

■ L E S A M I S D E ■  
**l'École de Paris**

<http://www.ecole.org>

### Seminar Creation

*organised with support from the Ministry of Industry (DGCIS : agency for competition, industry and services) and the Ministry of Culture, and thanks to the sponsors of the École de Paris.*

Algoé<sup>2</sup>  
ANRT  
CEA  
Chaire "management de l'innovation"  
de l'École polytechnique  
Chambre de Commerce  
et d'Industrie de Paris  
CNES  
Conseil Supérieur de l'Ordre  
des Experts Comptables  
Crédit Agricole SA  
Danone  
Deloitte  
EADS  
École des mines de Paris  
Erdyn  
ESCP Europe  
Fondation Charles Léopold Mayer  
pour le Progrès de l'Homme  
Fondation Crédit Coopératif  
Fondation Roger Godino  
France Télécom  
FVA Management  
Groupe ESSEC  
HRA Pharma  
HR VALLEY<sup>2</sup>  
IDRH  
IdVectoR<sup>1</sup>  
La Fabrique de l'industrie  
La Poste  
Lafarge  
Mairie de Paris  
Ministère de la Culture  
Ministère de l'Industrie,  
direction générale de la compétitivité,  
de l'industrie et des services  
OCP SA  
Reims Management School  
Renault  
Saint-Gobain  
Schneider Electric Industries  
SNCF  
Thales  
Total  
Ylios

<sup>1</sup> For the "Technological resources  
and innovation" seminar

<sup>2</sup> For the "Business life" seminar

(liste at october 1, 2012)

## THE WINNING SCORE OF THE PATROUILLE DE FRANCE

by

**Cédric Tranchon**

Squadron leader, French air force  
Leader, 2011 French air force aerobatic flight display team  
(‘Patrouille de France’)

March 13th, 2012

Report by Sophie Jacolin

Translation by Rachel Marlin

### Overview

The Patrouille de France aerobatic flight display team is faced with new challenges every year : each annual intake of nine experienced pilots has six months to learn an aerobatics routine where they fly in formation a few metres from each other at ground level. In every intake there is a career officer who, now has to learn to encourage group cohesion rather than to enforce his own decisions. These are two of the necessary conditions for their aerobatic aerial show which is intended to appeal to a wide variety of spectators, amateurs and professionals as well as those who are new to the sport. The Patrouille de France is able to rise to these challenges on an annual basis because its organisation is as regular as clockwork. This enables the show's squadron leader to prepare himself for his role, and for the teams to develop the crucial unity necessary. The pilots live together 24 hours a day, seven days a week, for six months of the year, and the precision of the flight performances requires both blind faith in the squadron leader as well as knowing his flying and communication skills inside-out.

*The 'Association des Amis de l'École de Paris du management' organises discussions and distributes the minutes ;  
these are the sole property of their authors.*

*The Association can also distribute the comments arising from these documents.*

© École de Paris du management – 94, boulevard du Montparnasse - 75014 Paris  
Tél : 01 42 79 40 80 - Fax : 01 43 21 56 84 - email : [ecopar@paris.ensmp.fr](mailto:ecopar@paris.ensmp.fr) - <http://www.ecole.org>

## TALK : Cédric Tranchon

When one flies in formation, two metres from flanking aeroplanes and just above the ground, team spirit, organisation and trust are not just management ideas, but prerequisites for personal and team survival. The organisation of the Patrouille de France relies on these imperatives. With perfect synergy, we can create and present a display which is as technical as it is aesthetic. Clearly we run risks but never take any.

Each year, the unit has a new squadron leader. I was the leader in 2011 having been in the 'slot' position (name given to the pilot situated behind the leader in the international language of aerial units) for a year. I gave up my command in December 2011. These two years were an interlude in my career as an officer fighter pilot.

The Patrouille de France is one of the 'public faces' of the French Air Force and acts as an ambassador for French aviation throughout the country and around the world. Its main aim is to represent French aviation performance and the French aeronautical industry in both professional and international trade fairs, as well as in aerial displays for the public.

### **A team which is constantly regenerated**

The way in which the Patrouille de France functions is based both on stability (including hierarchy, sharing of responsibilities, and ritual) and team assessment, because the pilots change position in the formation every year. The flying skills required for each of the eight positions in the formation is fundamentally different. Each year, one has to start from scratch and learn the flying skills in a new place in the formation. You may ask why we should not benefit from the expertise gained in one position, as each position requires its own special training. The answer is because we cannot rest on our laurels and must remain vigilant : a pilot who is too confident puts his life and those of his team members in danger. We are probably one of the only units in the world which operate like this.

### *The way changes are made*

The squadron leader is the person in charge of the unit and flies at the front of the formation. He maps out the flight trajectory and manages the mechanical energy. He is in charge of creating the programme (or *series*) for the season. He is squadron leader for one year. The positions within the formation, on the right and left (numbers 2 and 3 in the formation), and the slot position (number 4) are occupied by pilots who are in their first year in the unit. Pilots in their second or third year are at the back left and the back right of the formation and also on the periphery. This is where the two solo pilots are positioned : they separate from the main group at the end of the display and carry out particular stunts, sometimes criss-crossing each other so closely that they appear to touch.

Promotion within the formation follows precise rules. The slot is the unit's future squadron leader. He is a career officer from the French Air Force, and is second in command of the unit. The other pilots are contracted officers who were selected with a Baccalaureat degree, have passed selection tests and have pilot training. After one year in the unit, the slot becomes the squadron leader while the pilots on the inside of the formation go to the outside, or become second solo pilot. In his third year, the second solo pilot becomes the solo leader, and he then chooses his replacement from those on the inside of the formation. Tradition dictates that during the last flight of the season, he gives his cap to the person he has chosen. Subsequently, the pilot in the other inside position takes the outside right position. In the third year, the sequence continues. A pilot generally stays between two to four years in the unit.

A ninth pilot, (a former solo leader), can replace any other of his teammates without notice, apart from the leader who cannot be changed. He trains in different positions in the formation throughout the winter, and is in charge of the unit's safety during the summer season's meetings. During the displays, he communicates with the leader from the ground to inform him about the atmospheric conditions, and ensures that the surrounding area to the location of the display is safe.

Thirty-two engineers are also an integral part of the unit. The pilot, the engineer and the aeroplane form a threesome which does not change during the season. The two men get to know each other – and their Alphajet – extremely well. The engineer chooses the pilot (who has no say in the matter) and the head engineer chooses the aeroplane for each pilot.

### *Selection by cooptation*

Being a normal pilot is demanding, but being a pilot in the Patrouille de France is even more so. One is subjected to a very precise, regular routine, and during the meeting season from early May to the end of October one spends five days each week away. One has to blend in with the group, and be worthy of complete trust from each member of one's team. When recruiting a pilot, the team's image, safety and the way it operates comes into play. If a new recruit leaves after a few months, this is seen as a failure for the group.

Recruitment takes place by selection based on interpersonal qualities. The person in charge of human resources makes a pre-selection based on technical qualities and the candidates' experience. The necessary qualifications are that one has to be a fighter pilot in a combat unit, a unit leader (in other words, one must be capable of being responsible for four or more aeroplanes in a war situation), and have at least 1,500 flying hours (the equivalent of six to seven years in a combat unit). The head of human resources then draws up a list of about fifteen applicants from whom the unit must choose three every year.

In a typically intense day, the candidates then accompany the unit. This includes bodybuilding in the early morning, going to the airfield, having a briefing about the first flight, followed by the flight itself (the candidates are seated behind the pilots), eating a snack, having a debriefing about the first flight, a briefing about the second flight, the second flight, lunch, a debriefing about the second flight, and finally a session of group sport to finish off the day. Needless to say, they are terrified by their first flight ! All the reference points to which they are accustomed as fighter pilots are turned upside down, such as the distance from the ground, the management of energy, descending to hold one's position two metres from the other aeroplanes at 5G. Even the most seasoned pilot needs at least six months' training such as this to reach the level for a public air show. Our method of teaching at the Patrouille de France is such that we can turn any fighter pilot into a member of the team. Thus the recruitment gamble is as technical as it is human. The questions which are asked include the following : will the candidate be able to withstand the pressure ? Is his private life sufficiently stable so that it will not interfere with his profession ? Is it possible to live with him 24 hours a day for 6 months ? We have to consider all these subjective criteria during the day we spend with the candidate. This means we have to ask personal questions because we know very well that family life is put to the test when a pilot is appointed to the Patrouille de France. Those close to the pilot have to realise that he will be frequently absent and that he will be subjected to a great deal of stress. It is essential for the pilot to have a balanced environment and a healthy life. If he tries to hide his personal problems, this will prove detrimental to himself and the unit in the end. It is also the reason why trust is so important.

When we have met all the applicants, we vote. Before voting, we discuss the candidates in order to share any personal knowledge that we may have about them. Very often, the candidates may have worked with one of us in the course of an operation, in a squadron or in all kinds of possible work situations.

The method of recruitment for the engineers is the same, and takes place at the same time. After pre-selection, the engineers spend a week with the engineering team and are chosen by cooptation. The pilots do not have a choice of engineers, and vice versa. When, as a slot, I was in charge of organising the selections, I still submitted the names of pilots to the engineers in order to know if they had worked together before. It is essential that the duo works extremely well together. The pilots' safety and the entire synergy depend on this. During the two years I spent with the Patrouille de France, I never carried out any pre-flight checks on my aeroplane myself as is usual in the French Air Force. The Patrouille de France is the only unit which is excused from this procedure. There is complete trust between all the members.

### **Building and maintaining an *esprit de corps***

'One for all and all for one' could be the motto of the unit whose radio call sign is Athos. The values of the unit – respect, rigour and discipline – are not very different from military values, but are instilled in an atmosphere which may be different. This is particularly true of the unit's management. The leader cannot adopt an exclusively authoritative attitude and maintain a purely hierarchical relationship with his group. He should exercise his leadership in a spirit which serves to unite the group. His aim is to make each of his pilots (each of whom has a strong personality) keep to the framework which he intends to use during the year for the displays. When one reaches the position of leader, one has to find how to fulfil the function and exercise one's authority by oneself. The team relies on you implicitly. One must know what to do, how to do it and what to say. This sort of behaviour is not learned in a fighting unit where the hierarchical barriers are sharply drawn and involve more formality. In the Patrouille de France, there must be synergy between the team members. It is a very special way of being in command, and is more subtle than the way in which it is taught in officer training school.

An additional problem is that the leader, because he is a career officer, is younger than this team mates who are officers under contract and often coming to the end of their careers at the Patrouille de France. As a leader at the age of thirty-two, I was in command of pilots who were forty years old.

#### *Together, even outside work hours*

A successful, well-coordinated aerial display requires perfect understanding in flight and on the ground between the members of the team. Everyone trusts and understands everyone else, just like friends. The leader's challenge is not to create the best display possible, but to create a group from scratch.

How does one create solidarity between nine pilots who will live together six months of the year in the same hotels, far from their families ? And how does one keep this going ? Certain events can encourage this on a daily or a more ad hoc basis. We do things together, such as 'team bonding' trips over ten days in the mountains in the middle of winter. It is essential to plan some breaks in the training, in order to alter the work rhythm. This helps newly recruited, first-year pilots to blend into the group because at this time they are still in their training period and adapting to the group and their new way of life. It is a very difficult adjustment for these experienced professionals. During the team bonding trip, the group starts coming together, independent of factors relating to position or length of time in the unit, and this is facilitated through non-professional activities.

We also travel abroad as a group, and we all go out together with our families. The pilots' wives create strong friendships with each other which helps them to endure the constraints of this rather unusual life.

Daily sport sessions, in particular the two hours of team sport at the end of every day, also help to maintain team unity.

### *Rites of integration*

The traditions which are a part of the life of the unit create group solidarity. One of the traditions which promotes solidarity is for the first-year recruits, nicknamed the 'Smurfs', to wear the light blue flying suits which they have dreamt about. The candidates are chosen in January, but do not actually start training until October after the season has ended. From September onwards, they are monitored (during the so-called 'Smurf period') and sit behind the pilots during flights in order to learn more about the job. Their official entry into the unit takes place at an integration ceremony during which they are given their flight helmets which are painted red, white and blue.

The 'Smurf' flight is another unique event. At the end of the monitoring period, even though they have not yet flown or tried out the unit's version of flying, the three new pilots have to fly at the head of the formation, under instruction from the leader, and carry out part of the display routine as best they can. The senior pilot is at the back for safety reasons. This is probably the flight when I am most emotional, whether I am in the front or at the back of the formation. It is a very instructive stage as it enables us to assess what is necessary in order to raise the new recruits to the level of the rest of the unit.

At the end of the season after the final display, the leader takes leave of the unit and the three new 'Smurfs' salute the unit at a ceremony.

### *Training puts egos to rest*

One needs to have a strong personality to be a fighter pilot. Fighter pilots are sometimes said to be individualistic and elitist, but, in the face of danger, for example carrying out a war mission, a certain amount of egoism may be part of the survival instinct. In a squadron, a fighter pilot can always bring out his ego and 'sell himself', letting other pilots know, for example, that he excels in close quarter combat. In the Patrouille de France on the other hand, individual temperaments stay in the background. The only possible choice is to blend into the group. In any case, how could a team member distinguish himself individually in a flight formation, an exercise which is, by definition, collective? Our teaching methods are designed to bring all egos to the same level. Instruction gives each team member the feeling that he can be nothing without the others. The pilots spend their time discussing and even criticising the way in which they fly, in a forthright fashion. Nothing should be left unsaid. This is how one creates a shared experience.

### *Constant debriefing and oral transmission*

Debriefing is a crucial part of training. It takes place all the time: at the end of a training flight when ideas and feelings are still fresh in one's mind, or after a flight display to discuss safety, or later on by watching video cassettes in a more in-depth approach because each display is filmed. Debriefing continues informally in the relaxation area where we come together after each flight. It is an essential means of training and learning for first-year pilots. Knowledge is largely shared through group discussion. It is even more necessary because each unit is different and creates its own synergy, and is led by a leader who makes his individual mark on the unit. As a result, 'static' knowledge is pointless.

The discussion part is very important in briefings. Each display is preceded by the ritual of the dress rehearsal on the ground orchestrated by the leader. Seated opposite the leader, and positioned as they would be in flight formation, the pilots carry out exactly the same moves

that they would when flying, while the leader gives details of all the instructions, exactly as he would give them on the radio. If we close our eyes, we can feel the others around us. In this instant, we already feel as if we are in our aeroplanes.

If the briefing can be regarded as a warm-up, then the debriefing is the stretching exercise. It is painful, but necessary. We learn more in the debriefing than during the flight during which there is sometimes not enough time to absorb actions or to correct mistakes.

Regarding what is written about training methods, there is a book written by former pilots in the unit (known as the 'bible') lists all the routines which work well, and those which were tested unsuccessfully, as well as reports from former pilots. When each new team member-and particularly the new leader – begins a new winter training session, he draws inspiration from this book to create his display by putting together his own flight display routine. At the end of the season, each pilot records the way he approached the series and the routines. Subsequent units can learn from these written experiences.

## DISCUSSION

### The unit's isolated leader

**Question :** *The unit does not have the opportunity to test the qualities of a future leader. It only becomes apparent when he takes up the job. What happens if he does not prove to be a good leader ?*

**Cédric Tranchon :** There is sufficient esprit de corps on the group that for a year, the unit will manage to keep going regardless of the level of leadership. It can still improve until the end of the season even if it is not perfect. This is nevertheless one of the weaknesses of the system. When one recruits a team member, one has no means of knowing whether he will make a good future leader, even if he was a fighter squadron leader before and had already planned flight missions. It is always a risk. In any case, I do not remember this happening in the last few years.

**Q. :** *Why is the leader never replaced, unlike other team members ?*

**C. T. :** The leader moulds the team according to his own vision. He has his own way of flying, his own routine (or 'musical score'), and his own way of communicating on the radio. This is why he is irreplaceable. He 'must not' fall ill and should take part in all the flights. Without him, there is no unit. If another pilot took his place unexpectedly and tried to teach the team a loop, no team member would be able to keep his position in the formation, at least not correctly. A substitute would not give the instructions in the same micro-second between the time that he stops the radio and issues the order, and there would not be the same rolling rate, and so on. Each year, the unit is different and reflects its leader.

A substitute pilot can replace any other pilot. This is true for short absences, but when a pilot is injured and prevented from flying for a long period of time, the situation becomes problematic. This happened in 2010 after a training session when the second solo pilot lost control of his aeroplane and ejected. He was unable to fly for the rest of the season. We were fortunate that the previous year's substitute pilot had become a teacher at the Salon de Provence pilot school, and agreed to come back to the unit for the season which was due to start a month after the incident. If he had not been able to help us out, we would have had to put our replacement in the second solo position thereby avoiding any other replacement. As a result, some of our displays would most likely have had to be cancelled.

**Q. :** *You have shown the importance of the learning process in the group. However, it is likely that all pilots do not progress at the same rate. How does the leader deal with these differences and make sure that some pilots do not get discouraged ?*

**C. T. :** There are times throughout the year when pilots may well become discouraged. When a first-year pilot begins his winter training, he might well think that he will never cope. In the summer, after a month of displays, the pilots do not think that they will manage to keep going for the entire season. It is because of the cohesion within the group, and the fact that all the members progress in the same direction that they manage to move past these points, one after another. It is reassuring for the pilots to see that they all experience difficulties at different stages, especially since we re-evaluate our position in the formation every year. The pilots and the leader have to learn everything all over again. We have to watch each other to convince ourselves that the problem is not personal, and that it is a group problem which we can overcome together.

The difficulty for the leader is to appreciate the way in which each person progresses because we do not all progress at the same rate faced with this rather stiff test. If a pilot stagnates, the team (with help from the leader) must realise this quickly and support him. Unfortunately, the leader has no-one at his side to teach him his role. He finds comfort in the support and progress of his team. All of this is based on non-verbal support.

**Q. :** *When the leader comes across technical or managerial problems, who can he turn to outside the unit ?*

**C. T. :** Whereas a team member who has difficulties in executing a routine can ask the pilot who was in his position the previous year for advice, the leader cannot share his concerns with any member of the group. He is alone. He can only rely on the experience of former leaders, recorded in the 'bible', and in the way in which team members passed information between leaders in previous years. I have contacted former leaders, starting with my leader when I was the number 2, but I mainly asked questions about technical aspects. Advice given about management is less useful because each leader reacts differently to human situations. Advice given by a former leader might not correspond to the way in which I exercise my leadership or to the nature of my unit. Nevertheless, it is essential to detect and resolve any relationship problems which arise in the team. As the season progresses, people become increasingly tired, and this may cause tensions. The leader should be the first person to pick up on this. He must be capable of listening at the same time as he gives instructions and guides his team. This is where it is most difficult.

### **Recruiting a pilot... and his wife**

**Q. :** *A pilot's family situation appears to be a determining factor. Is it really a factor in maintaining a stable unit ?*

**C. T. :** Yes, to the point that it is one of the criteria for recruitment. It is not important to us that the candidate is married, but it is important that he has a stable and balanced life because when he is in the aeroplane his life will be ours. Someone with personal problems is potentially a danger, not only to himself, but also to his team members. We have already learned this from experience. Frequently we not only recruit the pilot, but also his wife ! She will have a direct influence on his behaviour and performance.

It is important that the wives understand the nature of the bond which unites their husbands and they have to experience it to understand this fully. The relationship is so dependent on trust and demands such symbiosis that it cannot be communicated to the outside world. We need to keep ourselves in this sort of bubble, where there are no secrets between our team members in order to remain united and to avoid danger. We could all die together at any moment.

It is therefore a selfish profession : we cannot share with our families either the bond which binds us to the other pilots or our passion. And yet our family life changes and shaped by the years we spend in the unit.

## **An introspective bubble ?**

**Q. :** *The polished management operation which you have described has probably come about through time to reach the precision that we see today. Has it been inspired by other units ?*

**C. T. :** The organisation has come together over time, and it has not been easy because the unit has suffered some losses. In the archives, there is a video of a briefing held in 1957. The pilots appear very relaxed, leaning on their aeroplane wings, discussing their display. This is radically different from the extremely precise routine which was the case a few years ago. They were already a professional unit, but with a different method. To my knowledge, we are one of the only units to have established a precise routine, perhaps with the exception of the United Arab Emirate's unit which was partly trained by one of our former leaders. Since its creation the definitive work carried out by the unit in order to reduce danger, has enabled us to create a framework which we follow today.

**Q. :** *Are there any distinct differences in organisation and performance between units ?*

**C. T. :** All units are different. They do not all have the same number of aeroplanes, or the same way of changing their programmes, or the same rules of flight. Therefore, it is difficult to compare the various performances. As far as the main factors are concerned, the recruitment and training principles are similar in France and Great Britain (where there are team-building sessions) with the one notable exception that the British Red Arrows' pilots do not change positions every year. The Italian Frecce Tricolori also keep the same positions for a number of years. Our unusual organisation which is constantly changing gives us the facility to adapt ourselves to unexpected events without having to change the formation or the structure. This is perhaps what makes us different.

**Q. :** *Do you compete with private units or national units ?*

**C. T. :** The private Breitling unit was recruited from former pilots of the Patrouille de France. I would not say that we compete with them, but that we copy each other in a healthy way. This is also true of other national units. We are brothers-in-arms who have the same enthusiasm regardless of our nationality. Having said this, we appreciate it when the general public tells us that the French unit was the best display of the day.

## **The Patrouille : the French Air Force's whim ?**

**Q. :** *Can one estimate the amount of money that the Patrouille de France makes in its representational role, and what are the costs ?*

**C. T. :** I do not know how to quantify the money that our role makes, but it is without doubt a solid source of revenue for the French aeronautical export industry in trade fairs, especially those which are attended by professionals and buyers. Perhaps our strong presence at the Dubai Air Show in November 2011 proved that France invests in its aviation and this encouraged support for the Dassault Rafale. I am not in a position to judge. As for the cost of the unit, it is possible to calculate the cost of a display, but this does not make a great deal of sense because there are no comparisons available.

**Q. :** *Is one a better fighter pilot if one has been in the Patrouille de France ?*

**C. T. :** No, because one has to learn everything again when one comes into the unit and forget it all when one leaves. At the Patrouille de France, one is taught what is forbidden elsewhere, such as flying aeroplanes very close to each other, and close to the ground. Even the way one flies requires specific hand movements which are very different from those taught to fighter pilots, such as using aircraft trim tabs.



**Q. :** *If, as a pilot, one has been in the Patrouille de France, does one receive any kind of recognition ?*

**C. T. :** The French Air Force goes to great lengths not to show any favouritism. It is not because one has been a member of the unit that one should benefit when one leaves the unit. Therefore, there is no particular recognition officially. When I left the unit, I went back to being a career officer, which included working in staff headquarters, and I went back to working with my former Air Force class mates without any change in my status.

What we receive as recognition is that we have taken part in a unique human adventure, an aerial display which has been seen by the general public, and in particular by children who have been filled with wonder and been inspired for the future.

Presentation of the speaker :

Cédric Tranchon : joined the French Air Force in 1998. Engineering graduate of the Air Force School (École de l'air). He became a fighter pilot officer, and in 2003 he was posted to the aerial base of Cambrai where there are two Mirage 2000 squadrons. He was head of the unit and then squadron leader. He has taken part in all sorts of security and air policing missions both in France and abroad under the assignment of NATO. In 2009, he joined the Patrouille de France, and became unit leader in 2011.

Translation by Rachel Marlin (rjmarlin@gmail.com)