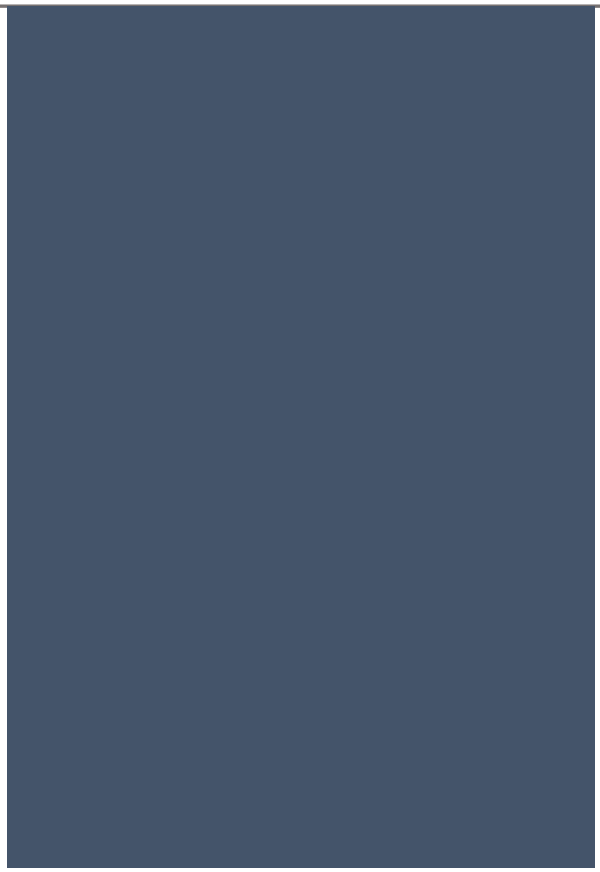

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[BOOK REVIEW]

Kazuhide Odaki, **The Right to Employee Inventions in Patent Law. Debunking the Myth of Incentive Theory**, Oxford: Hart publishing, 2018, pp. 203.

Elisa Contu

Employee inventions is a subject of great concern, which involves multiple conflicting interests with strict intertwining of labour law and patent law matters. In particular, the established principle that employers should enjoy the fruits of labour of their employees seems to clash with statutory laws, which in almost all countries require employers to pay a compensation to employee for their inventions, in addition to their salary and benefits. This rule can be interpreted in different ways, but the most plausible explanation is likely to be found in the 'incentive theory,' one of the traditional theories on the justification of the patent system. The idea is that a patent fortifies incentives to invent, to undertake challenging and uncertain activities of research: as such, it is an instrument for stimulating the creation of inventions and for enabling 'innovation.'

This approach appears particularly consistent with the position of independent workers linked to the historical image of the 'hero-inventor,' typical of the eighteenth and nineteenth centuries and perfectly represented by Thomas Edison or Alexander Graham Bell. They personify the idea of a lone, individual scientist, who creates inventions thanks to his brilliant talent and who shoulders the main related risks, including financial risks.

Nowadays, the production system has substantially changed, the cases of inventions made by a single inventor alone is the exception and the most part is created by teams of scientists and engineers working in corporations. Inventions are usually the result of the contribution of more actors with different positions, skills and risks, such as employers, employee inventors, employees who are not named as inventors but participate in the invention, middle-level managers, supervisors.

How does the 'incentive theory' work in this background? Do employee inventors need of an additional compensation to fortify their motivation to invent? Is it a useful and adequate instrument in order to boost the creation of inventions and also to stimulate innovation?

These are some of the inquiries which Odaki tries to answer, focusing his attention on inventions "made by employees in the course of their normal or specifically assigned duties during working hours using their employers' resources" (p. 7).

The Author's point is clear in the very title of the book, where he sets the aim of "debunking the Myth of Incentive Theory." It is a myth which has been refined over the years and which has been rarely questioned whether it actually motivates inventors, "it has been taken for granted in the relevant literature of law and economics that money acts as an incentive for employee inventors to invent" (p. 5).

Odaki carries out a comparative study based on a critical, empirical, and pragmatic approach. There is an effort to deconstruct that hard idea, investigating and testing its assumptions.

The book is structured into two parts. The first one is characterized by a multidisciplinary analysis. Considering the various aspects of the issue, the Author refers to psychology and econometric studies and, in particular, to several large-scale empirical surveys, in order to investigate whether monetary rewards have a positive effect on motivation, productivity, and creativity of scientists and engineers and, as a consequence, on the creation of inventions.

The second part examines the ownership of employee inventions in order to understand whether additional compensation required from the employers is to be considered as a payment for the transfer of inventions originally owned by employees. To this purpose, the Author engages into a deep comparative analysis of Common Law and Civil Law jurisdictions with separate attention for academic inventions that are characterized by the absence of a duty to invent as well as by 'academic freedom.'

The work is developed on various levels: a socioeconomic approach is accompanied by a purely juridical one, the perspective moves from particular to general, from the single inventor to the teamwork, from invention to innovation. One of the merits of the Author is not to limit the inquiry to the technical aspects of the norms involved, but to deeply investigate how they work in a specific context, avoiding easy generalizations.

At the beginning of the first part Odaki highlights the peculiarities of employee inventors compared with other employees in companies such as unskilled workers. He underlines the relevance of motivation and creativity in their job, the importance of communication and information sharing in teamwork as well as the role of serendipity and even failures in the innovation process.

In the light of these considerations, social psychology studies are remarkable for having shifted the focus from monetary rewards to other job-intrinsic factors which may increase satisfaction and motivation of scientists and engineers. On these bases, many empirical studies have tried to recognise what influences the most the creation of invention. The Author underlines

contradictions and weakness of the various research projects and dedicates main attention to three of them conducted in Europe, US, and Japan. The results do not necessarily suggest that inventors are completely indifferent to monetary rewards but show that they are "far less important for the vast majority of employee inventors than intangible incentives" (p. 36). The most part of employee inventors is motivated by values intrinsic in inventing. At the same time, econometrics studies produce conflicting results about the relationship between financial incentive schemes and the quantitative production of employee inventions. Even where there seems to be a positive effect it is not clear whether a causal relationship should be recognized.

In order to understand why there is not that immediate correlation, Odaki shifts the focus from the subjective standpoint of the individual employee to the 'organisational context' of modern companies, where various elements affect the realization of successful inventions, such as serendipity, corporate hierarchy, and teamwork.

In this scenario, the social image of 'hero-inventors' has been replaced by that of 'team-as-hero' (p. 51), invention is only a part of an innovation process and middle-level managers and supervisors play a central role in allocating economic resources to R&D activities. All this makes the relationship between monetary incentives and employee inventors' productivity particularly complex. This is mainly true with reference to co-workers who contribute to an important part of the inventive process but are unlikely to be regarded as co-inventors according to the criteria of co-inventorship in each jurisdiction – for example, because they understand the problem but not solve it – and so they are not eligible for inventor remuneration.

Odaki underlines that, even if there is not a clear connexion between distributive norms and inventors' productivity, compensation schemes have negative effects on job satisfaction and motivation if they are considered unfair. This perception and the related idea of 'distributive justice' change according to societal norms, distinguishing between 'individualist' and 'collectivist' societies. Nevertheless, various empirical studies support the thesis that the present reward system "will adversely affect the teamwork of employee inventors whether in individualist or collectivist societies" (p. 108). In the first case, it may encourage competition between co-workers, may promote secrecy of employee inventors, and other egocentric and opportunistic behaviours, which stifle communication and hinder the pursuit of interdependent tasks. In the second case, it is likely to affect group harmony and solidarity, which are guiding principles of the innovation process in that background.

Coming to the conclusion that financial rewards do not boost the number of inventions produced, Odaki wonders whether they can induce employee to exhibit their creativity, "which determines the quality of the inventions" (p. 85). He deems that monetary rewards are unlikely to encourage the creativity of employee inventors, because, in the current law of employee inventions, the amount of compensation is often linked to the profits gained by employers thanks to the invention and does not match the degree of creativity exhibited by the inventors. Moreover, even if they may have some positive effects, it is useful to take into account an overall assessment and to examine how they affect team process variables, such as internal communication, cohesion, and psychological safety, which greatly influence workplace creativity. As some studies and the comparison with virtuous examples prove, monetary rewards are likely to lead to competition inside a project team, undermine internal communication, affect cohesion as well as they may increase the focus on 'short-term thinking' or may encourage unethical behaviours at the sacrifice of the quality of the invention. According to research findings in psychology, creativity is more conditioned by other elements: with reference to the individual inventor it should be better represented by the number of citations received or patent renewal data, whereas with reference to the team it greatly depends on social environmental factors, such as the interpersonal relationship among colleagues and the vision of supervisors and top management.

Since the latest surveys and studies in econometrics and social psychology do not provide support to the incentive theory, the Author's conclusion is that "the current law on employee inventions is unlikely to encourage the creation of inventions as the legislature intends" (p. 109). In the second part of the book he considers if the justification for additional compensation can be found in the law of inventor ownership.

He analyses the origin of the relative norms and their current application in order to underline that, even in cases where the ownership of employee invention is vested in employees in the principle, the additional compensation is no longer relevant.

Most attention is reserved to the USA jurisdiction, apparently in contrast with the other common law systems, because Article I Section 8 Clause 8 of the Us Constitution assigns to the inventors the exclusive right to their inventions "to promote the progress of science and useful arts." The author points out that it is doubtful that the principle actually encourages the creation of inventions as it did in the time of the heroic inventor and notes that it has been weakened by legal theories developed by Us Courts in order "to reconcile the constitutional principle with the

reality of R&D performed in companies today" (p. 120). Among them there is the 'hired to invent' rule, according to which the employment is justified by invention and by the accomplishment of a specific inventive assignment. In this case, if the employee makes an invention during time of work and in fulfilling his duties, the employers can acquire the invention even in the absence of an express contract and without paying additional compensation. A second rule provides employers with a 'shop right,' a non-exclusive, free right to use the invention if it is made by employees during timework and using employers' resources. Furthermore, in order to avoid the risk of interpretative uncertainty, US employers often require employees to underwrite a 'pre-invention assignment agreement,' which generally regards all the inventions realized by the employee, even outside the work contest and sometimes also after termination of employment. These agreements are generally deemed enforceable even in the absence of an additional compensation, finding an adequate consideration in employment itself or in the offer of continued employment when the pre-invention assignment agreement is a condition of employment.

Therefore, despite the patent and copyright clause, American courts now accept that "for the sake of innovation employers own or exploit inventions made by employees without paying additional compensation in principle" (p. 136).

Among other common law countries, England and Wales have progressively affirmed that the employer has the ownership of inventions made in the course of normal duties or duties specifically assigned according to the employment contracts, and an analogous approach has been adopted by the jurisdiction of Australia, New Zeeland, Singapore, and Hong Kong. Canadian system is not very different, considering that even if the courts declare that the English approach is not followed and employees initially own inventions made by them, usually the transfer of the invention to the employer does not determine an additional compensation because employment itself is usually considered adequate consideration.

Otherwise, in some civil law countries patent laws have traditionally assumed the 'inventor principle,' which hold that only natural persons are able to create inventions and can become the initial owners of them with the consequence that, independently of employment contract, the ownership of inventions is initially vested in the inventor and employers must offer additional compensation to acquire them.

However, today this scheme is no longer applied rigidly and also in Germany and Japan, where it is still formally relevant, it has been virtually undermined.

In Germany, the current Act on Employees' Inventions adopts the inventor principle, accompanied by the 'monopoly theory' which requires the employer to share the monopoly profits attributable to a service invention with the employee inventor, since there is not a different contractual obligation. However, exceptions have been overtime introduced and some guidelines have elaborated a unique legal scheme for calculating additional compensation for 'service inventions' which mitigated the monopoly theory. In Japan the 'inventor principle,' adopted since 1921, has been undermined by the last amendment of the Patent Act in 2015. Although it has not completely overcome the rule of the initial ownership of the inventor, it has introduced a system where employee inventions belong to employers, including universities, "on condition that it has been provided for beforehand in a contract, workplace regulations or other stipulation" (p. 174). If the employer obtains the right in the invention, the employee has the right to receive "a reasonable amount of money or other economic benefits," which are not the payment for the transfer but rather incentives for them. This implies that what employers have to offer to employee inventors does not need to be commensurate with the economic value of employee inventions and "the 'inventor principle' should no longer be a barrier to the abolition of the legal provision for inventor remuneration" (p. 176).

In light of this deep and multidisciplinary analysis, the Author believes that the inventor's remuneration does not boost employee's motivation, productivity, and creativity and produces adverse effects on teamwork. The inventor principle, where present, has been gradually challenged for the sake of innovation and so it does not support the payment of additional compensation. Besides, it is now differently justified and regulated by diverse statutory laws and this determines negative consequences on certainty and for cross-border operations of companies.

Therefore, his thesis, anticipated in chapter 5, is that inventions should belong to employers who should be allowed not to pay compensation in principle "because of (i) the purpose of the patent system to encourage innovation and (ii) the unreasonable profits employee ownership would bring to named inventors" (p. 115).

On the first point, "the incentive theory regarding the patent system holds that incentives are given to enable 'innovation', not just the creation of inventions" (p. 113), which implies the translation of the invention into a useful product available to end users with enormous costs. On the second point, usually employers are in the best position to undergo the whole process of innovation because they have more experience in estimating profits and costs and the

possibility to invest substantial funds in R&D, whereas the most employee inventors have neither the inclination nor the ability to exploit their inventions. Regarding both points, it is necessary to consider who actually bears costs and risks. Given the actual system, the individual inventors play only a part in the process of innovation, usually they do not run any financial risk and do not generate profits without the contribution of the employees who are not named as inventors (114).

About these issues, the Author discusses separately the inventions made by university researchers. Analysing different systems, in particular the 'professor privilege' adopted in Italy and Sweden and the role of Technology Transfer Offices (TTOs) - which manage the right in academic inventions- he notes that there is no evidence that universities are more likely to encourage innovation than academics.

With reference to the distribution of work, risks and profits, academic inventions presume a teamwork among researchers and research facilities provided by universities or external subjects, similarly to what happens in companies. However, the determination of inventorship is made problematic by the principle of 'academic freedom,' by the non-commercial nature of universities, which have traditionally promoted 'open science,' as well as by the absence of a general duty to invent, different from the duty to research. In this scenario, if inventions made by academics belong to universities, the inventors are obliged not to destroy their patentability, and this can imperil their freedom to publish research results and the possibility for other academics to do further research based on the patented technologies. On the other side, if the ownership of inventions is vested in academics there is the risk of misconducts and, in particular, the possibility of a 'conflict of interest' between researchers' individual interests and their role within university. Taking into account these competing positions, Odaki supports the thesis of universities' ownership on academic inventions, "on condition that an academic grace period is introduced to protect their patentability and ensure academics their freedom to publish at the same time" (p. 178).

In conclusion, the Author's theory is that compensation for inventions should not be made mandatory, since it is unlikely to boost the creation of inventions. "Given that most inventions are made in organisations today, it should be clearly recognized that the main purpose of the patent law is now to provide employers with an 'incentive to innovate', which subsumes an 'incentive to invent'" (p. 182-183).