TRANSFORMATIONS IN TEAM WORK
AT RENAULT

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Team work at Renault has quite a long history and so to understand its form and content it would be appropriate to know what its principal characteristics are. It was first introduced in Renault in the 1970's by a few managers in an attempt to reform work and in particular assembly line work using the reorganization which was taking place at Volvo as inspiration. It was not possible to develop it in the manual sectors due to opposition by certain managers and the fact that it was regarded with a degree of suspicion by the unions. However it reappeared in the automated sectors at the beginning of the 1980's without coming up against any major opposition.¹

In fact new problems came to light with automation. The form it took on modified the usual norms of work and gave rise to dysfunctions. Different formulas of team work were then experimented with, some to accommodate these new work norms and others to overcome the dysfunctions of the automated installations in the way they had been designed.

The reduction in the number of posts that these formulas allowed, along with the necessity to mobilize the personnel to improve results after the 1984 financial slump and changes in alliances between the Management and unions, led to a consensus among managers on team work in the second half of the 1980's. The definition that was then given to it and the fact that it was implemented homogeneously made the more daring formulas that were used at the beginning of the 1980's redundant, both from the point of view of the function of the group leader and relations with maintenance. Although presented as being explicitly inspired from the 'Japanese methods', in fact team work at Renault distinguishes itself distinctly as much by its official definition as by its multiple facets (Freyssenet, 1988).

¹ I spoke about team work at Renault in a previous text from a more historical point of view: "The Origins of Team Work at Renault", published in Åke Sandberg (ed) Enriching Production. Avebury, Aldershot, UK. 1995. In this text the analysis is centered more on the transformations in its content and objectives. I would like to thank Emmanuel Couverre, Frédéric Decoster and Jean-Claude Monnet from Renault for their remarks and suggestions. However, I take sole responsibility for the analysis proposed here.

1. Team work to deal with 'the work crisis' at the beginning of the 1970's

At the beginning of the 1970's, two conflicting orientations existed within the Management at Renault to deal with the work crisis, which manifested itself through often spectacular conflicts, growing absenteeism, high levels of turnover, and an increase in the amount of rectification work to be done on vehicles. The first was that of the managing director, Pierre Dreyfus. He felt that it would be impossible to return to what he considered to be a form of neo-artisan work. As far as he was concerned the only solution was to compensate for the difficulties of assembly line work by continuing with a policy of increasing workers' purchasing power and especially by reducing working time and thus allowing them to take advantage of social and cultural activities which the industry could never bring them, and also by developing in-service training, thereby facilitating professional promotion.

The second orientation aimed at rendering work more enriching by making it more attractive and flexible. Several new forms of work organization were experimented with by some factory managers: rotation between two or three positions, complete assembly of a mechanism while moving it down the assembly line, lengthening the work cycle by including preparation and rectification, working on 'work islands', etc., that is to say about fifteen experiments, largely inspired from those at Volvo, with whom Renault had agreements on joint production of mechanical organs. Relying on the results of these experiments, a central work group proposed: "not only to humanize technology, but also to explore new ways of organizing the factories and designing equipment and buildings... (from the point of view of)... the degree of freedom and of initiative that would be allowed the personnel, the utilization of its skills, and the possibilities of working in teams". Several new operations resulted from this: the complete assembly of an engine by a worker at a fixed position, the introduction of four short assembly lines instead of one long one at the new Douai assembly factory, the generalization at the Le Mans factory of the assembly of front and rear axles in modules of 3 to 5 workers. These workers took charge of their own organization, ensured the complete assembly, verification the maintenance of the apparatus, were responsible for quality, carried out rectification work and looked after the cleanliness of the machines and working areas (Coriat, 1978; Freyssenet, 1979). These experiments in work reform also interested certain production managers who were concerned about the difficulty in dealing with the diversity and the increasing variableness in production. Besides being interested from a social point of view, they saw the possibility of adapting the production programme more easily and at a lesser cost. However, despite the results that were achieved, the most radical and novel formula, that of the modules, was the subject of much debate at top levels (Midler 1980). The work study departments were opposed because it challenged the basic industrial principles of decomposing and recomposing work into elementary operations (additivity) and carrying them out on a line in a sequential way (linearity). The development of team work in the manual sectors stopped at that stage.

Nevertheless, the concern to offer unskilled workers the opportunity to progress in the scale of grades right throughout their working lives not only remained but was imposed. In fact, the slump in growth after the petrol crisis and the easing off in hiring at the end of the 1970's made the freeze in professional promotion quite unacceptable.

The company work study departments considered that the best solution for the work crisis was to introduce automation quickly, which in their eyes would allow them to eliminate difficult and repetitive work and at the same time to develop the functions of
running-maintenance in such a way as to make them more attractive and more skilled, to increase the flexibility of the production tools and to raise the quality. And effectively, it is this solution which was finally adopted at the end of the 1970's. Those who were promoting team work in Renault had considered extending it to the mechanized and automated sectors very early on. A work group had been set up at the Le Mans factory as early as 1975 to consider the possibility of introducing "production units" to the manufacturing workshops, which would be autonomous with regard to upstream and downstream, be made up of various different machines, grouped together geographically, where the operators could be responsible in turn for running the machines, adjusting and changing the tools, verifying the quality, looking after minor breakdowns and maintenance. Team work was introduced to and accepted in the automated areas as soon as they were created, which was not the case in the manual sectors. It was accepted, because in the way it developed it did not challenge the principles of additivity and linearity and it could allow problems which appeared with automation to be solved.

2. The relaunch of team work in the automated areas, 1979-1984

Automation consisted in integrating in a single line the machines necessary for the manufacture of one part or sub-assembly. Both simple and complex operations were partly or totally automated, leaving the operators to carry out partial or heterogeneous tasks. With regard to more complex tasks, like repair of breakdowns, it consisted in simplifying them by dividing them up. The machines and production lines were equipped with automatic devices that stopped them in the event of an anomaly, that located the incident in equally automatic fashion, and that involved 'standard exchange' of the failed component, fuller repairs being postponed to periods outside production.

Three new problems then came to light: how to make these integrated, and therefore costly lines function continuously, so as to reduce their number; how to get the new mode of maintenance accepted; and how to divide up tasks, none of which occupied a person full time. These three problems challenged previous work norms. Production workers previously had daily work quotas to fulfill, which gave them relative freedom to vary the pace of the work. They had tasks which were relatively homogeneous and were easy to classify according to their level of complexity. Maintenance workers could take the time necessary for in-depth diagnosis and repair of machines. So what was now at stake at work in the automated areas, was to ensure that it would be accepted that the machines run continuously, that intermittent tasks at different levels be carried out by the same people, and that breakdowns be repaired rapidly so that production would be disrupted as little as possible. But when this type of automation was put into practice it gave rise to below average results. The automated machines had been supposed to bring productivity, flexibility and precision but designed as they were, they caused numerous stoppages in production as well as quality problems in the first half of the 1980's. Several causes lie at the root of this unreliability and the slowness in rectifying it. They include a lack of understanding of the daily production problems on the part of the designers, a desire to pursue technological leaps to make large improvements in a single step and a mode of calculating the profitability of investments which favoured man-power reductions. They are joined by, a weakness of links between the factories and the central work study department at this period, an opaqueness and needless complexity in the first machines which hindered attempts to make them reliable, and the fact that de-
sign technicians and engineers were hired according to their qualifications rather than coming directly from the factory by internal promotion (Freyssenet, 1992).

The organizational solutions found for these problems varied from one factory to another, or even from one work area to another, (Freyssenet, 1984; Midler and Charue, 1990). As early as 1982, four forms of team work could be observed. These different formula were not mere experiments, but involved whole departments of a factory: machining, welding, stamping, etc. They did not, however, represent the implementation of an official strategy by the company, but rather the fruit of local initiatives by area or department managers. Time would have to pass before senior management and the totality of the management of the company would realize and understand the scope and implications of these new ways of organizing work.

The first formula appeared in the Le Mans factory. It consisted in recruiting 'controllers' of automated machine lines among unskilled workers and making access into this new category dependent upon: prior success in psychological-technical tests, a theoretical and practical test following a four month period of training, an acceptance of certain working conditions (continuous working, three eight hour shifts, new tasks, team working etc.), and upon assignment to a specified piece of equipment. This formula aimed at offering unskilled workers a professional classification, in exchange for accepting polyvalent work composed of tasks normally classified at different levels and accepting that the production lines would function continuously.

The second formula, adopted in the robotized welding area at the Douai factory, consisted in offering maintenance workers (professionals and technicians) the possibility of becoming line controllers for a fixed period, and agreeing to certain quality standards and a certain rate of downtime. The reversibility of this choice and the promise of more rapid promotion elicited volunteers. However, under pressure from the production manager to repair breakdowns rapidly in order to achieve production targets and to avoid hold-ups, they were not able to truly exercise their competencies in this function by organizing themselves to make full repairs and to seek the fundamental causes of breakdowns in order to eliminate them. A separate maintenance group had to be retained.

The third formula was adopted in the Vilvorde factory in Belgium, also in the robotized welding area. Production workers who carried out unskilled work, but who already possessed technical qualifications, were trained full-time for a year, to enable them to control and repair robotized installations. Organized into groups of five persons, without a leader, they were classified as equivalent to 'third level professionals'. It was not planned that maintenance workers would come to their aid.

The last formula was adopted in the welding area at the Flins factory, where maintenance, quality control and industrial engineering had been placed under the authority of the head of department. Each robotized line was controlled by a mixed production-maintenance group, consisting of a technician, a leader, an electrician-mechanic, and three line controllers (former unskilled production workers, classified as 'second level professionals' following their selection and a four month training period). The division of tasks among them was not rigid, and so the controllers sometimes participated in in-depth breakdown repairs, and even in modifications made by the technician and the electrician-mechanic. This formula was by far the most original, and potentially the most far reaching. It represented a good compromise between, on the one hand, the need to make repairs swiftly, and on the other hand, not postponing the search for the causes of problems and the activities necessary to make installations more reliable.

Renault discovered the wealth of initiatives that had been adopted in its various factories on the occasion of an initiative launched in 1983 by senior management, which was aimed at mobilizing all possible energies in order to deal with the deep financial crisis that had appeared. This initiative was called “Industrial Restructuring and Social Dynamics” (Mutations Industrielles et Dynamique Sociale: MIDES) and consisted in a wide-ranging debate between managers, trade unions and external experts with the aim of outlining the transformations that the company should carry out. Some new concepts emerged from this debate at the level of the whole company: the basic production units (300 persons), conceived as the basic cell of industrial activity and composed of sub-cells (8-10 persons), the idea of “the new function of the worker”, a structure for the firm which allowed rapid circulation of information, training considered as an investment, and the idea that techniques should meet the aspirations and expectations of the personnel with regard to the content of work, etc. However the internal dynamics triggered off by this collective discussion came to a halt with the financial slump that Renault experienced in 1984 after the resignation of the CEO.

3. The legitimization, the diffusion and the homogenization of the different forms of team work in the second half of the 1980's

The serious financial crisis in 1984 made senior managers lose faith in their convictions. Many of them left the company, along with middle managers due to the possibility of taking early retirement, a measure that they had been strongly encouraged to exploit in an effort to enforce the drastic reduction in the workforce that Renault had decided on (Freyssenet, 1998). In this new context, where the company had to draw from its own energy and experience to get out of the crisis, any former opposition was inopportune.

It seemed that team work was no longer viewed with suspicion and could be advocated once again by the young managers who had been promoted taking the place of older ones. It appeared to be a formula which would allow them to both reduce the number of posts and to increase the involvement of the workforce. It allowed the elimination of a number of substitute workers, quality-control staff, rectification workers, 'setters' and foremen, as operators had to be polyvalent and verify the work they carried out themselves. So, it spread again progressively, even in the manual sectors, always on the initiative of the managers of the working areas and of the factory managers.

The manager of personnel and social affairs who had supported module work in the 1970's without much success, came to consider that, in the end, assembly line work was unavoidable, for economic reasons, and especially as it had changed in nature due to the profound modifications it was experiencing. It became much more acceptable in his eyes because of the preparation that took place away from the assembly lines or on the short lines of a certain number of sub-assemblies, also because of the automation of the most tiring operations, and the fact that the work stations were made more ergonomically acceptable. Team work got rid of the restricting, parcellized, and pure-execution nature of work (Tijou, 1991).

In the automated sectors, the different formulas of team work were tending to homogenize. The team of line controllers, former unskilled workers, taking it in turns to undertake the tasks and functions necessary for integrated production lines, became the model in the mechanical components factories. It could do this all the more easily since it revealed itself appropriate to the type of automation adopted. The simplification of
tool setting, quality control, problem-spotting and rapid repair allowed these tasks to be entrusted to operators with only a few months training. In the robotized welding areas, the operating groups formed only of maintenance workers disappeared, to be replaced by groups similar to those which were favoured in machining. The gap between the level of work that had to be done and the competencies of the workers was too wide. The formula of groups composed of former production workers with previous qualifications, and who were trained for a year to operate and maintain equipment, was not sufficient to obviate the need for intervention by maintenance workers. As for the most developed form, that of the mixed production-maintenance groups in the robotized welding areas, it came up against two problems. The first was the reductions in staff which resulted from the work which the teams themselves carried out to make the equipment more reliable. The lack of agreement with management to guarantee jobs provoked a growing reticence on the part of group members to continue their participation in these activities. At the same time, it became more difficult to undertake these activities. The pursuit of automation in the direction of automatic diagnosis for rapid repairs, coupled with the increasing opaqueness of the machines, made it still more difficult for the groups themselves to seek out and analyze the primary causes of incidents. Moreover, the groups were increasingly composed of line controllers who were formerly unskilled workers trained only to operate equipment and repair minor breakdowns.

The adoption of “Total Quality” by the management from 1987 onwards legitimized and gave an administrative basis to team work 1. It came as a way of boosting the trend of improving quality and results, to get the operators to support it, and to redefine hierarchical relations and the role of the foremen. Following a period of conflict and tension related to redundancies and reduction in manpower that took place between 1985 and 1987, Management simultaneously sought to promote a human resources policy as a strategic choice for the firm. Joint Management-Trade Union groups got together towards the end of 1988. Their work led to negotiations regarding skills, management of working time, organization of work, training and professional orientation. Several agreements resulted from this discussion: notably an agreement on skills in the automated areas and above all “The Agreement for Living” (l’Accord à vivre), which defined the new principles for contractual relations between the firm and its employees. “The Agreement for Living” confirmed that Renault wanted to base its success in the competencies of its personnel and the relevance of its organization. A plan to “professionalize” production workers would result from it.


In 1991 Renault decided to generalize team work in the form of Elementary Work Units, (EWUs). By the end of 1994, its twenty seven European industrial plants were officially organized in this way, both the production plants and the different services and offices.

1 Quality was officially declared a strategic goal for Renault. The Quality Manager becomes a member of the company's Management Committee. The Renault Quality Institute was created in 1988. Its goal was to train for the tools, techniques and processes of "Total Quality". A fact which is more decisive in its repercussions, the quality manager refused to give his agreement to commercialize the R19 when it was being launched, as he considered that the quality was not high enough. This came as quite a shock for the company. It signified that management at all levels would have to change their methods of working.
Officially, team work as conceived by Renault is polyvalent, multifunctional work carried out by a group of 10-20 persons. The unit is defined by the component, mechanism or sub-assembly that it makes up or the service that it renders. It is led by a unit leader, who constitutes the first hierarchical level. It controls and analyses its own production parameters. It enters into buyer-supplier relations with the other teams upon which it depends, upstream and downstream in the production process. What is expected from this form of work organization is an ability to react to problems, an improvement in the quality of products and the functioning of machines, a greater flexibility of production, a development of competencies, an increased interest in work, and finally a modification in hierarchical relations.

This definition of team work is different from the definitions given by the two other companies that Renault was successively inspired by, that is to say, Volvo and Toyota. And furthermore it encountered difficulties when it was implemented in the middle of the 1990's. So, according to this official definition Unit Leaders have a hierarchical responsibility and do not work on the line themselves They are not operators among others as in the Toyota group. Neither are they chosen by the members of the group as was the case in the Volvo group or in certain automated machining areas at Renault in the 1980's, and they are not rotated with others who fulfil the conditions to assure the function of unit leader. Considering what had been done previously in a number of plants, EWUs marked a return to hierarchical management in the functioning of groups.

The Unit is defined by size (10 to 20 persons maximum), by a spatial and temporal framework and by a homogeneous activity (a mechanism or a sub-assembly, a service...). The client/supplier relationship with other units defines its perimeters (Decoster, Freyssenet, 1997). These criteria correspond to several preoccupations: a size sufficient to allow movement between stations and substitute workers, a common spatio-temporal framework so that exchange within a unit can happen immediately, a product unit to allow the group to completely master the production and guarantee good quality. Does the definition given to team work correspond with the reality? How does it compare with Volvo and Toyota?

The size of the groups at Toyota and Volvo is generally smaller. They have a maximum of about ten. The product unit is not usual at Toyota, as the classic assembly line prevailed until the beginning of the 1990’s, when the lines were divided into sections and buffer stocks were introduced to relieve the constraints of just in time (Shimizu, 1995). From that moment on, an effort was made to make a team coincide with a complete sub-assembly. At Volvo, the product unit exists for off-line production modules. At Renault, despite the official definition, the constitution of EWUs did not entail breaking down the process of manufacturing or assembling, so that each Unit could manufacture or assemble a complete product. The EWU was adapted to the existing process and not the contrary. This had many consequences. Boundaries were created between EWUs where they did not always have any real foundation. Unit relations between upstream and downstream were therefore complicated. The units cannot proceed to redivide stations, so as to make the operations that the operators carry out more functional and therefore more intelligible (Ellegard, 1995; Freyssenet, 1995). The division

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1 This paragraph owes a lot to the comparative survey carried out by Emmanuel Couvreur and Benoît Passard on team work at the Renault factory in Sandouville and the Volvo factory in Torslanda, as well as to discussions with Marie-Noelle Hume who in studying the evolution in maintenance at Renault, and to the work of Koichi Shimizu on Toyota. The analysis made here on the differences between the firms cannot be attributed to them.
of operations between stations remains the responsibility of the work study department and the foremen, even if the operators are consulted occasionally. This is different to what happens in teams at Toyota, who have to balance out the stations among themselves or with teams upstream or downstream, when the production varies in volume or in variety. At Volvo, the operators who work on a complete product in modules, decide on the order of the operations themselves. They can give them a logic which makes them easy to memorize, despite their variety, something they could not do on an assembly line.

The operators are trained to be polyvalent, which is one of the criteria which affects their career. The function of this polyvalence is to allow workers to be replaced when absent or when there are modifications in production. Team work is supposed to facilitate this. But setting up EWUs on the assembly lines did not entail the redistribution of operations between stations. They still do not have any logical link between them, a link which would be the only way of memorizing them more easily and of reducing mistakes or the fear of making mistakes. Due to the fact that a lack of quality has a significant influence on their evaluation, operators consequently try to change work stations as little as possible. Operators verify their work themselves, as is the case at Volvo and Toyota. If workers notice a problem, they call for someone to intervene and take charge of eliminating the problem. The former is called the Unit's Technical Assistant (UTA). Apart from quality problems, he takes care of equipment, polyvalence training, and relations with maintenance. At Volvo the module operator only calls on his team leader, who works like him, if he does not succeed in solving the problem. At Toyota, he has the right to stop the line work so that the group can take the time to eliminate the cause of the problem that he has noticed.

Other more peripheral functions (supplies, minor maintenance, etc.) are not really integrated in the assembly EWUs. Because of the short time cycle, the operators are unable to fulfil these functions and leave them to the UTA. On the other hand, at Volvo they fall within the range of module activity (Couvreur, Passard, 1993). The operator takes care of supplies himself and assures preventive maintenance of his equipment. In the machining areas, when machines are automated and operators do not have to load and unload components for each cycle of the machine, they can more easily take responsibility for maintenance tasks, though these are generally limited to cleaning, oiling and minor repairs when machines have stopped themselves automatically. We still see some attempts to create a new concept, that of the exploitant, a worker who fuses maintenance and production tasks. But these remain limited, unofficial, and are very strongly resisted. Maintenance at 2nd (repairing) and at 3rd level (diagnosing) remains clearly distinct from production, so much so that it is sometimes organized into EWUs itself.

In 1995 there were four levels of classification for operators, sanctioned by professional trials: P1, P1 CS, P2 and P3. On the assembly line, it was necessary to know 6 work stations at the first level, 16 stations in the EWU at P1 CS level, and at P2 level, 16 stations within the unit and 10 outside. P3 was reserved for controllers of automated installations who, in fact, had authority over the other operators in the group. These P3 operators relieve the maintenance workers of repetitive maintenance jobs. They can relay their observations to the EWU for maintenance in their common language and can carry out certain interventions when the EWU decides (Hume, to be published). At Volvo in Torslanda, the module operators are classed at the same level, if they assemble the same type of sub-assembly.
The driving force behind the Unit is the Unit Leader who presents indicators of results during breaks and has meetings to solve selective problems. A communication area has been fitted up for this. At Volvo in Torslanda, indicators are analyzed on a daily basis for a period of six minutes taken out of work time. Every two months, two hours of paid overtime are dedicated to any problems which occur in the module. These meetings take place in a specially fitted out area. The Unit Leader takes care of relations between upstream and downstream in his sector according to formal procedures which he activates himself. However client/supplier type relations are difficult to establish when the unit does not correspond to a complete or easily identifiable sub-assembly. At Volvo, it is the operator concerned who relates with upstream and downstream according to equally formal procedures. The rectification work is charged to the accounts of whichever workshop is responsible for the fault.

Operators have an appraisal interview on an annual basis, and from time to time when faults reoccur frequently. Appraisal takes place more frequently and systematically at Volvo: there is a weekly audit and a twice yearly individual interview based on weekly results. At Renault an annual agreement is signed by the trade unions which gives workers a share in profits which is based on profits for the whole factory. Calculation of the profit share is individualized at Volvo and is based on the weekly quality audit and the volume produced. At Toyota it is included in the salary (which has quite a significant amount which varies). Salaries at Toyota depend on monthly improvements in standard times for teams and this is one of the essential elements which explains the involvement of the employees. Toyota was obliged to change its salary system at the beginning of the 1990's due to difficulties in recruiting and the fact that workers and foremen refused an increase in overtime.

Conclusion

Team work at Renault today therefore does not correspond with its official definition or with successive references, Volvo and Toyota. This is so, first of all because of its history. Far from being a form of work organization borrowed from the 'Japanese' at the end of the 1980's, it appeared in the manual sectors at the beginning of the 1970's as a means of dealing with the work crisis that Renault and many other European constructors were experiencing at the time. Due to the fact that it threatened the principles of additivity and of linearity, in its most advanced form, that is to say the production of a complete sub-assembly in a module, it was contested by the work study departments, who managed to prevent it from being generalized in the manual sectors. On the other hand it was introduced to and accepted in the automated areas which were created at the end of the 1970's. But to make that possible, its content and objectives were changed. Instead of breaking with the principles of additivity and linearity which were now very much part of the architecture and the running of the automated installations, its principal function and reality, in the formula that was introduced, was to ensure that any parts of tasks that were not carried out by the automated machinery would be done quickly by a small group of workers, who would intervene rapidly when problems arose. This would leave maintenance workers and technicians to do more in-depth repair work outside of production time. This type of team work made it possible to create positions for professional production workers, which opened up new career opportunities for unskilled workers, without it being necessary to have a technical qualification.
Following the financial crisis of 1984, the necessity to reduce the workforce and the workers' increased involvement in the improvement of results, rekindled interest in team work in the manual sectors. But this time, far from having the objective of 'breaking up the assembly line', to obtain quality, flexibility, productivity and work satisfaction, like in the experiments at the beginning of the 1970's, the function of team work was to obtain quality, polyvalence and productivity, in return for the possibility of becoming a "professional production worker". The fact that jobs like quality control, replacement, cleaning etc. were kept within the team permitted a reduction in the number of quality controllers, setters, rectification workers and foremen. In the first half of the 1990's team work was brought into general use in all the workshops and services, in the form of Elementary Work Units.

However, the definition that it was given has not been put into practice in every aspect. Thus, the breaking up of the productive process that would have made it possible to attribute one complete product to each EWU which would then have been really responsible for it, was not systematically carried out. Also, participation of EWU members in the search for and elimination of loss of time and material was not generalized as it had been at Toyota due to a lack of job security and the continuing reductions in manpower. Renault is therefore a long way from the form of team work of which Toyota remains the master.

Bibliography


