Well-defined Tasks for Individualized Jobs: Tayloristic Organizations Observed in France in the 1990s

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Introduction: Turmoil in the global automobile industry after the Oil Crises in the 1970s

The oil crises that occurred in 1973 and 1979 drove a sharp increase in oil prices. Consequently, the global automobile industry fell into a serious recession from the late 1970s through the 1980s. While the world economy experienced the repercussions of the oil crises, Japan's automobile industry suffered a relatively minor blow, owing to its exceptional product development capabilities and advanced production technology. Japan's automobile industry witnessed a sharp increase in exports in the 1980s, resulting in a trade surplus.

However, the increase in exports of consumer durables from Japan, particularly automobiles and electrical appliances, triggered a backlash from Western manufacturing industries. Correspondingly, the Plaza Accord was concluded in 1985 as an international political settlement. The yen soared from about 240 yen to the dollar before the Accord to over 150 yen to the dollar two years later. The sharp appreciation of the yen impelled Japanese manufacturers to relocate their production bases overseas.

The large-scale offshore relocation of the Japanese automobile industry and the start of local production from the 1980s were also considered a transfer of the Japanese-style production system. Meanwhile, local industries also began to learn and adopt Japanese-style production system, and from the 1990s, they began benefiting from their efforts. These visible facts are called *Japanization*. However, *Japanization* caused a serious conflict with local industries, especially in Europe and the United States. In contrast, after the so-called bubble burst around 1991, the Japanese economy experienced serious recession. In the wake of this long-term slump in the Japanese economy, the

Japanization debate also began to wane. Today, this topic is rarely discussed in academic groups, including those in Europe and the United States.

However, I suggest that the *Japanization* debate has triggered challenges for the theme concerning the organizing principle. The differences in organizing principles between the West and Japan are often in a dichotomous setup of individualism-collectivism. In contrast to this dichotomy, Japanese sociologists such as HAMAGUCHI Eshun (1985; 1997), KUMON Shumpei (1982), among others raised the issue of *contextualism*. Collectivism emphasizes group values in contrast to individualism, whereas *contextualism* emphasizes the relationships internalized by each individual, rather than a dichotomy of individualism-collectivism. Based on the premise that in the Japanese-style production system, tasks are used as a medium to form jobs that transcend individuals, this paper discusses the Tayloristic characteristics of French organizations as perceived by Japanese managers.

1. Tayloristic job descriptions in Western organizations

F. W. Taylor (1856-1915) published a book in 1911 entitled *The Principles of Scientific Management*, where he criticized the traditional organization of work, which was based on the know-how of skilled workers who were autonomous and responsible for their time and the conduct of their activity. He proposed replacing it with a new organization based on technical division of labor, with tasks distributed by posts.[1] The method of organizing work that he presented is called Taylorism, the principles of which can be summarized as follows:

1) Horizontal division of labor: to achieve maximum job fragmentation to minimize skill requirement and job learning time;
2) Vertical division of labor: to separate intellectual tasks by engineers like design and planning from execution by workers to identify more functionalities;
3) Introduction of wages directly linked to output (piecework wage).[2]

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1) TAYLOR 1911; LOCKE 1982: 1–15; DENT and BOZEMAN 2014: 158–159.

2) "The decomposition is based on the following principles:

(1) *A general principle of maximum fragmentation*. This prescribes that after analysis of work into its simplest constituent elements, management should seek to limit an individual 'job' to a single task as far as possible.

(2) *The divorce of planning and doing*. (Taylor's Fourth Principle.) This principle in particular is based on the idea that the worker is too stupid to understand his own job.

(3) *The divorce of 'direct' and 'indirect' labour*. . . . progressively suppressing that part of the worker's activity which consists of preparing and organizing the work in his own way." (LITTLER 1978: 166); NDAGUBA et al. 2018; RASK and JOHANSSON 2008: 995.

Highly-defined tasks and specificity of the social system that bears this model are the key notions of this production system.[3] Concisely, as Taylor explains, Taylorism is characterized by the construction of management and a core principle to look for a well-defined job:

> Perhaps the most prominent single element in modern scientific management is the task idea. The work of every workman is fully planned out by the management at least one day in advance, and each man receives in most cases complete written instructions, describing in detail the task which he is to accomplish, as well as the means to be used in doing the work. And the work planned in advance in this way constitutes a task which is to be solved, as explained above, not by the workman alone, but in almost all cases by the joint effort of the workman and the management. This task specifies not only what is to be done but how it is to be done and the exact time allowed for doing it. And whenever the workman succeeds in doing his task right, and within the time limit specified, he receives an addition of from 30 per cent, to 100 per cent, to his ordinary wages. These tasks are carefully planned, so that both good and careful work are called for in their performance, but it should be distinctly understood that in no case is the workman called upon to work at a pace which would be injurious to his health. The task is always so regulated that the man who is well suited to his job will thrive while working at this rate during a long term of years and grow happier and more prosperous, instead of being overworked. Scientific management consists very largely in preparing for and carrying out these tasks. (TAYLOR 1911: 39)

3） "The task. Taylor advocated that each worker be assigned a specific amount of work, of a certain quality, each day based on the results of time study. This assigned quota he called a 'task' (Taylor, 1911/1967, p. 120). The term task is roughly equivalent to that of goal. Thus the task concept was the forerunner of goal-setting." (LOCKE 1982: 6); Taylorism was illustrated by the belief that "Work structure or design in the mechanistic realm is characterised by job functions which are 'broken-down into specialist tasks that were "precisely defined"' (Burns 1963:103; Connor n.d.:5). This model adopts the form of 'rigidity' because of the relatively stable business environment conditions in which it functions (Shafritz et al. 2011). Its major attributes include high rigidity, high levels of formalisation, low adaptive capabilities, high centralisation, high stratification, low complexity, high productivity and efficiency and low job satisfaction (Lunenburg 2012:4)." (NDAGUBA et al. 2018: 2); "Taylor's (1911/1998) solution to the problem was to reorganize the system of apprenticeship and localized knowledge around what he called 'the task' (p. 29). Taylor believed that 'the task' is that thing a worker must know and be able to do in order to perform their role productively and correctly. Taken collectively, a system of tasks worked in synchronization to support a process of production and reach a definable goal." (STOLLER 2015: 318)

Taylorism was introduced relatively early in France.[4] There were two major waves: the first at the time of World War I, and the second during rapid economic growth after World War II.[5] In the high-growth period after World War II, a production system that combined Taylorism and Fordism was realized, especially in the development of the automobile industry.[6] Japanese managers who worked in Japanese transplants in the early 1990s noticed that the job contents were very clearly defined on a regular basis in French organizations. The pursuit of highly-defined jobs was reasonable considering the motivation for more efficiency and productivity. From the perspective of Japanese managers, however, it resulted in a lack of flexibility, especially in the machinery industry for consumers, where assembly operation is an important factor. This paper will focus on the significance of this issue.

When Taylor's doctrine was developed and applied in practice in the United States, before and after World War I, France showed a lack of enthusiasm toward the implementation of Taylorism. Nevertheless, in the 1990s, the corporate organization was the most Tayloristic in comparison with Germany, the U.K., and Spain (KÖHLER and

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4) "L'impossibilité finale de la grande coalition des producteurs que les années après guerre vont révéler, de même que les limites de l'extension du taylorisme dans les entreprises et les services, ne doivent pas nous amener à sous-estimer l'impact de cette première grande expérience de transfert en France de méthodes américaines d'organisation du travail. Ingénieurs et industriels français ont fait apprentissage de la complexité technique, culturelle et politique de l'acclimatation des méthodes américaines." (FRIDENSON 1987: 1053)

5) "The Taylorism movement came to France in two waves. The first wave involved the adoption of the principles of Taylor by Louis Renault in 1912, with organizers trained by Taylor himself. Louis Renault most probably had production growth problems at the time. There was strong demand for his cars and he could no longer find enough qualified personnel in Paris. The 1912 strikes against Taylorism drove him to replace almost all the personnel in the workshops. As a result of the war in 1914, all European industries would be faced with the same problem — the departure of qualified working men to the battlefront and their replacement by unqualified women. The formalization of operational procedures was the means employed to render working women more productive more rapidly. [/] The second wave of Taylorization of French industry took place in 1945. The country was being reconstructed by former peasants and then by immigrants. Then started 30 years of growth known as the "glorious" years. It is clear that, under Taylorization during that period, the objective of growth was at least as influential as the preoccupation with worker productivity." (PEAUCELLE 2000: 456)

6) "Par taylorisme, on entend un ensemble de techniques de préparation, de mesure et de contrôle du travail dans les ateliers et de paiement des tâches ainsi décomposées et uniformisées, que des professionnels de la séparation entre conception et exécution du travail développent à partir de bureaux spécialisés. Par fordisme, on entend la réorganisation des usines selon un flux continu de matières et de produits et l'obtention par les ouvriers de salaires supérieurs leur donnant accès à une consommation de masse" (FRIDENSON 1987: 1031)

WOODARD 1997). According to observations made by Japanese transplant managers, the organization within French factories was rigid and inflexible; there was a notable difference between Japanese and French companies as far as the notion of tasks and jobs is concerned.

2. Exclusive and individualized jobs

2–1 Individualized Jobs in French Organizations

In the 1990s, Japanese managers sent to local factories in charge of its administration seemed impressed by the attitude of French workers behaving individualistically, as narrated by a Japanese director of a speaker-box manufacturer in France:

> The working hours in France are short (39 hours per week) and operators are reluctant to work overtime. They don't work overtime for any reason other than their responsibility. If you give them a target before the operation begins and they accept the target, it's relatively easy to convince them to work overtime when they don't clear the target. However, I have difficulty persuading them, for example, to make 200 more units because the products are selling well. Also, if it is necessary to work overtime because of defects or mistakes of some other department (materials, etc.) or supplier, they will not accept it. They will not work overtime when they are not responsible for it. Especially for someone else's mistake. I tried to convince them that "even if you take responsibility, it won't be enough to make the company work." I have said from time to time: "Let's all help each other," and I hope that things have improved somewhat, but the fundamental spirit is the same as before. It has not changed even a bit. (Interview held on December 2, 1993, in Villers-La-Montagne)

According to the assessments given by Japanese managers, each job was clearly defined and independent of others in French companies. Therefore, the first characteristic was that jobs were exclusively individualized (only one person is responsible for one job). This implies that the rest of one's work is the work of others. Therefore, it is logically inevitable that one does not perform any job other than the one assigned. Workers do not accept requests from executives to personally give it up for the benefit of the company. This kind of job exclusivity is not limited to operators (*non-cadres*), but is also observed in middle managers as well as executives in charge of factory operations.

Relying on the impressions intuitively maintained by Japanese directors, we can notice a clear-cut contrast in job descriptions between France and Japan. In French companies, the responsibilities of each job must be clearly defined and limited. For example, the responsibility of the factory manager is limited to the job of directing subordinates to run the factory. Therefore, one responsibility (e.g., handling of workers' grievances) is

exclusively individualized to one manager in charge of the management of workers' compensation.[7)]

In Taylorism, tasks are first determined precisely, scientifically, and exclusively; French people, *non-cadres* as well as *cadres*, commonly recognize that a job is a set of tasks to be carried out by a single individual. Clear definitions of tasks and jobs are presented as follows:

> An employee's job is made up of a set of task elements grouped together under one job title and designed to be performed by a single individual. (ILGEN and HOLLENBECK 1991: 173)

According to observations by Japanese directors, the French way of working was very Tayloristic. In the 1990s, the French agreed with Taylorism and operated it faithfully.[8)]

2–2 Hierarchy of jobs

Each isolated job is supervised by a superior job holder who coordinates the workflow

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7) A Japanese director of a mobile phone complained regarding a French manager's performance of his duties. His statement revealed a clear-cut difference in the notion of job even though it sounds quite strange for Westerners: "It's not impossible to demand operators to rotate different posts, but the French plant manager himself was not willing to do so. He doesn't want to take responsibility for something new. The manager doesn't want to deal with complaints from operators either. He doesn't want to handle those grievances because he might be held responsible for them. Compared to the case in the U.S., they don't accept what the Japanese say. They first think of escaping from responsibility. I feel a large distance between us regarding the responsibility of being the plant manager. So, they don't want to do anything new, like rotating operators from one post to another. In France, you have to take it very seriously to be blamed: "It's your responsibility." You have to quit the next day. The other day, when we had a minor accident due to inadequate manuals, I reproached the plant manager (French), saying: 'It's your responsibility.' He replied: 'The president makes everything my responsibility. I can't accept that." So, I told him: 'You are responsible for everything in the factory, from the toilet running to the production line operations.' He said: 'That's a false responsibility.' And we had a big argument all day. Then, what is the responsibility of the plant manager? I am sure that the duties of a plant manager include everything work-related in the factory. In Japan, we regard responsibilities are combined with duties. So, I told him: 'If the floor is dirty and no one else is around, the plant manager has to clean it himself.' He said that he won't accept it. He didn't understand me. He protested bitterly saying: 'Why does the factory manager have to do everything?' I think that he loses the bon sense due to a pride to have succeeded the elite career in education." (Interview held on December 14, 1993, in Rennes.)

8) "French firms were traditionally highly Taylorised, as a result organisational structures were inefficient (in large measure because they employed too many people), and they incorporated a wide array of obstacles to change." (HANCKÉ 1999: 18)

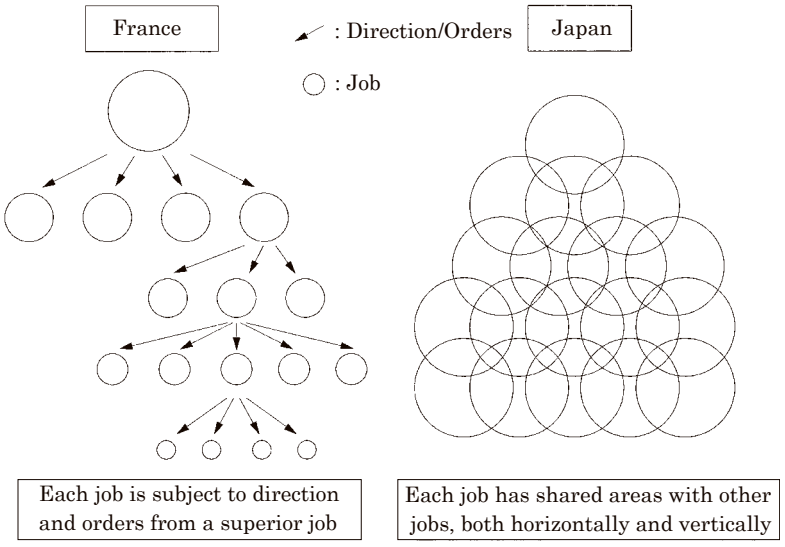
among subordinate jobs. The hierarchical structure of these jobs is shown in the left part of Figure 1.

This hierarchical division of labor is most clearly manifested in the division of labor between functions such as development, design, and manufacturing as narrated by a Japanese manager belonging to the R&D department of an electronics manufacturer:

> In France, the division of labor is segmented. The French approach to engineering is that the engineer comes up with the idea, the technician draws it up, the factory manufactures it, and the sales department sells it. However, this often leads to problems. This is not good. We need a change of mindset. Such a product cannot be sold. In Japan, development is connected to sales. The system is such that one person can be responsible for everything from upstream development to downstream sales. In France, on the other hand, there is a solid grand design like Minitel, so everyone has a solid core. However, when I look at the products that have come out, they are difficult to use. In France, our people negotiate with subcontractors based on finished drawings. In Japan, when you show a rough concept to subcontractors, they will sometimes advise us: "This is better in plastic." They are experts in their specialties, so why don't you listen to them? (Interview held on November 10, 1993, in Cesson-Sévigné)

In contrast to the French situation, even development engineers might be disregarded in Japanese factories if they are not equipped with good knowledge about every operation

Figure 1 Job structure in France and Japan



Source: NAKAGAWA 2022b: 29.

on the shop floor:

> In Japan, engineers are regarded customarily to be in charge of the integral management of the production on the shop floor; they are expected to do anything on the shop floor. So, if engineers can't do what workers do, they risk being disrespected. Especially when he is young and inexperienced. People on the shop floor will say: "You don't deserve an engineer. You have to spend ten years more to be considered as an engineer." (*Ibid.*)

In French organizations, command and execution are separated from the beginning and are exclusively individualized. They employ people based on this isolated, separated, and exclusive system of duties and authority. Consequently, decisions are made by one person alone, and he is solely responsible for them. He does not and cannot violate the duties and authority of others. Another field of expertise is left to a person, and if he cannot do it, he will simply be replaced. Therefore, the person who gives orders and the person who executes the orders are designated into different jobs.[9] Herein lies the difference between Western-style top-down and Japanese-style bottom-up approaches.

According to a study, France had the most Tayloristic form of organization among the four countries concerned (KÖHLER and WOODARD 1997: 62). Therefore, the French-type organization as seen by the Japanese director was an organization governed by the typical Taylor System principle.

Taylorism scientifically and narrowly defines tasks for a specific job. It not only excludes employee inputs but also treats employees as moving parts of a machine in search for profit maximization: "The main focus [of the Scientific Management] is the accomplishment of task with fixed and pre-defined effort for maximum output." (UDDIN and HOSSAIN 2015: 583)

As the job of each employee is exclusively individualized, they carry out their jobs in isolation, especially as far as tasks of *non-cadres* are concerned. However, unusual tasks that go beyond the predefined framework of work inevitably appear in operations such as "flow work" in which a large number of people cooperate. In such cases, coordination among the persons concerned is indispensable. However, since each person exclusively performs only the predetermined routine tasks, it is impossible to coordinate among personnel and departments at the same level in a French-type organization. This coordination is carried out by the higher authority that is independent of the

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9) "In French companies, there is a division between 'engineers-cadres' and 'non-cadres'. This is because the category of 'engineers and cadres' keep to themselves the duties of command and concept formation and allow the other categories of people only the duties of execution." (LANCIANO et al. 1992: 24).

subordinates' duties and is assigned unusual tasks. Subordinates perform their duties according to the orders of their immediate superiors. Coordination function is assumed by a higher level job; the characteristic of the French-style organization is that each department is distinctly independent, and coordination among them is performed vertically via upper and lower linkages.[10)]

3. Separation and independence of jobs and functions in the division of labor

3–1 Disintegration of tasks to create independent jobs within companies

What happens in the division of labor in a company when there are quantitative and qualitative changes in work? In France, the disintegration of tasks to create a new independent job is the response to the new situation.

Case 1: French Federation of Purchasing Executives

In France, purchasing in a company is an independent profession, and the people involved in this profession have formed a voluntary association called the *Compagnie des Dirigeants et Acheteurs de France*（CDAF）（French Federation of Purchasing Executives）. In large companies, buyers（e.g., purchasers）are transferred within the purchasing department after three to five years, but in such cases, they were very probably transferred only by changing the items（e.g., from mechanical to plastic）. In France, employees are not assigned to other departments as is the case in Japanese companies. If there is a transfer, it is to another company for career advancement.

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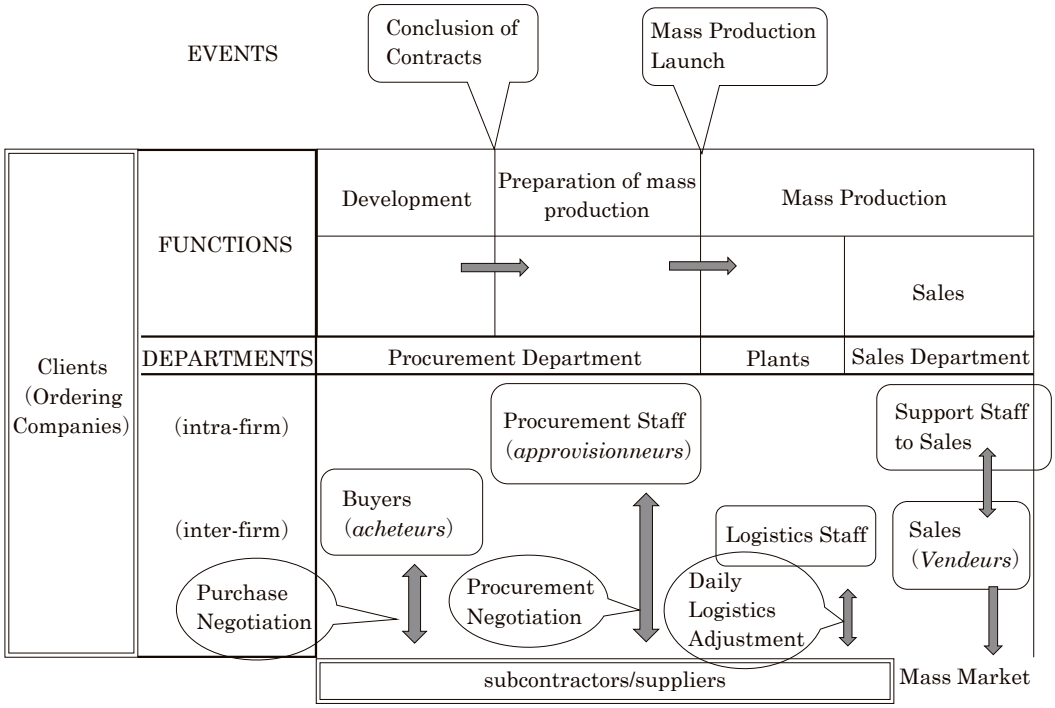
10) When one person holds several different tasks, the coordination between these tasks is naturally done at his or her discretion. As we will see later, the reason why such an action is difficult in a French organization is that each job is clearly defined and coordination between isolated jobs is derived from the exclusive authority of the supervisor. If subordinate persons carry out the coordination between jobs by their intention, they will be violating the important duties of their superiors' jobs. AOKI Masahiko posits it taking an example of a flow line of horizontal hierarchies: "A good example may be team work on an assembly line. In order to make the flow of the assembly line smooth, workers assigned to the line may need to share information on such events as: at which site a flow-halting problem occurs, whether it requires immediate help to remedy and if so how to collectively fix the problem, and whether a collective solution ought to be routinized. In functional hierarchies, such events may be coped with by specialists equipped with task-specific skills, such as foremen, mechanists, repairmen, or engineers. It is true that even in horizontal hierarchies in order to make assembly work efficient, each worker needs to be well-trained in an assigned task. Team work cannot completely substitute for the individual skills of workers performing particular tasks, unless the team work is of a primitive sort. But these individualized parts of skills are performed in the context of information sharing about the state of the environment common to all organizational members."（Aoki 1998: 8）

According to CDAF, when purchasing volume increases, it becomes impossible for a single buyer (*acheteur*) to handle it, resulting in the creation of a new position to deal with the new environment. The buyer deals only with purchase negotiations with subcontractors/suppliers and concludes the contracts. Once the contract is concluded, the procurement staff (*approvisionneur*) negotiates with the subcontractor/suppliers regarding the subsequent logistics operations based on quality, price, delivery, and environmental-friendliness. The purchasing department's work concludes once the negotiation is settled. For subsequent daily operations, the logistic staff in charge of acceptance will negotiate with the subcontractor/supplier regarding the quantity and timing of acceptance.[11)]

The division of labor in French is expressed as *la division de travail*. What is interesting in this case is that, as the work of purchasing expands quantitatively and changes qualitatively, the functions and duties are divided and made independent to create a completely different job in the purchasing department, as expressed in Figure 2. What is striking for the Japanese is that the three jobs, old and new, are distinguished,

11) A CDAF manager told me about the recent tendency of purchasing activities: "The development of purchasing activities has made it impossible for a single person to carry out the entire purchasing activities. Where once purchasing was done in the neighborhood, it has expanded to the whole of France, and where once purchasing was done in France, it has expanded to the whole of Europe with the European integration, and where once purchasing was done in Europe, it has now expanded to the whole world. Purchasing agents are traveling further and further, more and more frequently. Therefore, in addition to education, a higher level of competence and skills are required for the job. Accordingly, in large companies, purchasing agents (*acheteurs* in French) are increasingly responsible only for negotiations with external companies, so their job is to conclude purchasing contracts. The logistics of the purchased parts within the company are increasingly handled by the procurement department (*approvisionnaires*). They negotiate with subcontractors based on four criteria: quality, price, delivery time, and environment (e.g., recycling, minimization of waste, etc.). The role of the purchasing section ends here. Once a purchasing contract is concluded, it is no longer the duty of purchasing staff to negotiate the daily operations. Instead of the purchasing staff, the logistic staff negotiates with the subcontractor and adjusts the quantity and delivery date. After the contract is concluded, production begins, and the logistic staff is in charge of delivery date, quantity, and inventory according to the specific flow of production. Specifically, based on the annual quantity that is determined in the contract, the logistic staff decides with the subcontractor or sub-subcontractor at what time interval the delivery should be made, how much quantity should be delivered, how much inventory should be maintained, and so on, in accordance with the actual production conditions at the factory. Purchasing and logistic are increasingly becoming independent categories of employees (*salariés*). From the subcontractor's perspective, they first negotiate and conclude a contract with the purchasing department of the ordering company, and then coordinate daily deliveries with the logistic department of that ordering company." (Interview held on June 1, 1993, at CDAF)

Figure 2 Jobs are divided into multiple tasks and made independent



Source: Author.

one-after-one sequential, and non-overlapping: Buyers work up to contract derived from negotiations, procurement staff work on style and formality, and logistics is in charge of day-to-day outsourcing.

The reason why the three jobs are distinguished and do not overlap is that different individuals are assigned to these jobs. Here, the mechanism is entirely faithful to the principle of division of labor: divide and assign jobs individually.

Case 2: Chamber of Commerce and Industry of Brittany

Chambers of Commerce and Industry throughout France guide small and medium-sized enterprises（SMEs）. In the following case, the Chamber of Commerce and Industry of Brittany recommended SMEs create a job in quality control to improve quality. In this case, the post should be a managerial position（*cadres*[12]）.

A director of the Chamber of Commerce stated in an interview held on July 20, 1993, that（1）the quality control function should be independent;（2）the function should be a

12） In France, *cadres* are sometimes promoted internally. However, the basic method of recruitment is sourcing from the external market. In this case, experience as well as（and often more）education, especially schooling, is important. The bac+2（see note 14）is probably the boundary between being

cadre; (3) the *cadres* should be recruited from the external market; (4) the *cadres* should have a minimum of a bac+2 education and experience in quality control,[13] and (5) if the above conditions were met, a public subsidy of 100,000 francs (roughly 18,700 US dollar in July 1993) would be given upon hiring.[14] The move to encourage the creation of quality control jobs was implemented at the regional level in Brittany, and not throughout France. However, it is interesting as it clearly expressed what the French regard as appropriate in the relationship between tasks and individuals.

These interviews showed the French reactions when work changes quantitatively or qualitatively in the division of labor within a company. When the volume of work

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and not being hired as a *cadre* when going through the external market. With this educational background, one may be recruited by a *cadre*, but even if recruited, one is placed in a *cadre* at the lowest level (except through internal promotion). Cf: MOULLET 2005.

13) Bac+2: Holders of a *baccalauréat* (university entrance qualification) followed by two years of education in a university or an equivalent educational institution. The director's following statement: "it is not good if there is too much intellectual difference with people on the shop floor," indicates that they are at the lower level of *cadres*. Concurrently, it shows that academic background is prioritized as one of the determinants of a person's professional ability in French society. Cf. MONCHATRE 1998.

14) "We want an objective index to know whether or not there has been a clear development in terms of quality. In this respect, we chose 'the creation of quality control jobs' as the indicator. This is because a company cannot exist permanently as an organization unless the job of quality control exists with a responsible person to whom the job is assigned. The important thing, however, is that the job is clearly assigned and the function is made permanent. Our role is to advise the creation of a system of quality management in the company. Without a quality function, everything will be unstable in the company. Without it, the company cannot be considered independent. In the last four years, 220 quality manager positions (i.e., *cadres*) have been created in SMEs in Brittany. Of these, 117 were created by internal promotion and 103 by recruitment. Quality *cadres*, when recruited from the external market, are supported by public funds. There is no support for internal promotions. This encourages firms to introduce 'brains' into the firm. This is because SMEs do not have a job structure (*encadrement*). They only subsidize the hiring of experienced *cadres* with a bac+2 or above. However, it is not good if there is too much intellectual difference with people on the shop floor, so people with higher education are not hired very often. Generally, bac+2 is the minimum and they must have professional experience. We enforce this. Otherwise, there is no grant. The subsidy is 100,000 francs for each quality *cadre* at the time of recruitment. Three subsidies are available for different jobs (production engineering, quality, production). Recruitment leads to a potential increase in added value, so subsidies in this respect have an impact. The introduction of external skills is important. This is nothing short of recruiting *cadres*. Even if the *cadre* quits, the duties become indispensable and the organization remains, so the *cadre* is recruited as a system. The conditions of such a grant (bac+2, experience, *cadre* status) are important. This is because it raises the level of the organization, the *cadres*' responsibility and, the enterprise in the end." (Interview held on July 20, 1993).

increases, it is divided and new jobs are explicitly created. The purpose of creating new jobs is to assign new personnel to the job. Moreover, in this case, they are explicitly recommended to be *cadres* because they are not subsidized unless they are *cadres*. French companies often use the expression *structurer*. It means to create a job of *cadre* (i.e., *encadrement*) to assign subordinates to it, and to make it independent as a department or section as a whole. It is a principle that the function should be made as explicit as possible and made independent as a job. The reason for making them explicit and independent is, of course, to assign people to them.

3–2 Disintegration of jobs between companies

In subcontracting practice in the machinery industry of Europe and the United States, it is common for ordering firms to place orders to subcontractors by specifying a single part, process, material, etc. Conversely, in the Japanese machinery industry, ordering firms frequently place orders to subcontractors by grouping several parts as integrated mechanical components that fulfill autonomously specific functions as a single unit. The mechanical parts thus assembled are incorporated into the finished products as a component that exercises specific functions. This practice is called *unit-supply* in Japanese subcontracting. In the Japanese industry, the subcontracted machinery products provided by this practice are called *unit-components*. Even though this type of *unit-supply* was quite scarce in France, I found two companies carrying out *unit-supply* in the Salon du Bourget in 1993. This practice or its absence reveals what happens in inter-firm relations in France when new works are created.[15)]

Case 3: Unit suppliers in the Aquitaine region (1)

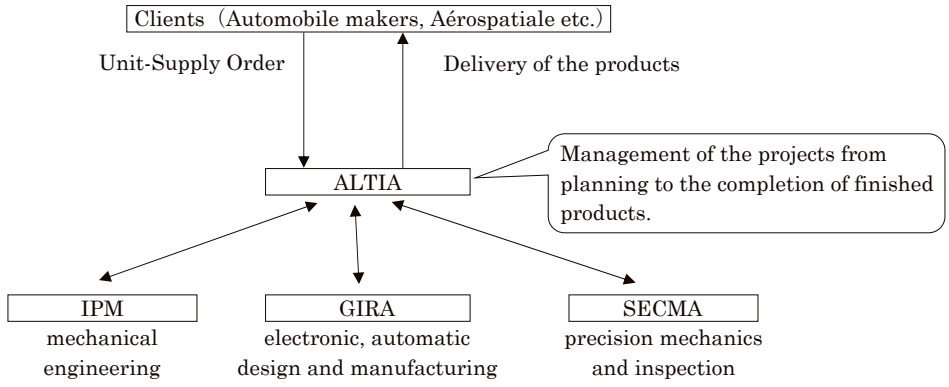
The first company (ALTIA), which had a total of 70 employees belonging to three companies (25, 15, and, 30 employees respectively), was established as an independent legal entity to act as a joint contact point. The purpose of the grouping was to increase competitiveness and gain a higher reputation. Eric Nadlow, SECMA's sales representative, said:

> Perhaps the best definition of ALTIA is "a grouping of complementary companies."

15) *Unit-supply* is a modality of procurement of assembled parts in contrast with purchasing of single parts and a single process of machining. The significance of *unit-supply* in the evolution of small and medium-sized enterprises in Japan has been discussed and highlighted in academic studies. The coordination function of *unit-supply* has been raised in the past as an issue of transferring the responsibility for the development and engineering of units. It encouraged the evolution of small and medium-sized subcontractors for acquiring a new capability of engineering in addition to that of manufacturing. Cf: IKEDA and NAKAGAWA 2002.

ALTIA is formed from three companies: IPM for mechanical engineering, GIRA for electronic and automatic design and manufacturing, and SECMA for precision mechanics and inspection. ALTIA can take care of the project completely from the planning to the completion of finished products. Compared to existing groups in the market, ALTIA has the advantage that these three companies are not in competition with each other at all, but are complementary. Therefore, there is no risk of harming each other; on the contrary, we are bringing together our mutual complementarities. We have all the skills and knowledge needed to complete the products, and this is something that our customers increasingly demand. For this reason, we have grouped rather than growing piece by piece in isolation. ALTIA is currently in the process of applying for a legal form but has already exhibited at this Salon in Bourget. To deal with the downturn in the aircraft industry, ALTIA is looking for new customers in the hydraulics, presses, and mold business, which is expected to yield good results in 1994. (Interview held on June 15, 1993, with the author at the Salon du Bourget.)

Figure 3 Independence and Incorporation of Functions in the Inter-firm Division of Labor among French Companies (ALTIA)



Source: Author.

Case 4: Unit suppliers in the Aquitaine region (2)

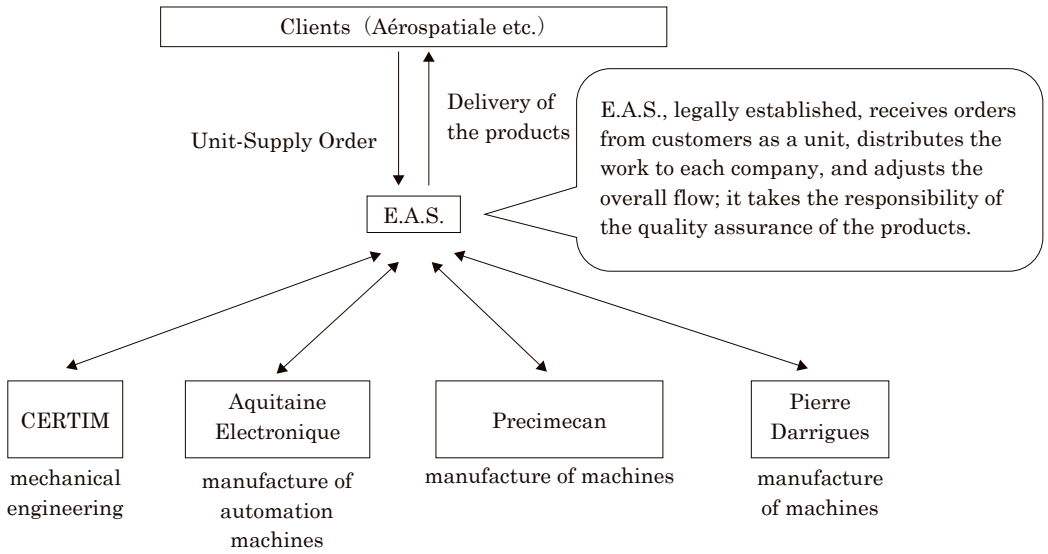
E.A.S. (Euro Adour Système) was founded almost a year ago [i.e., in 1992] as a joint-stock company by four independent small companies, each belonging to different industries. The company takes the legal form (*forme juridique*). There are 15 employees in CERTIM (mechanical engineering), 35 in AQUITAINE ELECTRONIQUE (manufacture of automation machines), 32 in PRECIMECAN (manufacture of machines), and 19 in Pierre DARRIGUES (manufacture of machines), taking the total to 101. When E.A.S. receives an order from a client, it manages the entire workflow,

from design to finished products, and is responsible for completion and delivery to clients. The advantage of this system is that clients can place a lumpsum order with E. A. S., which is the main contractor, instead of four different firms. Consequently, (1) a cost reduction of 5% was realized and, (2) E.A.S. could take overall responsibility for quality defects. The main fields of activity are machine units and machine parts for the aircraft industry, machine tools, railway vehicles, and petroleum industry. The main customers are Aérospatiale, Atelier Industriel Aéronotique（A.I.A.）, Dassault Aviation, Messier-Bugatti, and Société Européenne de Propulsion. Each of the four companies can only produce single items or small lots, and cannot and will not mass-produce due to their sizes. For each manufacturer, the work done through E.A.S. accounts for only about 10% of their sales.（Interview held on June 15, 1993, with the author at the Salon du Bourget.）

According to a manager affiliated with a Chamber of Commerce, this type of *unit supplier* was very rare in France. In Aquitaine Region（Dordogne, Gironde, Landes, Lot-et-Garonne, Pyrénées-Atlantiques）, these two companies might have been the only examples that were carrying out *unit-supply*.

The difficulty of *unit-supply* lies firstly in the coordination function to be assumed by one of the participants. Somebody should assume responsibility for the finished unit of components from quotation to final shipment through every process of manufacturing. This coordination function is in charge of planning and adjustment of manufacturing

Figure 4 Independence and Incorporation of Functions in the Inter-firm Division of Labor among French Companies（E.A.S）



Source: Author.

operations in different sections dispersed in several firms. It should adjust the different interests of each firm to arrange the issues to reach a compromise. Here we are facing the emergence of a new task called coordination function.

In Japan, *unit-supply* is a quite common and ordinary practice, so one of the member-firms would be the unit supplier. Perhaps CERTIM, which had an engineering function, would have been the unit supplier for the case of E. A. S. In this case, the company concerned, acting as the prime contractor, received the order as a whole, and used the other two companies as its subcontractors; this procedure is a very ordinary Japanese subcontracting practice (*unit-supply*). Accordingly, the new function of coordination would be absorbed by one of the members.

In France, in cases of intra-firm relation (cases 1 and 2), when new tasks (a division of purchasing function for case 1 and creation of quality control for case 2) were revealed indispensable, new jobs were created to adjust to the new situations. In the cases of inter-firm relations, either, when a new task (coordination function for cases 3 and 4) is getting up for *unit-supply*, a new organization is set up. The French deal with a new situation by creating a new legally independent corporation. If it is not possible to subcontract *unit-supply* without establishing a new corporation, it could be problematic to supply units in France. These cases are very revelatory for the organizing principle. With an increase in load or alteration of products, they created a new independent function and assigned it to somebody in the intra-firm as well as a newly-born firm in the inter-firm division of labor.

Conclusion: Segregation and integration of tasks

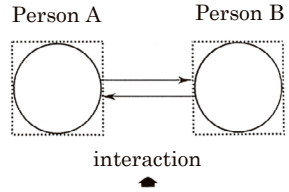
Concerning segregation and integration of tasks for division of work, Kjell Rask and Jan Johansson presented an interesting discussion:

> Work is always to some extent divided into separate tasks to allow for some level of specialization. In this paper we use the words integration, generalization and unification for efforts to bring different work tasks together for individuals or work groups, and segregation, specialization and fractionation for efforts to divide work into smaller tasks for individuals. (RASK and JOHANSSON 2008: 997)

Therefore, in this framework of division of work, two directions of task-individual relationship are postulated: (1) segregation of work into tasks for an individual job; and (2) integration of tasks for an individual job. This discussion is very enlightening. It should be emphasized, however, that each of the directions of segregation-integration of tasks lies in the assumption that the job is individualistically assigned to a single person.

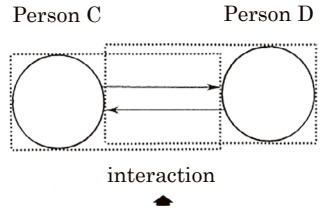
An empirical comparison of the task-individual relationship between France and Japan

Figure 5 The Interaction Between Individuals as Individual Subjects or Atoms



Source: HAMAGUCHI (1985: 306)

Figure 6 The Interaction Between Contextuals as Referential Subjects or Molecules



Source: HAMAGUCHI (1985: 306)

reveals that this is a vital issue for the argument of the organizing principle. Let us adopt the metaphor of atom and molecule in chemical bonds proposed by HAMAGUCHI Eshun regarding the contrast between an *individual* and a *contextual* (Figures 5 and 6).

> Figures 2 and 3 [5 and 6 respectively in this paper] express the concepts of an individual and a contextual, respectively. An individual actor is an independent unit of action and hence can be compared to an atom. The interaction between such individuals, A and B in Figure 2 [5], is nothing but an object outside the life-space of each individual. By contrast, a contextual is part of a larger action system that has as its components interpersonal relations as well as contextuals and can be compared to a molecule. Therefore, in an actor system of contextuals, C and D in Figure 3 [6], the shared interaction is part of the life-space of both, and thus this system is similar to a molecule." (HAMAGUCHI 1985: 305, 307)

A chemical bond is the attraction between atoms; it is "an electrical force that holds atoms together to form a molecule (= the smallest unit of a substance)" (*Cambridge Dictionary*). As for intramolecular bonding, the main types of strong chemical bonds are covalent, ionic, and metallic, and they function inside molecules. Strong chemical bonding

arises from the sharing or transfer of electrons between the participating atoms.[16] In contrast, an intermolecular force (or secondary force) bonding molecules is very weak.[17]

The analogy of chemical bonds metaphorically illustrates the difference between France and Japan. In the first place, it is entirely normal for a covalent bond to have exchanged and shared electrons. Each atom has an attractive force that binds them together, and as a result, a molecule is formed. If the relationship between tasks-individual is expressed metaphorically, tasks can be analogized to electrons and an individual to an atom. Just as the strong bond between atoms was realized by electrons, the coordination between individuals in the work is realized by tasks.

In French organizations, tasks are individually well-defined so that no exchange or transfer of electrons occurs between atoms. Since there was limited connection between individuals, the molecular formation was based on individual atoms (Figure 7). In contrast, in Japanese organizations, individuals are connected through tasks to form a molecule called a job (Figure 8). Collaboration through horizontal linkage is the content of the substantive relationship between jobs, and the tasks themselves fill the space. The experience necessary to accomplish each task is shared between generations of employees; this makes it possible to transmit knowledge and experience from older generations to the younger.

Segregation and integration of tasks are two essential aspects of job creation. The French have prioritized the individualization of each job and ignored or failed to integrate the tasks. Since the job is individualized in Tayloristic organizations, only one of the two aspects (i.e., segregation) of tasks is adopted. The French organization does not envision the chemical bonding of individuals in the first place; it does not realize it is possible when tasks become metaphorically electrons. Restricting an individualized body to each task, essentially, deprives the tasks (i.e., electrons) of their attractive forces; so the attraction between atoms does not occur. Originally, the tasks should carry out attractive forces to fill the gaps between jobs and enable the chemical bonding of atoms.

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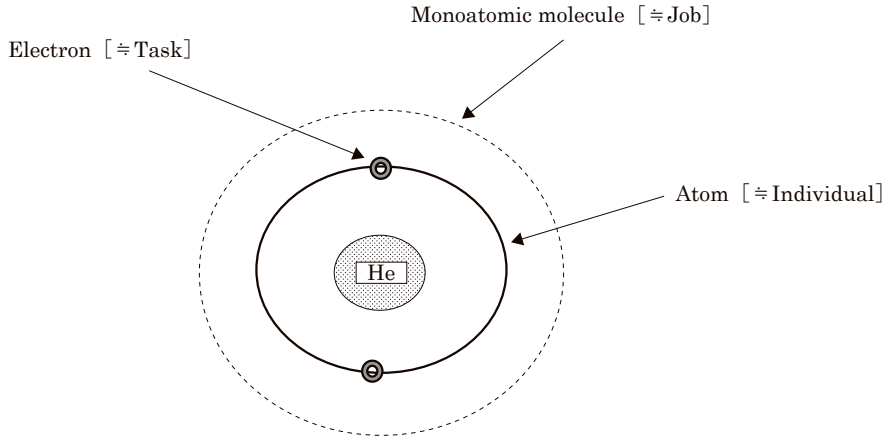
16) "An intramolecular force (or primary forces) is any force that binds together the atoms making up a molecule or compound, not to be confused with intermolecular forces, which are the forces present between molecules. […] Chemical bonds are considered to be intramolecular forces which are often stronger than intermolecular forces present between non-bonding atoms or molecules." (https://en.wikipedia.org/wiki/Intramolecular_force)

17) "An intermolecular force (IMF) (or secondary force) is the force that mediates interaction between molecules, including the electromagnetic forces of attraction or repulsion which act between atoms and other types of neighbouring particles, e.g. atoms or ions. Intermolecular forces are weak relative to intramolecular forces — the forces which hold a molecule together. For example, the covalent bond, involving sharing electron pairs between atoms, is much stronger than the forces present between neighbouring molecules. Both sets of forces are essential parts of force fields frequently used in molecular mechanics." (https://en.wikipedia.org/wiki/Intermolecular_force)

Figure 7 Metaphor of a Monoatomic Molecule * in the Tayloristic Job Context

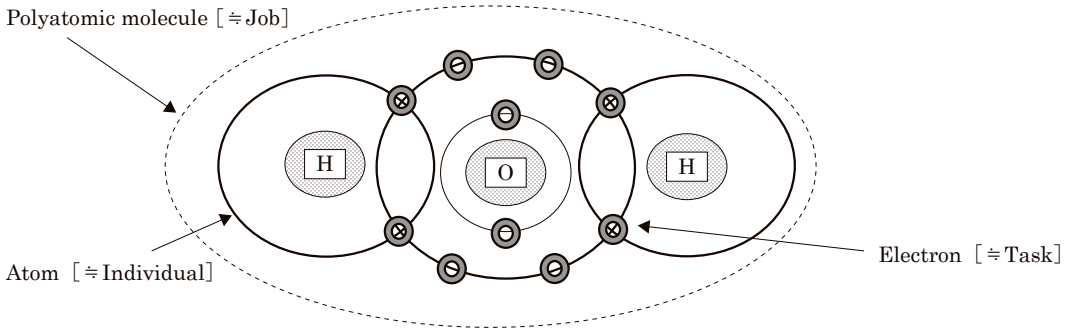


* The expression "monoatomic molecule" is not entirely correct. According to the definition recommended by IUPAC, a molecule is "an electrically neutral entity consisting of more than one atom." (https://doi.org/10.1351/goldbook.M04002). Here, the term monoatomic molecule is used to provide a better understanding of the metaphor.

Note: Just like monoatomic gases such as helium that do not share their electrons with other atoms, jobs in the Tayloristic system are individualized.

Source: Author.

Figure 8 Metaphor of a Polyatomic Molecule in the Japanese Job Context



Note: Just like atoms exchange and share electrons with other atoms to form polyatomic molecules, tasks in Japanese organizations are conjointly carried out to allow job-sharing.

Source: Author.

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