

The 16:9 format – a technical and artistic challenge

C. Darmon (Television Director)

1. Introduction

Television has entered a phase in which technical standards are undergoing change. The 16:9 format is the first stage in this revolution. It modifies the shape of TV screens, and it also modifies picture-making procedures. The change in format in itself brings about a profound change in viewers' habits, and 16:9 has artistic characteristics which are different from those of 4:3.

2. The 16:9 picture: one-third as much again

The term *16:9* refers to the width/height ratio of the new TV picture, which is much wider than the traditional "small screen" image which has a ratio of 4:3. Using the 16:9 format gives us 33% more picture than in the 4:3 format. The new picture is also more comfortable and satisfying to look at, since it corresponds more closely to the characteristics of human vision: the field of vision of the human eye is wider on the horizontal axis than on the vertical axis. This particularity, which may seem strange given that the eye is round, is due to the shape of the face. The 16:9 format thus covers

The technical innovations which are pervading the world of broadcasting will achieve their full potential only if all the professionals concerned adopt a new approach and new working methods.

In this article the Author describes how the new 16:9 format has changed the rules for shooting, and explains the aesthetic advantages it offers.

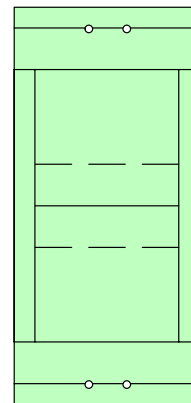
a field akin to the useful human field of vision (130°). Human vision is panoramic and this is one of the essential physiological characteristics to which the 16:9 format corresponds.

3. A new audio-visual language

It is important on two counts to know how to handle the extra picture area which the 16:9 format offers.

3.1. Static composition

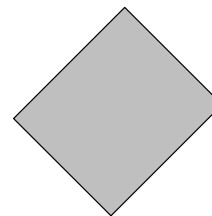
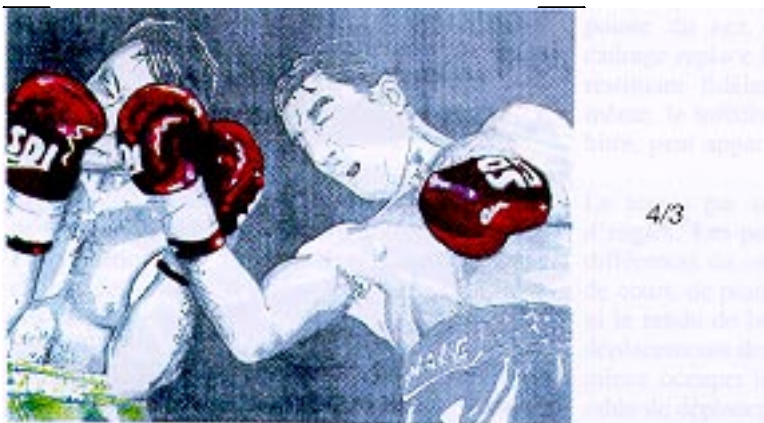
The new format calls for a change in the way that cameras are positioned. In rectangular scenes, diagonals can be used more easily. Perspectives are much more significant than in 4:3 pictures. The wider 16:9 format requires a fresh approach to video shooting, which is closer to cinema production. It is essential to learn how to use the extra



Note : The position of the camera is identical for the two formats.

16:9

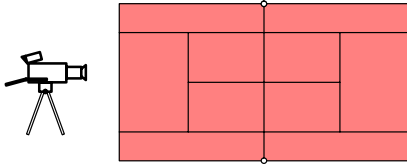
Figure 1
Comparison between images in 4:3 and 16:9 in the case of a team sport (rugby).



Note : The position of the camera is identical for the two formats.

16:9

Figure 2
Comparison between images in 4:3 and 16:9 in the case of a boxing match.



Note : The position of the camera is identical for the two formats.

a) Camera behind the baseline

16:9

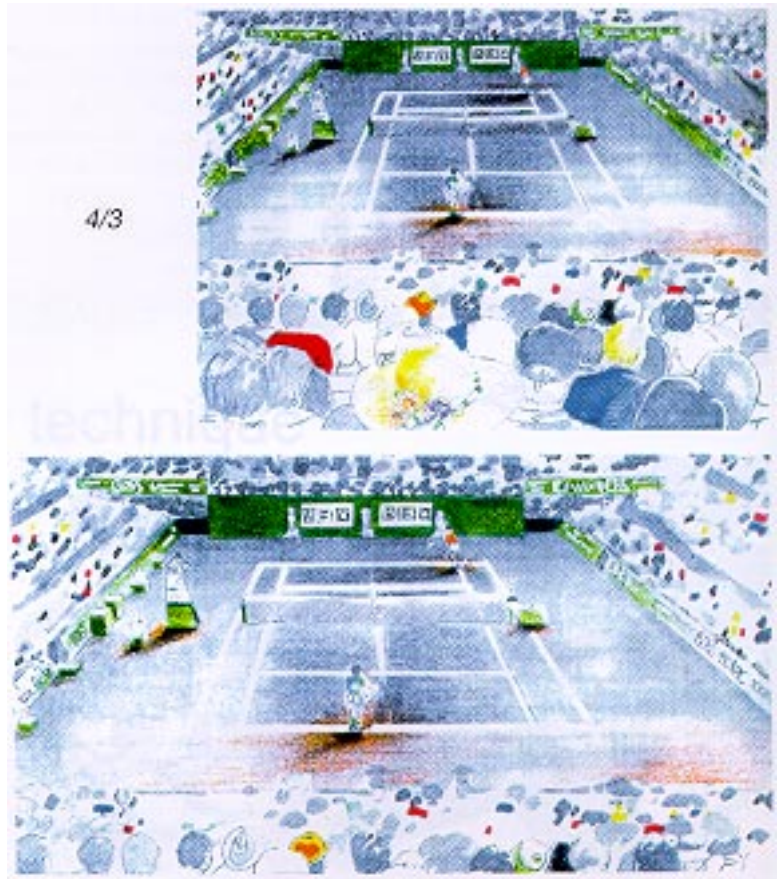
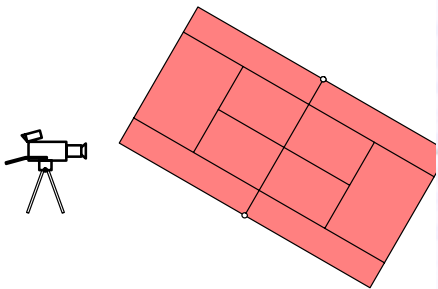


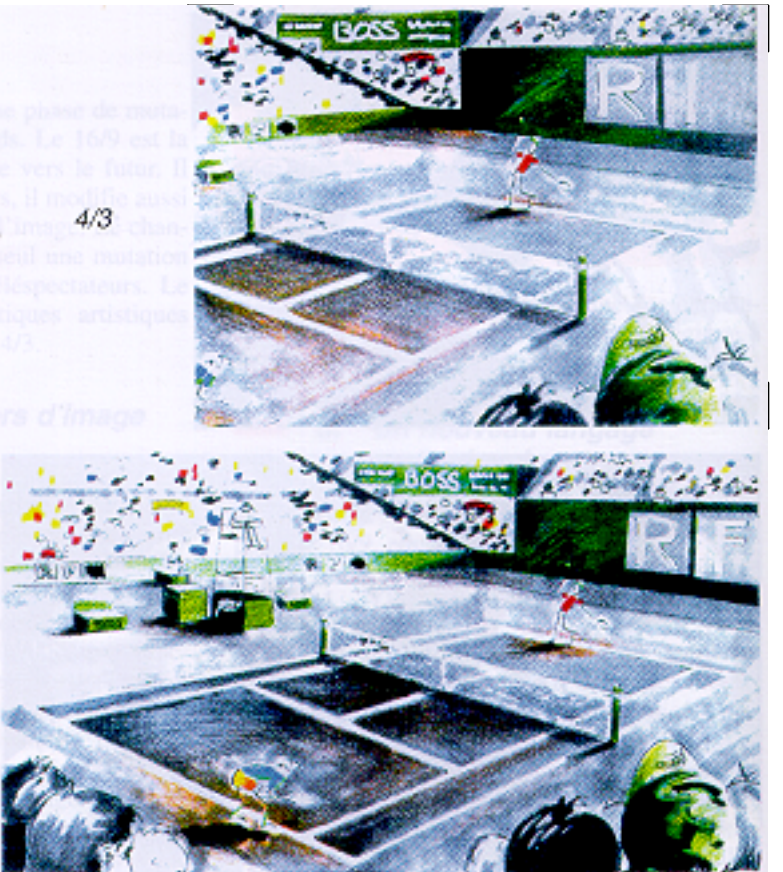
Figure 3
Comparison between images in 4:3 and 16:9 in the case of a tennis match.



Note : The position of the camera is identical for the two formats.

b) Camera at a corner of the court.

16:9





width of the picture, and in particular to place the subject correctly in relation to the frame. For example, close-ups cannot be lined up in the same way. Faces must be given a wider frame so as to show where people are looking. This means that greater precision is required in linking one shot to the next.

With 16:9 it is possible – and indeed essential – to work in three dimensions. A leader is framed in the foreground. The subject, which is the focus of the image, is placed in the middle distance and the third dimension is the background.

■ 3.2. *Dynamic composition*

The speed of panning must be slower so as not to cause strain on the viewer's eye, which has to take in more images, unless of course a specific effect is required. The perspective provided by 16:9 gives even more emphasis to movements and changes of position.

16:9 necessitates the creation and utilization of a new language with a specific style where the cameras' movements constitute the "syntax" and their positions and axes provide the "alphabet". Cameras must be placed lower down as shots in 16:9 work well with very rich backgrounds. To return to the principle of working in three dimensions, great care must be taken with focal distances and lens openings in order to strike the right balance between background and foreground, depending on the depth of field.

Although this is a technical task, it nevertheless has an aesthetic and imaginative aspect in which creativity is essential. The director is the conductor of the "orchestra" of pictures. His mission is to build sequences using a particular language, to produce an illusion and to generate emotion, the overall aim being to tell a story well. The 16:9 format is ideally suited to this task.

■ 4. *Sport in 16:9 format: focusing on the action*

Sport is one of the areas best suited to the use of 16:9, as a few examples comparing it with 4:3 will show. With 16:9, TV viewers become spectators, finding it easier to understand the game and its tactics because they feel really involved in the action.

Team sports such as football or rugby are remarkably well suited to 16:9 since the action takes place essentially on a horizontal plane. In a medium shot it is possible to see several players in the same frame (*Fig. 1*), thus making it easier to follow the tactics of the game. Using the same central image, we would have to zoom out in 4:3 if we wanted to include all the players. They would then be framed in a much wider shot and would appear much smaller, which would clearly have less impact. Using a short focal distance in wide format also gives a result which appears far more dynamic (the camera located at pitch level).

Covering a boxing match in 16:9 format really requires only a single shot while the fighting is in progress. As *Fig. 2* shows perfectly, with a close shot in 4:3 format it is possible to frame only one of the two contestants and the end of the other contestant's nose. In 16:9, however, using the same frame puts both the boxers back into the picture. At the same time it faithfully conveys the intensity of the fight, and also makes it possible to show the third person involved in the match (the referee).

Tennis, on the other hand, requires changes of angle, and the positioning of the cameras for 16:9 will be different from that used with 4:3. The baseline position habitually used in 4:3 is not suited to conveying the speed of either the ball or the players' movements (*Fig. 3a*). Thus, in order to make better use of the space offered by the 16:9 format, it is preferable to shift the viewing angle towards the diagonal of the tennis court. As shown in *Fig. 3b*, the court appears larger from

Mr Claude Darmon is a graduate of the Ecole de Cinématographie Vaugirard in Paris and the holder of a post-graduate degree in production and communication from the Sorbonne, Paris. He worked first at the ORTF (previously, the national broadcaster in France) and then at the Société française de Production. He is a member of the Centre national de la Cinématographie (CNC) and since the early 1990s has been a recognized television and film director.

Mr Darmon has already been responsible for many TV productions, filmed both in the studio and on location. His experience of live sports and news coverage is particularly rich and varied.





this angle. The side view makes it easier to appreciate the speed of the players' movements and also that of the ball, and the image becomes far more dynamic. In 1995, during the French Open Championships at Paris-Bercy, a remotely-controlled camera with a 5.5 wide-angle lens was placed directly in line with the net. It covered the whole surface of the tennis court, and reproduced the match perfectly. Such an innovation is possible only with wide-format cameras.

Very careful attention must be paid to the pace of picture cutting since framing is different with 16:9. Again taking tennis as an example, it is necessary to cut from the tight shot of the service to the wide shot at least one or two seconds earlier than in 4:3 format because of the speed of the ball, which appears greater.

5. *Dual shooting: doubling the brain's task*

Using 16:9 obliges us to change completely our way of working and to rethink all the framing habits acquired while using the 4:3 format. We must take a wider view and adopt a different approach. If obliged to change from one format to the other during an operation, the cameraman or the director has to cope with a form of double vision. Financial constraints often force us to limit equipment and to opt for coverage which can

be used simultaneously for 4:3 and 16:9 programmes, in other words *dual shooting*. The picture provided must then be as suitable for viewing on a 4:3 TV set as on a 16:9 set.

In these circumstances the work of the cameraman and the director becomes something like simultaneous interpretation in two languages, an extremely delicate operation which requires a great deal of caution.

Without meticulous preparation and a sound professional schedule, dual shooting would be detrimental to picture quality and readability.

6. *Conclusions*

It will be some years before the equipment used by the broadcasters and the viewers is replaced all over the world. So there will be a long and costly period of transition, which calls for careful preparation.

This preparation is not only, nor even essentially, a technical matter – it also involves aesthetic considerations. The success of the new 16:9 format will be confirmed only if it gives the end-user – the viewer – clear cause for satisfaction. And, as everyone knows, sport on television – even though some may sometimes find it a trifle invasive – is nevertheless still the favourite viewing in many households.

Digitalization of the EBU transmission network

Geneva, 2 June 1997

The EBU announced today its plans for digitalization of its internal Eurovision transmission network. Used for distributing and exchanging programmes among EBU Members, the network covers the whole of Europe and also includes northern Africa and the Middle East. It uses transponders on the Eutelsat II-F4 satellite with a total capacity of seven television channels, and has 55 transmit and receive earth stations. When the transmissions become digital, the capacity will increase to over 20 channels.

The digital standard which has been adopted is the professional MPEG-2 profile, 422P@ML, one of the most advanced digital compression techniques. The EBU will thus be in a position to diversify the services it provides to broadcasters and will be able to offer superior technical quality while at the same time reducing the transmission costs.

The UK company NDS has been selected by the EBU to supply the digital coding equipment that is required to adapt the Eurovision network.

Further information on this project can be obtained from:

Didier Debellemanière (EBU – Operations department)
Tel: +41 22 717 27 53
Fax: +41 22 717 27 80