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German transplant companies in China: how do companies solve the problem of skill formation at the shop-floor level?

Empresas alemanas en China: ¿Cómo solventan las empresas el problema de la formación a nivel de planta?

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DOI: 10.5944/reec.29.2017.17238

Recibido: **6 de octubre de 2016**
Aceptado: **28 de marzo de 2017**

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Abstract

This article explores German transplant companies' attempts to foster and assure the skills levels of their Chinese employees for production and innovation in consideration of a different socio-cultural and political framework. Methodologically conducted by on-site expert interviews, this paper first reports empirical findings on German companies' strategies and practices for recruiting and retaining (skilled) local employees for the shop-floor level. On the basis of Engeström's activity theory, the concept of boundary objects functions as the theoretical framework. The results indicate complementary innovative personnel strategies with regard to qualifying and retaining. In the discussion, the identified phenomena such as the foundation of a coopetitive practical training center are assigned to the theoretical context of boundary objects.

Key Words: China; Vocational Education and Training; VET; Skill Formation; Activity Theory; Boundary Object

Resumen

Este artículo tiene el propósito de aprender sobre la intención de las empresas alemanas en el extranjero en fomentar y asegurar los niveles de competencia de sus empleados chinos en producción e innovación considerando un marco socio-cultural y político diferente. Llevado a cabo metodológicamente a través de entrevistas a expertos in situ, este artículo se centra en reportar sobre los primeros hallazgos empíricos en estratégias y prácticas de empresas alemanas sobre reclutamiento y vinculación de empleados locales (competentes) para el nivel de planta. En base a la teoría de la actividad de Engeström, el concepto de boundary objects actúa como marco teórico. Los resultados indican estratégias de personal innovativas complementarias con referencia a cualificación y retención. En la discusión, los fenómenos identificados como la fundación de un centro de entrenamiento práctico coopetitivo, son asignados al contexto teórico de *boundary objects*.

Palabras clave: China; Formación Profesional; FP; Formación en Competencias; Teoría de la Actividad; Boundary Object

1. Problem Statement

Over the past decades, China has developed impressively in terms of its political, social and economic levels. From an economic point of view, due to lower labour costs that provided important local advantages in the mid 1990s, a large number of foreign invested companies moved their production plants to China. As a result, China became known as the "elongated workbench" (SCHWÄGERMANN, 2016: 166) and has become one of the leading destinations for foreign direct investment (THE WORLD BANK, 2016).

Today, Germany is one of the ten major investors in China, and approximately 5,200 German companies are currently situated there. However, the situation has changed and lower labour costs are no longer one of the key advantages for foreign invested companies to produce in China. Instead, those companies operating in China have a high demand to achieve local adaption and innovation for their products to affect conditions of competition (GERMAN CHAMBER OF COMMERCE, 2015). As a result, as is evident in the case of the mechanical engineering sector, a growing number of German companies are pursuing the field of research and development.

This development is accompanied by an increasing demand for better-skilled workers who can take part in different stages of production processes and who are able to improve product quality and productivity (ZHAO, 2013; DEITMER *et al.*, 2013, GESSLER, 2017). In this respect, China's development from a social point of view is a hindrance.

The situation in the labour market is difficult, and there is a lack of workers both in terms of quality and quantity (LI & SHELDON, 2014; VAN DER BURGT *et al.*, 2014; PILZ & LI, 2014; ZHAO, 2013). The quantitative lack is reflected by low numbers of graduates from vocational schools, which is, in turn, deeply anchored in the Chinese culture (ZHAO, 2013). As most parents have only one child, they greatly emphasise academic tracks geared toward the upper educational system, leading to a low number of graduates from vocational schools (BARABASCH *et al.*, 2009).

The gap of skilled workers in quality, however, can be attributed to an imbalance of practical and theoretical training that is relevant both in vocational schools and academic tracks (PILZ & LI, 2014). Education in China clearly focuses on full-time schooling, but work-related skills and knowledge are tremendously neglected (DEITMER *et al.*, 2013). As a consequence, this is manifested in a disconnection between the design of vocational school and academic track courses and practical employment needs (PILZ & LI, 2014). This results in a mismatch between the employees' skills levels and companies' expectations. Zhao (2013) notes that in order to approach this problem there is a substantial need for cooperation between Chinese companies and vocational schools and colleges in order to promote and standardise laws, regulations and operation mechanisms.

Also, from the governmental side, efforts have been made to strengthen the vocational track, which had been falling behind (DEITMER *et al.*, 2013). However, adequate laws and regulations are still lacking, and the responsibility for vocational education is vague. Some Chinese companies even see the responsibility for vocational education and training (VET) as belonging solely with the government, and are thus neither interested in involvement with VET, nor in cooperation with vocational institutions (ZHAO, 2013).

It is precisely in this field of unresolved tension that German transplant companies[1] are operating. On the one hand, there is a high demand for skilled workers in order to

1 "Transplant companies" are companies that have set up facilities abroad. In this case, the target country is China.

fulfil high product standards and to pursue research and development, but the labour market does not supply this workforce, neither in quality, nor in quantity. There is therefore a need for a number of strategies and measures for firm-based qualifications.

"Workforce Skill Formation and Innovation at the Shop-floor Level in China", financed from central funds by the University of Bremen, is a three-year explorative project, whose object is to investigate the strategy and practice of skill formation in German firms at the shop-floor level in the international context of firms operating in the region of Shanghai, China (GESSLER & FREUND, 2015). This project builds the framework to investigate the central research question:

> "How do German firms with production sites in China foster and assure the necessary skills levels of their Chinese employees for production and innovation when a vocational education system according to the German model does not exist?"

2. Theoretical Approach

Activity theory research aims to analyse different types of activities as well as the learning and developing processes of acting subjects who shape an activity by their actions (GEITHNER, 2012). One of the models that was developed in order to make an activity conceptually tangible was the cultural historical activity theory by Yrjö Engeström (1987).

This theory builds the basic foundation for a concept that has become an explicit part of Engeström's activity theory, the concept of boundary object (AKKERMAN & BAKKER, 2011). This concept is constituted by two terms: boundary and object. Boundaries can be seen as socio-cultural differences leading to discontinuity in an action or interaction where there is, however, a common purpose that is relevant to each actor (ebd.).

Boundaries between groups are formed by common objects through flexibility and shared structure and serve as the "stuff of action" (LEIGH STAR, 2010:603). Objects are those objects that:

> "...both inhabit several intersecting worlds and satisfy the informational requirements of each of them.... [They are] both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use, and become strongly structured in individual site use." (STAR & GRIESEMEIER, 1999: 393)

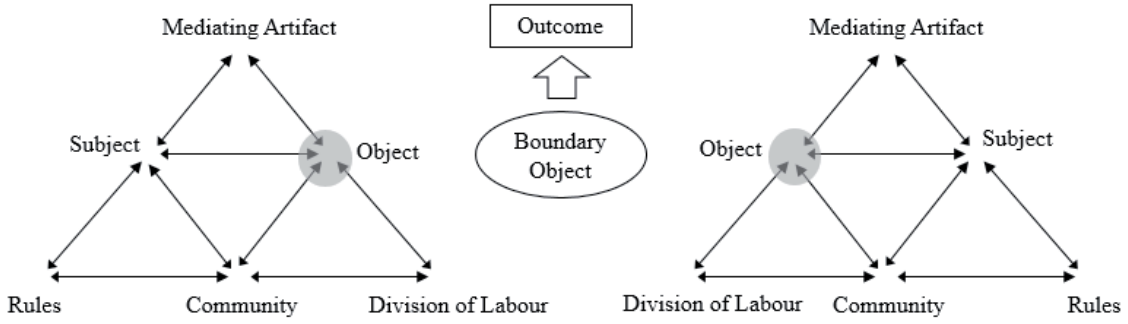

Figure 1. Boundary object as connection of two activity systems. Based on Engeström 1987, p. 78

For this research paper, the concept of boundary object as an extension of the cultural historical activity theory of expansive learning by Engeström (1987) is suggested as a theoretical framework. Engeström's approach seems to be suitable as it considers the two-way relationship of working and learning as well as the connection of individual and collective development, and the concept of boundary object indicates how artifacts can fulfil a specific function in bridging intersecting practices.

3. Methodology

This exploratory research was conducted using a grounded theory methodology, which is a "qualitative research method that uses a systematic set of procedures to develop an inductively derived grounded theory about a phenomenon" (STRAUSS & CORBIN, 1990: 24). This approach is well suited to investigate the above mentioned research question as it fulfils the requirement of a methodological approach that mitigates the uncertainties associated with international comparison studies. Considering the fact that the case study is undertaken in a new area of knowledge where outcomes are difficult to predict, this approach offers the opportunity to construct a new theory through the analysis of data that were empirically gained. Furthermore, it differs from traditional models of research, in which an existing theoretical framework is used to examine whether or not the collected data does or does not apply to the phenomenon of the study.

Data collection was conducted between 2014 and 2016 in the autonomous city of Suzhou, Jiangsu Province, in which a total of around 17,000 foreign enterprises can be found (BMBF, 2013). Within Suzhou, we focused on two economically advanced areas with a local labour market perspective and a high concentration of German transplant companies.

The first research site is Suzhou Industrial Park (SIP), in which 5,000 foreign enterprises are located (BMBF, 2013). Twenty-five per cent of these foreign enterprises have their headquarters in Europe, and around 200 enterprises are German. A sector analysis that we conducted in 2014 shows that around 25 per cent of all German enterprises in SIP are assigned to the manufacture of machinery and equipment sector, which makes up the largest proportion of all sectors and represents the focus of interest for our empirical approach. The second research site within Suzhou is Taicang German Industrial Park, in which 1,200 foreign transplant companies can be found, around 220 of which are German owned. Like with SIP, we focused our data collection in Taicang on German transplant companies in the manufacture of machinery and equipment sector.

All German companies within this sector were contacted via email. Those companies that expressed their willingness to be available for an interview by answering our email were selected for the purpose of investigation.

Data were collected from four different German transplant companies situated in SIP as well as from four with production sites in Taicang through expert interviews with CEOs and human resources and/or training managers. In these eight companies, in total, 13 interviews with different experts were conducted. On average, the interviews lasted around two hours. To achieve comparability, the interviews were semi-structured and were recorded and transcribed for evaluation purposes.

The data analysis procedure followed the grounded theory approach formulated by Strauss and Corbin (1996). In contrast to the classical grounded theory approach, originated by Glaser (1965), this advanced developed approach by Strauss and Corbin

allows theoretical sensibility by analysing categories, codes and coding through abductive reasoning. These different steps are repeated until it becomes possible to describe and explain the phenomenon that is to be researched. In this context, the attention is directed to the theory's suitability as a framework for the data collected. The positive outcome of this fluid exchange between theory and data is a reconceptualisation, based on a creative leap.

4. Results

The empirical findings offer answers to the following questions, which set up the focus of this article:

- What do we learn about the cooperation developed between German transplant companies and vocational schools to solve the problem of skill shortages?
- What kinds of measures are promoted by German transplant companies to strengthen (highly-skilled) employees' loyalty?

Considering all explored issues would go beyond the scope of this article. Therefore, for this research paper, we focus on two phenomena, which examine different perspectives on how German transplant companies try to foster and assure the necessary skills levels of their shop-floor level employees. These ideas build on one another.

4.1 Cooperation in Apprenticeship

In Chinese provinces that have a huge demand for skilled labour, and thus for vocational learning tracks, two reform concepts have emerged in the past several years, production schools and practice firms (DEITMER *et al.*, 2013). Whereas in production schools, production areas for training purposes are developed within vocational schools, in practice firms, artificial practice companies are set up, aiming to give insights into the working environment by simulation (ebd.).

Although these two reform concepts are the results of successful initiatives made by vocational schools in cooperation with Chinese enterprises, these reform concepts cannot replace a system of dual VET (GESSLER, 2016; GESSLER & HOWE, 2013). Deitmer *et al.* (2013) see the problem as mainly that there is a distance that is too huge between vocational training and the job market, and they articulate the urgent need for the implementation of a systematic and well-structured vocational training programme, which would be executed with the cooperation of both sides: companies and vocational schools.

The answer for such a concept might be found in a form of cooperation that was developed by two German transplant companies, a vocational school and the local Chinese government. Although both German companies are suppliers, producing springs, and are thus competitors in their field, they are cooperating. They are "coopetitors" (BONEL & ROCCO, 2014: 9) working together in order to find a solution for their common problem of not getting employees with suitable skills and experience from the labour market.

In cooperation with the local government that gives financial support, as well as a local vocational school that conveys theoretical knowledge, the DAWT[2], a practical training centre according to the German system of dual VET, was established.

2 The abbreviation DAWT stands for "*Deutsches Ausbildungszentrum für Werkzeugmechaniker Taicang*", translated into English as "German training center for tool mechanics Taicang".

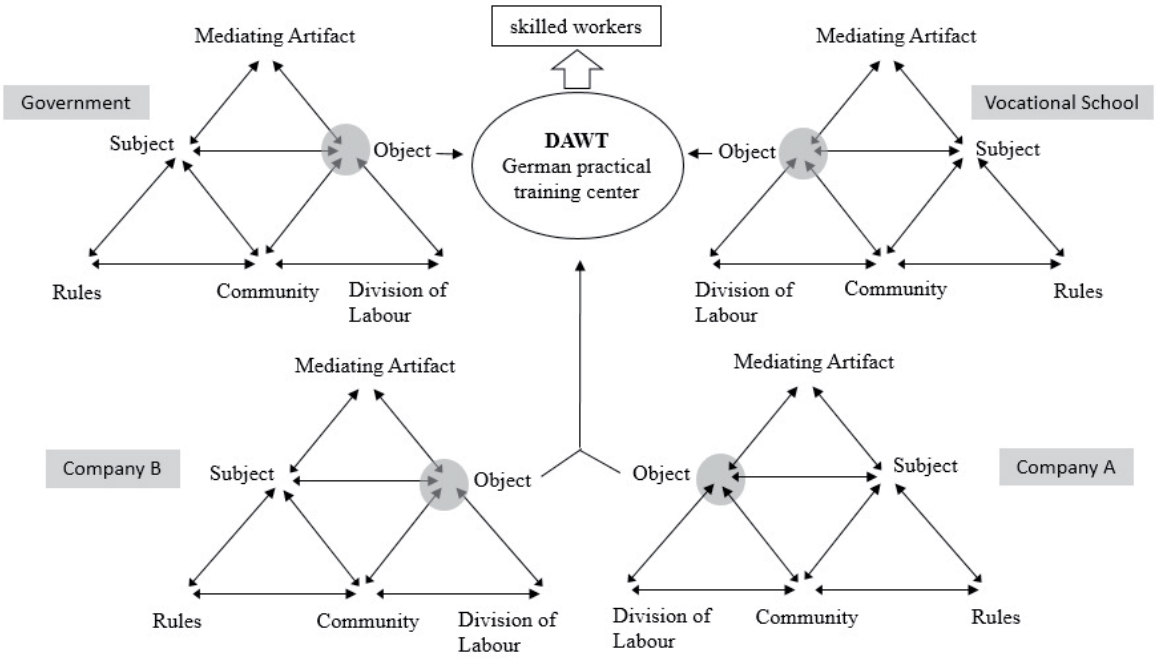

Figure 2. Cooperation in apprenticeship imbedded in the activity theory model. ***Source:*** own illustration.

Imbedding the phenomenon of cooperation in apprenticeship in the activity theory model proves that the DAWT dual practical training centre functions as a boundary object (see section 2: theoretical approach). The two companies involved, as well as the local government and vocational school, share the common objective of finding a solution to compensate for the disconnection between the design of vocational school courses and practical employment needs. DAWT was developed in cooperation with all of the subjects involved and can be classified as a boundary object with skilled workers as the outcome.

Although the parties involved share the same objective, their intention and interest for cooperation differs. The two German companies initiated the cooperation as they continuously require shop-floor workers with suitable skills and practical, work-based experience that was not found in the labour market. Therefore, the two German companies have a privileged position with regard to executing employment agreements with DAWT trainees.

The local government, however, intends to improve the situation in the whole local labour market by giving financial support to DAWT. Graduates who are not employed by the two German companies are available for the labour market as highly skilled workers, both theoretically and practically.

Analysing the phenomenon of cooperation in apprenticeship in depth, we find two types of cooperation. While the government and vocational school constitute a public cooperation, the two German companies represent a private cooperation. Hence, the phenomenon found can be described as a public-private cooperation in apprenticeship that was developed with the objective of fostering the necessary skills levels of Chinese shop-floor workers. This type of vocational education system, according to the German model, had not previously existed in the Chinese context.

4.2 Staff Retention Programme

Despite a lack of skilled workers in quantity and quality, high labour turnover has become another important challenge for employers in China (LI & SHELDON, 2012). With the implementation of an apprenticeship system according to the German dual model (see section 4.1: cooperation in apprenticeship), not only those companies recruiting DAWT graduates, but also others, whose employees have valued experience and skills, face the problem of losing their skilled workers as they are highly coveted on the labour market. Poaching employees from neighbouring firms intensifies competition amongst companies and, as a number of previous studies show, the prevalence of poaching even discourages firms from investing in qualification measures that would be necessary to redress skill shortages (AMCHAM SHANGHAI, 2009; JIANG *et al.*, 2009; LI & SHELDON, 2012).

German transplant companies are confronted with the risk of labour piracy, and in order to keep the number of employees being poached by other companies as small as possible, they implemented attractive staff retention programmes.

One example of such a staff retention programme is the so-called "buddy programme" that was implemented by one of the companies surveyed for this research paper. The respected company developed the buddy programme after they suffered high labour fluctuation over a long period. The programme was designed in consideration of cultural incentives and values and was therefore exclusively implemented at production sites in China.

Every operator that is new to the company is assigned to a fixed "buddy" from the first day of work. Buddies are selected carefully. They must fulfil a minimum duration of uninterrupted company affiliation, as well as a minimum verifiable performance level, and must have favourable personal characteristics. A buddy's task is to foster the integration of a new employee into the company, for example, by spending lunch or cigarette breaks together. Furthermore, buddies get a monetary award if the new operator assigned to him or her stays in the company for at least six months. According to Ma (2007), awards for extraordinary performance of individuals are deeply anchored in China's culture and tradition.

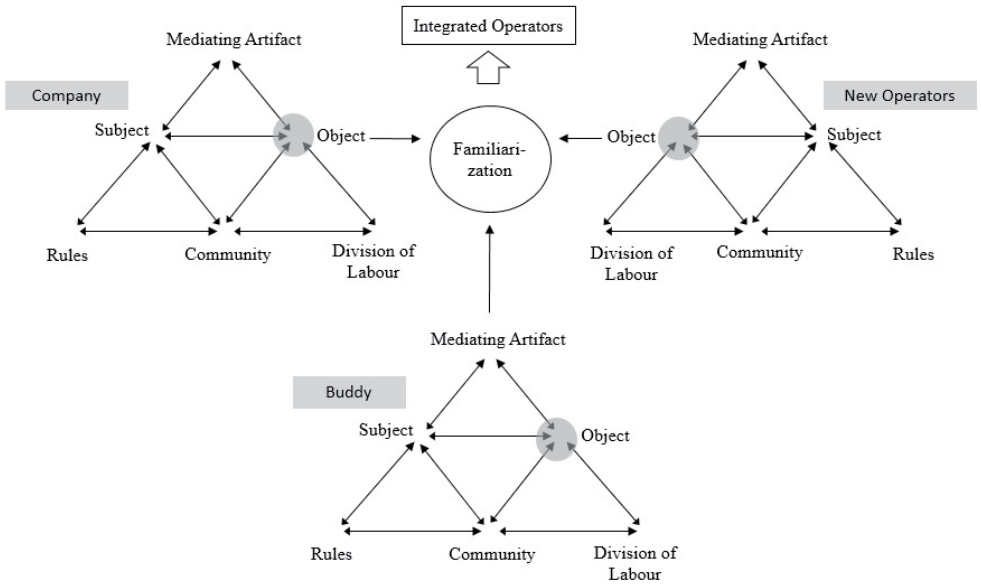

Figure 3: Staff retention programme, "Buddy Programm", imbedded in the activity theory model.
Source: own illustration.

Imbedding the phenomenon of a staff retention programme in the activity theory model proves that the company, as well as the new operator and the buddy, share a common objective, that is, familiarisation. It thus functions as the boundary object (see section 2: theoretical approach) that connects the three activity systems.

Again, the parties' intentions and interests differ. The company conceptualised and implemented the programme as it is in its interest to reduce the number of employees leaving the company. The new operator's interest, however, is to settle down in a new working environment and to get the feeling of being welcomed and valued as a new member of a family-like organisation. In contrast, it is the buddy's motivation to pursue familiarisation as it is a sign of appreciation to be able to be a buddy and as it is connected to a monetary award.

Although the intentions and interests are different, the three parties are connected by their common objective, familiarisation, which functions as a boundary object. As a result, the outcomes are integrated operators. Hence, the phenomenon found can be described as an innovative, business-related strategy that was implemented with the objective of assuring the necessary skills levels of Chinese shop-floor workers.

5. Conclusion

The two phenomena presented in this research paper were selected as they are very good examples of innovative strategies that were initiated by German transplant companies in China with the objective of fostering and assuring the necessary skills levels of their shop-floor workers for production. From this study, we learn that cooperation is not only essential to developing and implementing solutions to foster and train highly skilled shop-floor workers, but that cooperation is also necessary to assure that the company has adequate employees. The outcomes of such cooperation were constituted by imbedding the forms of cooperation in apprenticeship, as well as the staff retention programme, into activity theory models and identifying boundary objects. For further research, a broader range of cooperative phenomena could and will be analysed according to this scheme. The phenomena presented are only two among many others that were implemented by German transplant companies acting in China, in a context that is neither restricted nor pre-defined. It is in exactly this context that there is both the need and the possibility for the implementation of innovative strategies.

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