
Scientific management: its inapplicability to contemporary management challenges

Anil Kumar Palla

Campbellsville University, USA

Iris Billy

Medgar Evers College, City University of New York, USA

Keywords

Frederick Taylor, Taylorism, scientific management

Abstract

This paper contained a critique of the management approaches and philosophies of Frederick Taylor. The critique was based on four claims, namely that (a) The tension between management and labor unions is no longer primarily based in productivity and what Taylor referred to as 'soldiering'; (b) the insights of Taylorism have already been applied to business process management; (c) machines have addressed the problem of soldiering; and (d) the next frontier of organizational efficiency and management excellence is the productivity of knowledge, not the productivity of manual labor. Evidence was presented for each of these claims, with the purpose of analysis being to compare and contrast the kinds of approaches Taylor suggests in Principles of Scientific Management to the actual challenges faced by contemporary managers in contemporary organizational settings.

Introduction

At the beginning of the twentieth century, the American management theorist Frederick Winslow Taylor published (Taylor, 2014) the seminal *Principles of Scientific Management*, perhaps the first attempt to apply scientific principles to organizational processes as well as management. The purpose of this paper is to consider the relevance of Taylor's approach and theory to contemporary management challenges. The hypothesis defended in the paper is that Taylorism is no longer relevant to contemporary management, for the following reasons: (a) The tension between management and labor unions is no longer primarily based in productivity and what Taylor referred to as 'soldiering'; (b) the insights of Taylorism have already been applied to business process management; (c) machines have addressed the problem of soldiering; and (d) the next frontier of organizational efficiency and management excellence is the productivity of knowledge, not the productivity of manual labor. Evidence for each of these claims has been presented in the body of the paper, after which the conclusion reiterates the argument that Taylor's relevance is more historical than contemporary.

A Critique of Taylorism's Contemporarily Applicability

Taylor's *Principles of Scientific Management* was based primarily on the author's experience as a management consultant (a term that did not exist at the time, and that does not appear in Taylor's book, but that is nonetheless an appropriate description of his role) at the Bethlehem Steel Factory in Bethlehem, Pennsylvania (Taylor, 2014). At this era in American history, there were numerous obstacles to organizational efficiency and management excellence, and these obstacles provided the context in which Taylor made his contributions to the emerging science of management. Four such obstacles were: Clashes between management and unions, with unions often encouraging their members to work less hard at work, in the phenomenon known as 'soldiering'; the absence of proper business management; the necessity of augmenting machine productivity with human productivity; and a de-emphasis of knowledge work in favor of manual work. As argued in the four sub-sections

of this part of the paper, none of these concerns is particularly applicable to contemporary managers or organization. Thus, to apply the principles of Taylorism in contemporary settings would largely be fruitless, if not actively counterproductive, as argued in greater detail below.

Management and Unions

At the Bethlehem Steel Factory, when Winslow (2013) gathered the data and derived the insights that would subsequently come to form the core of *Principles of Scientific Management*, management was eager for its unionized workers to work as hard as possible, whereas the workers themselves wanted to work less hard. Winslow noted that, in many instances, workers ‘soldiered,’ that is, loafed or otherwise deprived management of their full effort. In this context, Winslow’s empowerment of management was designed partly to give management a stronger hand in its dealings with unions. The reason for Winslow’s motivation to empower management can be adduced from a closer consideration of the historical dynamics of labor unionism in early twentieth-century America and from a contrast of this state of affairs to current union membership levels.

Principles of Scientific Management was published at the height of labor union power in the United States (Allen, 1988; Belman & Voos, 2006; Canak & Miller, 1990; Clawson & Clawson, 1999; Dickens & Leonard, 1985; Fichtenbaum, 2011; Moore & Newman, 1988). However, in contemporary times, unions are largely irrelevant, representing a radical change from Taylor’s highly unionized times. Figure 1 below, an original figure based on tabular data (Unionstats.com, 2015), indicates that only around 1 in 10 American workers is unionized, and the downward trend in union membership suggests that, in the future, union membership will be even smaller. In the contemporary setting, the relationship between managers and employees is not governed by the union dynamics that prevailed in Winslow’s day – dynamics that were often adversarial to management in terms of ‘soldiering’ – but by more direct relations between managers and individual workers. For this reason alone, Winslow’s adversarial approach, designed to empower management at the expense of unions, is of little relevance in contemporary organizational settings in the United States, which, as Figure 1 suggests, are unlikely to be unionized.

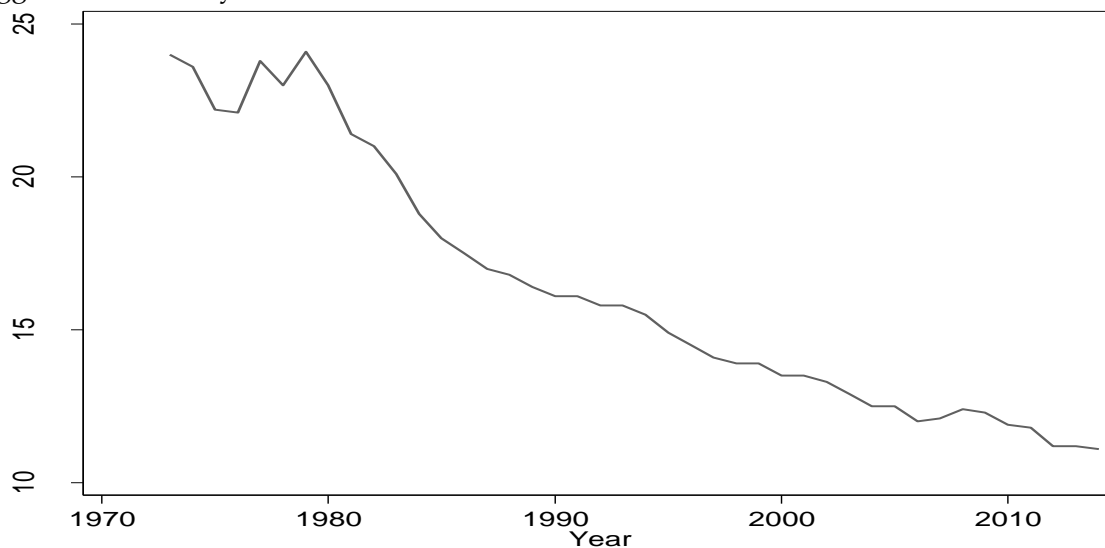


Figure 1. Decline in American union membership (all sectors, 1973-2014). Note: Original figure.

Business Process Management

Although many of these arguments in this study critique Taylorism for being ineffective or obsolete, as understood from the point of view of contemporary managers and organizational settings, there is at least one realm in which Taylorism succeeded, and continues to succeed, spectacularly: The realm of business process management. The core competency of business process

management is to create a means of working that is scalable, efficient, and cheap (Bi, Davison, Kam, & Smyrniotis, 2013; Bintoro, Simatupang, Putro, & Hermawan, 2015; Worley & Lawler, 2010). Writing just a few years after the publication of *Principles of Scientific Management*, the automotive pioneer Henry Ford wrote that “In our own work we have always found that, if our principles were right, the area over which they were applied did not matter....It has never made any difference with us whether we multiplied what we were doing by five or five hundred” (Ford, 2013, p. 225). This statement of Ford’s is a perfect expression of business process management, and it is indebted to the intellectual and practical framework that Taylor created in *Principles of Scientific Management*.

In the realm of business process management, Taylorism succeeded so well that it made itself obsolete. In environments (Garson, 1989) ranging from fast-food restaurants to factories, generations of managers influenced by Taylorism created business processes that streamline work and reduce the element of human error—and, indeed, human choice—that so vexed Taylor himself (Taylor, 2013). Because business process management has succeeded so well as a discipline, it has both surpassed Taylor’s initial, comparatively simpler vision of business process management and reduced the need for contemporary managers to reinvent the wheel. In this respect, therefore, an application of Taylorism in contemporary business process management would be redundant at best and actively destructive of existing systems at worst.

Automation

One of Taylor’s most famous contributions to business efficiency was his calculation of the ideal shovel size at Bethlehem coal. Taylor found that, when shovels were designed to carry a maximum of 9 pounds, workers would be able to carry these shovels throughout the workday without getting unduly tired. When shovels were much larger than this size, then workers would either under-fill them—especially when they were ‘soldiering’—or fill them completely, in which case they would soon get tired. Much of *Principles of Scientific Management* contains guidelines for managers to derive more work from laborers in this manner. These guidelines were important in Taylor’s time, but, in the age of automation, are radically less important, at least to contemporary organizations.

In contemporary times, the vast majority of work described by Taylor in *Principles of Scientific Management* is conducted by machines, whether robots or machines with active human operators (Matthews et al., 2015; Maurizio Faccio, Kilic, & Durmusoglu, 2015; Rujirayanyong & Shi, 2006; von Suchodoletz et al., 2011). In this context, there is far less of a need than there was in Taylor’s time to understand how to generate more productivity from manual laborers. The steady spread of automation means that Taylor’s principles of [manual] worker management are largely obsolete.

Knowledge Work and Manual Work

The business theorist Peter Drucker noted (Drucker, 1998, 2014) that the main managerial and organizational challenge of the first half of the twentieth century that of mechanical productivity, whereas the challenge of the remainder of the century—a challenge that continues to exist in contemporary times—is that of mental productivity. The combination of automation, business process management, and the design of optimal physical environments—which are legacies of *Principles of Scientific Management*—successfully addressed the challenge of mechanical productivity. However, the challenge that remains to be addressed is that of knowledge productivity.

At organizations such as Dell and Toyota, simple ideas by line workers can, and have, saved their respective companies millions of dollars (Hitt, Ireland, & Hoskisson, 2009). In the contemporary economy, a good idea is worth far more than manual labor—which can be provided by machines in any case. Drucker (1998, 2014) argued that the main challenge contemporary managers faced was to create workplace environments and relationships that encouraged workers to make active, knowledge-based contributions to the organization. These contributions were, according to Drucker,

the main drivers of competitive advantage in contemporary organizations, and the main task of contemporary managers was to understand the nature of motivation in a knowledge economy rather than in an economy based predominantly on manual labor.

Taylor (2013) never envisioned such a state of affairs, because, in his time, the nature of the economy was such that workers' contributions to organizational success were more limited. For a contemporary manager, the main challenge is not to find a way to squeeze more productivity out of a manual laborer, but, rather, to create a knowledge workplace in which workers of all kinds feel empowered and encouraged to suggest the kinds of ideas that save their organizations money, generate new markets, and, simply put, create the kind of competitive advantage that labor productivity alone cannot generate. In such an environment, *Principles of Scientific Management* is obsolete, because it has nothing to say on the topic of facilitating knowledge work and the knowledge economy. Rather, *Principles of Scientific Management* is a guide to micromanaging manual labor, an endeavor that is hardly likely to add value to a modern corporation.

Conclusion

The hypothesis defended in this study was that Taylorism is no longer of substantial relevance in organizational theory of practical management, for four reasons. First, the tension between management and labor unions is no longer primarily based in productivity and what Taylor referred to as 'soldiering.' Second, the insights of Taylorism have already been applied to business process management. Third, machines have addressed the problem of soldiering. Fourth, the next frontier of organizational efficiency and management excellence is the productivity of knowledge, not the productivity of manual labor. Collectively, these reasons suggest that Taylorism is of more historical than contemporary relevance.

References

- Allen, S. G. (1988). Declining unionization in construction: The facts and the reasons. *Industrial & Labor Relations Review*, 41(3), 343-359.
- Belman, D., & Voos, P. B. (2006). Union wages and union decline: Evidence from the construction industry. *Industrial & Labor Relations Review*, 60(1), 67-87.
- Bi, R., Davison, R. M., Kam, B., & Smyrniotis, K. X. (2013). Developing organizational agility through IT and supply chain capability. *Journal of Global Information Management*, 21(4), 38-55.
- Bintoro, B. P. K., Simatupang, T. M., Putro, U. S., & Hermawan, P. (2015). Actors' interaction in the ERP implementation literature. *Business Process Management Journal*, 21(2), 222-249.
- Canak, W., & Miller, B. (1990). Gumbo politics: Unions, business, and Louisiana right-to-work legislation. *Industrial & Labor Relations Review*, 43(2), 258-271.
- Clawson, D., & Clawson, M. A. (1999). What has happened to the US labor movement? Union decline and renewal. *Annual Review of Sociology*, 25, 95-119.
- Dickens, W. T., & Leonard, J. S. (1985). Accounting for the decline in union membership, 1950-1980. *Industrial & Labor Relations Review*, 38(3), 323-334.
- Drucker, P. (1998). *Peter Drucker on the profession of management*. Cambridge, MA: Harvard Business Press.
- Drucker, P. (2014). *People and performance*. New York, NY: Routledge.
- Fichtenbaum, R. (2011). Do unions affect labor's share of income: Evidence using panel data. *American Journal of Economics and Sociology*, 70(3), 784-810.
- Ford, H. (2013). *My life and work*. Toronto, Canada: CRC Press.
- Garson, B. (1989). *The electronic sweatshop*. New York, NY: Penguin Books.
- Hitt, M. A., Ireland, R. D., & Hoskisson, R. (2009). *Strategic management: Competitiveness and globalization*. Mason, OH: South-Western.

-
- Matthews, J., Love, P. E., Heinemann, S., Chandler, R., Rumsey, C., & Olatunj, O. (2015). Real time progress management: Re-engineering processes for cloud-based BIM in construction. *Automation in Construction*, 58, 38-47.
- Maurizio Faccio, D. Y. C., Dr, Kilic, H. S., & Durmusoglu, M. B. (2015). Advances in assembly line parts feeding policies: a literature review. *Assembly Automation*, 35(1), 57-68.
- Moore, W. J., & Newman, R. J. (1988). A cross-section analysis of the postwar decline in American trade union membership. *Journal of Labor Research*, 9(2), 111-125.
- Rujirayanyong, T., & Shi, J. J. (2006). A project-oriented data warehouse for construction. *Automation in Construction*, 15(6), 800-807.
- Taylor, F. W. (2014). *The principles of scientific management*. New York, NY: Harper.
- Unionstats.com. (2015). Union membership and coverage. Retrieved from <http://www.unionstats.com/>
- von Suchodoletz, D., Rechert, K., Welte, R., van den Dobbelssteen, M., Roberts, B., van der Hoeven, J., & Schroder, J. (2011). Automation of flexible migration workflows. *International Journal of Digital Curation*, 6(1), 183-198.
- Worley, C. G., & Lawler, E. E. (2010). Agility and organization design: a diagnostic framework. *Organizational Dynamics*, 39(2), 194-204.
-