; Roy, 1952). Burawoy (1979), for example, describes the complex game of 'making out'

(see also Roy, 1952) on the production floor as the joint creation of workers and managers. This game coordinates and sublimates the inherent tensions between and conflicting interests of workers and management and facilitates ongoing production. The making-out game involves workers' efforts to identify holes in management's imposed system of production norms and bonuses and their attempts to extract as much income as possible from 'gravy jobs' (Burawoy, 1979).

Production games lay the groundwork for the automaton's measurement and motivation of workers, since they give the appearance of an independent system guided by clear rules to which both management and workers adhere. Additionally, production games are seductive to workers since they appear to provide opportunities to gain the upper hand over management and increase income. These games also provide a stage for workers like machine operators to perform their skills for peers as well as for management. Whereas shop-floor games are presented as a co-creation of management and workers, despite their asymmetrical power relation, salespeople's role in shaping the operation of the automaton is more limited. As we shall see, the inscription of the rules of engagement into software grants the automaton greater power in enforcing behavioural scripts than any norm and bonus scheme does.

The sales contests governed by the automaton exhibit striking similarities to the making-out game, yet they also differ in important ways from shop-floor games described in older literature. Because they are not based on a system of production norms and bonuses, the online sales competitions run by the automaton do not involve 'pacing', 'goldbricking' or the active involvement of time and motion engineers. Rather, whoever logs the most sales wins the contest. Unlike the case in the making-out game in production plants, management and engineers in the computer store I studied have no direct presence online since an automaton coordinates sales competitions. Workers' ability to shape the trajectory of online competitions is marginal in comparison to the input of workers in shop-floor games. The dense network of informal social ties between operators, inspectors, engineers and foremen that exists on the production floor is transformed online into a sparse network of formal and virtual ties. The players who participate in online competitions are transformed into avatars by the automaton in the sense that they are represented electronically as a set of individual sales-performance measures and ratings that can be viewed by all other salespeople. In presenting my empirical findings, I first investigate the constitution and inner workings of the automaton. Then I describe how it operates as a control device that governs the sales competition. Finally, I demonstrate how the automaton automates the production of sales-floor authority through its operation as an 'object of belief'.

Research site and methods

This ethnographic study, carried out in Tel Aviv, Israel, involved 50 interviews, 41 with salespeople and managers of five different branches of a retail chain selling computers and computer accessories and games and nine with suppliers and IT purchasers. In an important supplement to the interviews, two research assistants carried out extensive observation at one branch, documenting 122 complete sales interactions, some short and others lasting 20 minutes or more. This documentation occurred over 21 observation

sessions conducted at different times of the day and on different days of the week, each session lasting about three hours. All interviews and documentation of sales encounters were compiled into a single database. Initial analysis was based on broad descriptive categories reflecting the salespeople's point of view, such as 'types of clients', 'sales strategies' and 'means of coordination and control'. Grounded theory (e.g. Strauss and Corbin, 1998) directed data analysis, and interpretation required interpolation between theoretical concepts and empirical analysis. After 30 interviews were coded using these general categories, more fine-grained categories were applied to them. For example, all interview excerpts pertaining to 'means of coordination and control' were further analysed using categories such as 'control agents' (human and non-human) and 'attitude towards means of coordination and control'. After completing the coding of the 30 interviews, I devised initial research propositions such as 'salespeople see the computer as an independent means of control'. I used the coding of the remaining 20 interviews to empirically test my research propositions and devise new ones. I emphasize that the automaton was not the object of study; rather, the social organization of sales labour was. The study's focus on emergent phenomena reduced the risk of imposing existing theoretical framing on the data. All interview and observational data were coded and analysed using ATLAS.ti software.

The computer chain studied here has 56 branches nationwide. They differ in size but are similar in their organisational structure and internal division of work. Top management granted me permission to conduct interviews and observations in specific branches, and the relevant branch managers were aware of the study. The salespeople at each research location also knew that the study was taking place and that the research goals were purely academic. The store that served as the main focus of this study, in which all salespeople were interviewed and extensive observations were carried out, ranks high among the computer chain's outlets in terms of gross sales. It is a busy place, located within a large shopping mall, and has clear peak sales hours, mainly in the evening and during weekends and holidays, when 30–50 customers might be present at the same time. A regular work shift for salespeople lasts seven hours. The branch employs 12 workers, the number increasing to 15 during the summer vacation season. Five salespeople work during busy shifts. The branch under observation has one manager, two assistant managers and a stockkeeper in addition to the salespeople on the floor. Most of the workers, as well as the managers, are in their twenties, probably reflecting the transitory nature of sales jobs as well as the tendency for young people to be 'tech savvy'. After completing their compulsory army service, young people work in the store for a year or two and then typically move on to other careers or to sales jobs elsewhere. A few become branch managers within the chain. Salespeople attend to customers, answer the phone, operate the smart cash register (SCR) and handle dissatisfied customers who return merchandise. They are also responsible for cleaning the store at the end of the day. They receive an hourly wage and, in addition, earn a commission on sales and receive money vouchers from some of the distributors whose products they sell. Another important supplement to their basic pay takes the form of prizes awarded to the winners of the many sales competitions that take place in the store, which are operated by the automaton. Especially successful salespeople can effectively double their pay through commissions on sales and the value of the prizes they win in contests. The store manager performs

administrative tasks and communicates with chain headquarters and, whenever needed, assists salespeople on the floor. The two assistant managers replace the manager on some of the shifts and otherwise work as regular salespeople.

Salespeople are paid a little more than minimum wage (amounting to slightly over US\$1000 per month). To increase their income, they have to sell, and those who fail to do so have little incentive to continue working and typically leave the store's employ after a few months. During the study period, my assistants and I heard of salespeople voluntarily leaving their jobs but not of salespeople fired for poor performance. Given that few formal skills are required for sales jobs, other candidates soon appear to replace those who leave. The system of rewards ensures that the store retains the more successful salespeople, without the need for an evaluation process or elaborate human resource practices.

Much of the training is conducted on the job and is nested within the occupational group. Novices accompany more-experienced salespeople and often ask their advice. At times, a veteran salesperson may listen in when a novice interacts with a client and later provide suggestions for improving his or her salesmanship. Some sales training is outsourced to distributors of leading computer brands, who have direct ties to the store. For example, representatives of leading distributors visit the branch to introduce new products and price-reduction schemes. They also occasionally train the salespeople in selling their particular products.

Findings

The constitution and operation of the automaton

The software loaded onto the SCR has a central role within the sales triangle composed of managers, clients and salespeople. It can store personal information about clients who agree to provide it as they finalize a sale, such as their email addresses, birth dates and the type of products they are most interested in buying. This information enables the software to function partly as a customer relations management (CRM) system. Via email, customers automatically receive coupons for birthday 'gifts' and personal invitations to take part in special sales and promotions of products of their choosing. The software on the CRM also updates each branch's inventory and purchasing needs and makes them available for monitoring by the centralized purchasing unit at chain headquarters. Beyond this logistical capacity, the automaton acts as a control device, enrolling workers in its managerial system and subjecting them to the alleloptic vision of their peers. The first step in constituting the automaton is the enrollment of all the salespeople. As the number of salespeople increases, so does the controlling power of the mutual gaze.

When a new salesperson is hired, he or she is given an access code and a personal password, which allows that person to log onto the SCR and to become part of the computer chain's online community. Before writing up the receipt at the end of a sale, the employee must punch his or her personal password into the SCR; all the items involved in that sale are registered under that employee's name. This information provides the baseline for the calculation of a general commission of 0.75% of gross sales allocated to each salesperson, to be paid at the end of the month in addition to the worker's hourly earnings. Employees' self-reported sales data constantly flow into the network. These

data become the input for the automaton, which activates different measures to constantly update the sales performance of individual workers. Individual sales figures are also aggregated to calculate the sales performance of the branch as a whole.

When logged onto the automaton and viewing the SCR screen, each salesperson can observe the performance of all other salespeople in the chain, in real time and according to different measures and sales contests. Access to the network and engagement in mutual viewing is privileged – only chain employees can become part of the network. Thus, the online community is a form of ‘gated community’. The performances of salespeople are displayed in tables, each dedicated to a different sales measure or a specific competition, and the figures for each salesperson, who is identified by his or her real name, are constantly updated and displayed online. This transparency creates a keen awareness among salespeople that they are the objects of view by their coworkers. Mutual viewing provides them, in turn, with a basic sense of membership in an online community within the employing organization. Salespeople use the functions of the automaton to measure their own sales performances and to track their accomplishments across time and shifts. More importantly, they compare themselves against the other salespeople in their branch and in the chain as a whole. The temptation to observe one’s own performance and that of others is always present once a salesperson is enrolled. Both practices are reflected in the following employee’s comment:

Everyone has a salesperson’s code that you punch into the computer when you sell. You can follow up on your sales in any minute, and there are a few who do [so] [*laughter*] and by this you can know who sold what, when and for how much.

Having enrolled, an employee is subjected to the view of all other salespeople, and the formalized measures provide lenses through which this mutual viewing becomes possible.

The control capabilities of the automaton

The automaton and the sales-performance formulas operate automatically and mediate ties between management and salespeople. Because these measures are part of the software, and therefore ‘objective’ and ‘neutral’, management can distance itself from the operation of the automaton and the control it enforces. When one salesperson was asked about the way salespeople are supervised, he replied:

Now the main thing is measured by the computer, which shows how much you sold, what were your profit margins, your hours of labour, and how much of this time you sold and what did you make [*in commission*] . . . The whole stock is run on the computer.

This speaker presents what he calls ‘the computer’, and not management, as the main mechanism overseeing salespeople’s work and managing the stock. He describes a variety of measures performed by ‘the computer’ and clearly sees this object as an independent agent that exercises control. A different salesperson, who was also asked about the way sales work is supervised, highlighted the ability the automaton gave employees to view the performances of all their peers: ‘In regards to sales? Everything is written down

in the computer. How much this one did, how much that one. What are the profit margins.' The foregoing comments illustrate the degree to which the automaton is integrated into the labour process, much like the object-control described by Rennstam (2012).

These comments also illustrate that the members of the online community are fully aware they are being subjected to the collective gaze of their coworkers at all times, even when they are off shift. Through this continuous peer monitoring, the automaton partially relocates workplace control to the level of the members of the online community, rather than completely retaining it in the higher echelons of the hierarchy. This can be seen as an extension of Barker's (1993) notion of 'concertive control', originally applied to a team with a few members who supervise one another, to a large community of online members, most of whom have never met one another. To prompt salespeople to actively participate in competitions and to follow up on their own sales and those of others in the chain, management has constituted an elaborate incentive system that supports the automaton and facilitates control. This system leads salespeople to follow the behavioural scripts inscribed into the automaton and to engage in sales competitions and in mutual viewing. A salesperson described this incentive system:

First of all we sell, and we punch in the salesperson personal code. So one can see how much you sold. Every salesperson can see at the end of the month and by that he receives the salary. On each sale you receive 1% as a commission [*the commission was reduced to 0.75% during the study*]. Sometimes you have promotions. If you sell a certain product you get a voucher. You can get vouchers when you sell many different computers. So if you have some kind of sales competitions, that is, financially, yes, the salary you make reflects the amount of sales.

This speaker refers to a complex system of commissions, money vouchers and sales competitions. The automaton runs the whole system, and the measurements and configurations of employees' sales performances stream into the network. The work of the salespeople in the chain is channelled through the automaton, which governs workflow through the operation of the competitions.

Sales competitions and sales-force control. The vast majority of contests work to individuate the sales force by fostering individual-level competition. They are initiated either by the chain or by an outside supplier. Most are initiated by chain headquarters and, through the automaton, track the monetary amount of sales made by an individual through measures such as the number of items per invoice, the amount of upselling and the total value of sales per shift, week and month. A branch manager described the variety of prizes at stake in competitions: 'We have many internal competitions in the chain. Flights, products given as a gift, laptops, we had a big LCD competition of Brand X . . . All sorts of things. It can be small or large items.' In addition to branch or chain-level competitions initiated by headquarters, top management allows and even encourages suppliers representing global manufacturers of certain brands of computers to promote their own sales contests. Thus, competitions sponsored by different brands can take place simultaneously at all or some of the chain's stores. The details of the competition are inscribed in the automaton, which automatically gathers the relevant sales information and calculates the measures desired by management or suppliers. Here a salesperson describes an incentive scheme initiated by a supplier in which salespeople compete against themselves:

Brand X or Brand Y decided that whoever sold 10 computers this month, so they remunerate them. And this is not remuneration from the chain, this is the outside supplier who remunerates with vouchers, like, at the end of the month together with your salary you get an envelope with money vouchers or something like that.

Suppliers who initiate sales schemes and competitions require the chain to share information collected by the automaton, for example, to provide them with sales figures for specific products they want to push, by individual salesperson and by branch. The whole system of supplier-initiated competitions can be seen as a means of outsourcing incentives. The chain invests little, if any, effort and offers no rewards in such sales contests, instead, delegating this role to the supplier.

The most common form of sales competition through which control is exercised pits individual salespeople against one another. Below, I examine branch-level and (the more common) chain-level competition, as I highlight the role of the automaton in managing the array of sales contests and controlling the behaviour of the sales force.

Competition among individual salespeople in the same branch and in the chain. Branch managers are authorized by and have the blessing of headquarters to initiate sales competitions in their stores. A branch manager explained the logic behind these ‘local’ contests:

It is clear that competition does exist. Being first also means ‘I sold the most’, and also from the personal viewpoint, salespeople have incentives and a salesperson can sell for 100,000 NIS a month so for him [*sic*] this often means a few hundred NIS [*in commission*]. Here in our chain we have a constructive competitiveness.

This statement expresses a positive view of the spirit of competition among coworkers on the sales floor. It also clearly conveys that management is aware of the potential for contests to bolster salespeople’s self-image and professional standing through constant self-rating against others. As the manager indicates, competitions and incentive plans can also provide salespeople with a substantial pay increase through the commissions they make and the prizes they can win. The control capabilities of the automaton are not restricted to the branch level. In fact, they become even more apparent in the chain-based competitions I describe below.

Salespeople generally share management’s view of the importance of commissions as a supplement to their low basic pay. Yet, as indicated in the interview excerpt above, contests have a deeper meaning for salespeople. In light of their ability to engage in mutual viewing, success or failure affects their occupational esteem. In the following comments, a salesperson reveals how the sales measures inscribed in the automaton’s software, coupled with the opportunity for mutual viewing that the automaton facilitates, become a means of evaluating salespeople within the online viewing community:

Salesperson: As to my level, I am – not just what I think, what other people say about me – I’m high level. As someone that doesn’t understand this field [*computers*], I sell in large sums . . . Most of my time here, in this branch I was first place, always first, most of the months.

Q: *Do they rate you here?*

- S: Yes, there is always the branch rating. In the chain itself, I was once first place, this month, I'm the first place in the chain out of 400 employees. Once every half a year or so someone would pass me by 5000 to 10,000 NIS. This is nothing, just one sale, one sale I make.

This salesperson presents the results of the branch and chain-level competitions as objective measures of professional accomplishment, qualitatively distinct from employee self-perception. Calculated by the automaton, these 'objectified' measures, the speaker argues, are accepted by the other members of the online community and can be translated into a source of occupational esteem. Yet the classification and formulation of work performance conducted automatically by the automaton is not an objective but, rather, a political act representing management's desire to bolster sales. Hacking (1995) asserts that the power inherent in categories is based on their ability to impose the realities they supposedly only describe. Here, when management designs work performance categories, they become lenses for mutual viewing, and the limited aspects of human agency they capture and quantify impose themselves on viewers as employees' public and 'real' self-representations. Since face-to-face encounters only occur within circumscribed locales, like the individual branches of the computer chain, and not among all members of the online community, workers have no means of performing other personal qualities through which informal organization might take shape. In other work settings, informal organization can offset the power of various means of control such as production norms and bonuses (Burawoy, 1979). The absence of any potential for informal organization in the operation of the automaton enhances the system's control capabilities. Sales figures and achievements in the different competitions constitute salespeople's main representation within the online community. This limited representation renders the social fabric of the online community thin and amenable to further managerial manipulation through the introduction of increasingly complex work performance figures that further stratify and individuate workers.

While salespeople find themselves subjected to mutual viewing on a large scale, management fades into the background. As the previous excerpt suggests, gradually, through the ongoing operation of the automaton, objectified measures of sales performance are accepted by members of the sales force as neutral measures of their own skills and those of others, and the managerial interests behind them are further obscured.

The ability and tendency of salespeople to continuously observe one another's sales figures through the automaton is apparent in the following description of a large sales competition organized by a supplier:

- Salesperson: Not long ago, Brand X of portable computers, whoever sold the most in the whole chain received an LCD screen. One of the salespersons could receive one, so it motivated the salespeople to sell more of Brand X.
- Q: *Does this create competition within the branch?*
- S: Yes, it created competition but mostly among the branches rather than among the salespersons in the same branch.
- Q: *How do you know what takes place in the other branches?*
- S: There is a possibility to see through the reports, we have access to the sales records, and we [*in the Tel Aviv branch*] have no problem to see

how much someone in Haifa sold. This creates competition. I didn't really take part in it, so I transferred my sales to someone who did participate and wanted to, so whenever it came to Brand X, I let him close the deal.

This excerpt is telling in a number of ways. First, the speaker makes a clear connection between employees' mutual viewing, which the automaton facilitates, and a spirit of competition inspired within the sales force. He also mentions that he decided not to take part in a specific competition, which points to individuals' ability to exercise some degree of social agency and resistance to this system of control, which is designed to motivate sales. While salespeople are required to enroll in the automaton, they can opt not to compete against their peers in all types of contests. As this example illustrates, the chain-based competitions also have an unexpected consequence: at times, they foster cooperation among salespeople in the same branch, who attribute their own sales to coworkers who have a chance to win against individual rivals in other branches. In allowing their colleagues to report their sales as their own, they give up their commissions on those sales. The spirit of competition inspired by the automaton, the extent of mutual viewing and the role of the automaton in instilling professional pride are apparent in the following salesperson's description of one contest:

We had this special prize . . . I can't tell you the details but this was a sales competition in all the chain, we were divided into groups, and in my group, towards the end of the competition, I saw that me and another salesperson [*from a different branch*] are leading, and the reward was a serious one, one you don't get every day, the worth of 5000 NIS [*about US\$1400, more than the basic monthly pay*], And this was already the closing of the last day of this sale, we are already closing the cash register, and I know that I'm tied with the other salesperson and that I might win but might not. I felt really bad, after I gave everything here. Then, a customer peeps through the door and asks, 'Closed?' My friend tells him yes, but I tell him, 'What do you need?' He enters and asks for a GPS. OK, and he looks around. And [*to win*] I need to sell him a portable computer, OK? So he looks at different GPSs and he starts driving me crazy: 'I must compare prices'. And I tell myself, 'I must push him to buy this [*a portable computer*], this is the last customer, I must!' And he looks like someone who has money, so I tell him, 'We are having our last day of a sale' and we really had signs outside: 'Last Day, Crazy Price Reduction; a Computer for only 2800 NIS'. He's interested and says: 'Show me' [*salesperson laughs*], and he purchased the computer [*more laughter*]. And I won!!! This was a sale I will never forget!

This interview excerpt illustrates various elements of the automaton and shows how they coalesce into an efficient system of control through online sales competitions. The fact that all sales figures stream into the network and that this salesperson could observe the figures of all his competitors in other branches in real time created fierce competition. The sums of money the winner of this competition could collect were substantial. Yet more than money was at stake: so was occupational esteem. Note that the salesperson's expression of joy after his dramatic win seems to reflect professional pride in addition to happiness at winning the prize. For the salesperson, winning has material content but also symbolic content within the online community of workers. Winning is an affirmation of his selling skills and his professional standing among the other salespeople in the chain. Again, we see how the formulation of sales

performance provides a baseline for the mutual evaluation of sales skills within the online community.

Salespeople's dependence on customers in these competitions also looms large in this speaker's account. Unlike the situation in a production plant, where management's control efforts are directed at the interface between the operator and the machine (Noble, 1979), on the sales floor, management directs its attention to the interface between salespeople and customers. The automaton mediates this interface. As the above account indicates, the automaton and the competitions it manages position customers as the main hurdle to winning, thereby directing salespeople's attention to customer interactions. Thus, the automaton and the sales competitions free management from some of the tensions inherent in the sales and service triangle. While management cannot control the behaviour of clients, the automaton can inscribe behavioural scripts for salespeople and ensure that they are attentive to customers. Ironically, it is not always the customer's needs that are met. In the example above, the client entered the store with the intention of buying a GPS system and ended up buying a portable computer. What the automaton does ensure, however, is continued capitalist consumption.

The chain-level sales competitions, as noted above, have an unexpected consequence that remains largely outside management's purview: the contests at times encourage forms of cooperation among salespeople within a particular branch. One salesperson recounted his experience of such cooperation, which I suggest is a way of resisting the behavioural script inscribed into the automaton and of working around the control it imposes:

See, in the previous branch I worked in, I was also in a competition, so then everybody saw that I am the only one who had a chance to win, so they volunteered to assist me. That was actually very positive. They noticed that I had the best chance to win so they wanted to assist me with what they could, to even transfer sales to me and such. But it [*a sales competition*] can also bring a negative atmosphere.

This salesperson describes the potential for mutual viewing to create both competition within a branch and a spirit of cooperation when an employee is close to winning a chain-based competition. The ability of all salespeople to view the sales figures of their peers encourages them, at times, to divert their own sales to a branch coworker – thus losing their own commissions – to assist that coworker in winning a chain-wide competition. At the same time, the speaker mentions the potential of competitions to create a 'negative atmosphere', probably referring to aggressive competition among salespeople within the branch and the chain as a whole.

Some lower-level managers and workers criticized the self-regulating system of competition, highlighting its negative aspects. An assistant manager at one branch, who also works as a salesperson, was among them:

We had this competition that took place twice more, among the salespeople, because it increased sales in a crazy way, it created a situation where it was very worthwhile for the salespeople to sell a computer of brand X, and we are the only chain in Israel selling this brand . . . and the prize was a 32 inch LCD TV, second place wins a portable computer . . . but I'm very much against it, very much so! It creates a spirit of greed among the salespeople, and then you reach a situation where the salespeople don't want to sell products that don't offer a reward for selling them, they don't want to make an effort, but a product which grants you vouchers, they will sell!

One can detect, then, a tension within management regarding sales competitions. While top managers at headquarters are often the ones initiating sales contests through the automaton, the assistant manager cited here is opposed to the frequency of these events, since it results in a tendency for salespeople to sell only those products on which a competition is focused. In the speaker's view, the practice encourages greed, which he perceives to be morally reprehensible.

Top management in this case goes beyond simply installing the automaton and inscribing behavioural scripts in it. It also takes steps to ensure the legitimacy of its operation. Legitimacy transforms the application of control into authority. Constituting the automaton as a legitimate form of control means that sales workers accept its operation and justify its use. For management, legitimization of the automaton can enhance salespeople's inclination to actively participate in competitions and reduce the odds of sales-floor resistance. Below, I describe how management attempts to legitimize the automaton and how the automaton further enhances its own legitimization through its operation and engagement with salespeople.

The legitimization of the automaton and its role as an 'object of belief'

To render the control capabilities of the automaton legitimate, management presents it as a fair and just system for resource allocation. The values inscribed into the operation of the automaton are fair competition among individual salespeople, open access to information for all contest participants and antagonistic social ties based on fierce competition among atomized economic actors, each striving to realize his or her economic interests and maximize individual rewards by winning contests. These values are similar to those imbuing economists' vision of a 'perfect market' (Knight, 1921), which is predicated on symmetrical distribution of information and a large group of actors who compete, as individuals, against each other, who work to maximize personal utility and who share a basic sense of fairness of trade. The design of the sales contest is meant to instill a belief that markets represent a good and just way to allocate resources. Given salespeople's position at the market's frontier, the inscription into the automaton of values associated with a perfect capitalist market should come as no surprise. After all, salespeople produce and reproduce the market through their daily encounter with buyers (Darr and Pinch, 2013), and reflections about the market and the way it operates are part of daily discussions on the sales floor. Yet the inscription of market values into the automaton is also part of larger trend in managerial ideology towards what Kunda and Ailon-Souday (2005: 201) call 'market rationalism', which 'uses the root image of the market and of the patterned relationships between rational market actors to capture, understand, and describe corporate realities and to guide managerial practice'. As I discuss below, the automaton lures salespeople to engage in contests and, through engagement, propagates values associated with 'market rationalism'.

Market values underpin the operation of the automaton in my case in two distinct ways. First, they lure salespeople into engagement with the automaton and encourage active participation in sales contests. Second, having been inscribed into the automaton and transformed into behavioural scripts, they enhance the system's legitimization through active employee engagement with it. Below I present the empirical manifestation of each of these elements in helping render the automaton legitimate.

Transparency of information. Sales information in different configurations constantly streams into the online community. Different sales contests take place simultaneously through the automaton, and thanks to informational transparency, each salesperson knows his or her rank ordering in each of them and can discern which contests he or she has the greatest chances of winning. Employees can verify the accuracy of the streaming information by following their own constantly updated sales figures and can then devise competitive strategies based on this information. The public presentation of sales figures also enhances the legitimacy of the final ratings, since the entire sales force knows which employee is leading a particular sales contest at successive points in time.

Ensuring fair competition between individual salespeople. Management renders the automaton a just system by ensuring fair competition among salespeople while eliminating the inherent advantages enjoyed by some branches. For example, in the case of an elaborate competition involving both branches and individual salespeople and initiated by the supplier of a certain brand of computers, management grouped branches according to their gross sales to ensure fair competition. A branch manager describes how this contest worked:

We launched today a competition of Brand X. They turned the whole chain into kind of teams: The Reds, Greens and Blues. Now the Reds are the strongest branches including my branch, Branch B and Branch C. Of this group, the five salespeople who will sell the most computers of Brand X will receive prizes. First place a Wii system, second place, I don't know, a portable computer or something like that. Cool competition. Other than that they have more competitions. Every supplier that comes to our branch holds sales and competitions . . . you have workers who travel abroad, win game consoles, portable computers and money, which you often get.

This example illustrates the degree of craftsmanship and thought invested by management in the design of sales contests. Some branches are located in more affluent neighbourhoods or shopping malls, and their locations give them an inherent advantage in achieving high gross sales, thus increasing their (and their individual employees') chances of winning competitions. The assignment of branches to colour-coded groups is meant to remedy this situation and to preserve a sense of fairness. The competition itself, which includes the division of the whole chain into 'leagues' and 'teams' and the use of colours to designate teams, clearly references a sporting event. Here, the sports arena is mobilized to portray the automaton as fair and just. From the chain's perspective, the constitution of a fair competition is important for establishing legitimacy and thus the active participation of salespeople in all branches, not just the most lucrative ones.

Pitting one salesperson against the other. When asked if the elaborate incentive system inscribed into the software instills a spirit of competition in the sales force in his branch, one manager replied:

Yes, a lot, which is both good and bad. I mean it really motivates them. Many times I tell them: 'Did you see how he [*a specific salesperson*] bypassed you?' This is in order to motivate them to sell more. But there is also: 'This salesperson stole my customer here and there', I tell him, 'Stop looking at your own sales and look at the branch as a whole.'

This comment exemplifies how branch-level management actively encourages the act of mutual viewing through the automaton, thus reinforcing its control capabilities. The excerpt also illustrates how the sales contests act to individuate the sales force and to enhance competition among salespeople. Individuation is also apparent in the way the branch manager pits one salesperson against another and in how he encourages salespeople to engage in self-interested behaviour. But this excerpt also suggests that competition is a double-edged sword. At times, it motivates individual salespeople to compete against others in the branch and the chain as a whole and to participate in selling games. At other times, however, branch managers acknowledge the adverse impact of the automaton on social cohesiveness among salespeople in a particular branch, who accuse each other of stealing customers.

Management efforts to legitimize the operation of the automaton do encounter resistance. A few salespeople expressed resentment towards the automaton, citing personal moral values or professional norms rather than organizational values. For them, some competitions and incentive plans are antithetical to good and moral salesmanship. One salesperson provided the following example:

At the time there was this deal where if we sell a certain number of products of a specific make the branch would get X amount of money and I'd get a commission [*above the regular one*]. But this wasn't something I cared about, since I don't believe in the product, and I don't sell products in which I don't believe, because this is my personal morality.

This speaker presents a clear moral argument for abstaining from a competition that promotes poor-quality products. The excerpt also demonstrates that engagement with the automaton can invoke moral sentiments at odds with the values propagated by the contests. It suggests that some employees engage in forms of resistance and workarounds on the sales floor that are grounded in personal and professional values. To be sure, evidence of moral resistance to the values inscribed into the automaton is rare. The vast majority of salespeople reported that they participate in sales competitions, attempting to reap the many prizes and money vouchers that serve as important supplements to their paychecks and accepting, through work practice, the values inscribed into the automaton. Such active participation constitutes a limited indication that the automaton is viewed as legitimate.

The transformation of managerial control into authority, then, is predicated on the automaton's ability to operate as an 'object of belief'. Once salespeople actively engage in sales contests, the automaton can propagate the values that reflect 'market rationalism' (Kunda and Ailon-Souday, 2005). These values are closely aligned with managerial interest in individuating the sales force and fostering antagonistic relations within it. Despite the automaton's potential to shape the actions and beliefs of workers through engagement, salespeople still find ways to resist it, within and outside the system.

Discussion and conclusions

In his seminal book *The Technological Society*, Ellul (1964: 431) observes with horror, 'Who is too blind to see that a profound mutation is being advocated here? A new

dismembering and complete reconstitution of the human being so that he can at last become the objective (and also the total object) of technique'. The automaton represents the realization of some of Ellul's worst fears. This internet platform targets and objectifies salespeople, reducing their online identities to their ratings in sales contests, all but erasing personal attributes and the potential for informal organization. Management can easily scrutinize salespeople's performance via well-established criteria loaded onto the automaton. The application of the alleloptic vision – that is, the ability of all salespeople to engage in mutual viewing of their peers at all times – enhances these control capabilities, with the automaton constituting a large-scale form of what Barker (1993) dubs 'concertive control'. Yet control through the automaton is not restricted to a work team whose members engage face-to-face but is extended to a large online community of salespeople, each represented by a constellation of sales measures and ratings. The wide scope and penetration of the automaton make its operation as a workplace-control mechanism unique.

The term 'alleloptic vision' makes reference to, and creates a distinction from, the notion of the 'panopticon', coined by Bentham (1791) to describe the design of the modern prison. Panopticism inspired critical depictions of total institutions, most notably by Foucault (1977), and of workplace surveillance and control throughout most of the 20th century (for a discussion, see Sewell, 1998). The notion of the 'alleloptic gaze' shares the panoptic emphasis on surveillance, individuation and measurement of work performance. Whereas in the panopticon, information about individual workers flows upward through a hierarchical power grid, the alleloptic gaze is predicated on horizontal information flows made available to all workers within an online community. The alleloptic gaze facilitated by the automaton allows members of the online community to impute expertise to other virtual-community members and to ascribe different levels of skill to them in relation to various types of sales. Imputed expertise is a well-documented means of occupational coordination and social control (Freidson, 1970, 1984) that allows members of occupational communities to draw boundaries between centre and periphery and to identify experts within the community. As enacted through the automaton, the alleloptic gaze can be seen as the large-scale harnessing of occupational means of social control for managerial goals. Future research can examine the degree to which imputed expertise operates as a control mechanism within other virtual communities of workers constituted by management. But the automaton does more than facilitate efficient control. It also represents the culmination of a long trend towards the automation of the production of workplace authority.

The constitution of workplace authority has been described by leading scholars as a key managerial challenge, not to be confused with the need for workforce control (Bendix, 1956; Burawoy, 1979; Weber, 1946). This study set out to re-establish the conceptual boundaries between control, legitimation and workplace authority, terms that are often conflated in critical studies of contemporary workplaces. The conceptual demarcation of control, legitimation and authority elucidate the multi-faceted operation of the automaton. The extended control capabilities of this object are clear. Yet, to achieve active employee participation in sales contests and reap the benefits of these capabilities, management must render the operation of the automaton legitimate. First, control is applied through an artefact that enacts 'objective' measures of performance, and management's role in designing this object is deliberately obscured. Second, the emphasis on fair play in the

design of sales contests and the importation of vocabulary from the sports arena further enhance the automaton's legitimacy. Finally, the transparency of the streaming sales figures contributes to the legitimacy of the automaton by allowing all workers, regardless of rank, to monitor the accuracy of their own ratings and those of their peers at all times. Once the legitimacy of the automaton is established, to the degree that most salespeople are ready to actively engage in sales contests, the most elusive, yet central, role of the automaton as an 'object of belief' can come into play.

'Objects of belief' (Fleming and Spicer, 2005) propagate values and norms through active engagement, with no need for their internalization by social actors. The automaton lures salespeople to engage with sales contests by offering hefty prizes and by presenting itself as a fair system for reward allocation. Through their performance of the behavioural scripts inscribed into this internet platform, salespeople can become believers in the normative foundation of the automaton, which is predicated on what Kunda and Ailon-Souday (2005) call 'market rationalism'. The automaton individuates the sales force, facilitates symmetrical distribution of information among employees, prescribes antagonistic social relations and justifies self-interested behaviour through its reward system. These elements coalesce into a coherent system of meaning that the automaton can impose on salespeople, as they try to make sense of their daily work.

The automaton is a flexible object. The specific values loaded onto it are context bound, and it can propagate different values and behavioural scripts in different contexts. The effectiveness of the automaton also hinges on its ability to preserve the illusion of an interpretive space that allows workers to evaluate and accept or reject its normative foundations. Resistance both within and outside the system should be seen as the realization of this interpretive space. While Fleming and Spicer (2005: 191) see what they call 'pre-programmed automatons' as deterministic forces that leave no space for interpretation, this study demonstrates that even under such penetrative systems, workers find ways to maintain limited degrees of social agency and resistance.

While the findings reported here are limited, based as they are on a single case study, I suggest that variations on the automaton have recently emerged in various professional arenas, academia being a key example. Google Scholar, for instance, has provided the global academic community with the technical capability to engage in mutual online viewing of streaming performance measures – here, the number of one's scholarly citations. In turn, mutual viewing within the academic community is encouraging the formulation of new measures, such as the h-index and AIT metrics, by which constant comparison can be made. These applications enable formulation of increasingly complex assessments of academic performance, for example, through scales that weigh number of citations, the impact factor of publication venue and the number of downloads of an article via various internet sites. Comparisons can thereby be made among individuals and academic departments.

This case study illustrates a noticeable trend towards the use of internet-based automatons that govern workflow. Management's ability to present performance measures to online communities of workers in real time is likely to become more common with the advent of wearable technologies, increasing electronic surveillance and improving capabilities for compiling and analysing vast amounts of streaming information. Thus, internet-based automatons are likely to appear in a variety of production and supply chains and to transform the way we conceptualize, exercise and resist workplace control and the constitution of authority.

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Asaf Darr is an associate professor in the Department of Sociology, University of Haifa, Israel. His research focuses on technology and work organization in the sales sector, the sociology of markets and the interplay of commodity and gift economies in contemporary mass markets. He is the author of *Selling Technology: The Changing Shape of Sales in an Information Economy* (Cornell University Press, 2006). With Trevor Pinch he published in 2013 ‘Performing sales: Material scripts and the social organization of obligation’ in *Organization Studies* 34(1): 1601–1621. In 2017 he published ‘Gift-giving in mass consumption markets’ in *Current Sociology* 65(1): 92–112. [Email: adarr@univ.haifa.ac.il]