

THE HISTORY OF TRAFFIC SIGNING IN FRANCE AND EUROPE: THE ROLE OF INTERNATIONAL CONVENTIONS

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ABSTRACT

Today, it seems as if traffic signs have always existed. This is partly true – for example, as far as we know, the Romans used boundary stones. But the real beginning of road signing starts with the introduction of the motorcar at the end of the 19th century.

A variety of different systems have been implemented since 1890, but it was not until 1909 that the first international convention was agreed. The Vienna Convention, which represented a huge step forward, was signed in 1968, but a large part of the world does not apply it; furthermore, the Vienna Convention does not cover (at least up to now) every kind of traffic signing.

This paper describes the history of traffic signing in France and in Europe, highlighting the role of international conventions.

1. INTRODUCTION

Several years ago, two of the authors (i.e. Marina Duhamel and Jacques Nouvier) published the “History of traffic signing in France, from 1946 to the present day” [12]. Mr. Christian Leyrit, the Road Director at that time, agreed to write the preface and stated: “Traffic signing is active and changeable. It is not only utilitarian; it reflects certain preoccupations of society. Whether it is directional signing, regulatory signing or indicative signing, it provides a link between those who designed and built the road, those who manage it and maintain it and those who use it. It translates how the former takes the latter into account.”

These few lines set the scene admirably. But when did the first traffic signs appear? It is generally thought that the first signs date back to Roman times, but “modern” signs, mainly aimed at motor cars, first appeared at the end of the 19th century.

In several European countries, the highly creative period at the beginning of the twentieth century saw the birth of many signs and, in particular, the first four “official” danger signs, which were circular at that time.

Since then, there are certain aspects of traffic signing that have, progressively, been standardised, notably thanks to the Vienna-Geneva Convention. However, this Convention does not solve everything and does not apply to the whole world, which is divided between two different signing systems.

The article itself focuses on the following main subjects:

- ✓ The beginnings of traffic signing in Europe.
- ✓ The two systems used in the world.
- ✓ The Vienna Convention.
- ✓ Tourist signing.
- ✓ Direction signing (in a context marked by the limited scope of international agreements).
- ✓ Temporary and variable message signing (in a context where international agreements are practically non-existent).
- ✓ Future perspectives.
- ✓ Conclusion.

A comprehensive bibliography completes the paper.

Please note that several quotations or references come from the aforementioned historical book [12], which is one of the basis of the current paper.

2. THE BEGINNINGS OF TRAFFIC SIGNING IN EUROPE

2.1. The first attempts

If we gloss over Roman boundary stones, the Compostela pilgrimage routes - that were marked by scallop shells -, signing recommended during the reign of Louis XIV, together with a few 19th century initiatives, signing really started at the end of the 19th century when many proposals saw the light of day. In Brigitte Cambon de la Valette's words [19], "The clutter of regulation signs makes them indecipherable. Their shapes vary from town to town [...], the signs, overloaded with wording and advertising are hard to read... Hapless drivers have a nightmarish task! Everyone, motorists and the public authorities alike are hoping for a regulation to standardise the various types of signs so that they are easier to read and will make an impact on uses.

Now action by active and efficient associations will change things for the better."

It should be mentioned that Michelin and Dunlop, the tyre manufacturers, and also the touring clubs, also initiated actions.

The first attempt at international harmonisation was made in December 1908 and October 1909, respectively in Geneva and in Paris; four signs emerged from these International conferences [10] (see Fig 1).

2.2. The next steps forward

After that major international step forward, which was, incidentally, more symbolic than practical, no new initiative was launched until several years after the First World War.

The League of Nations' Standing Committee on Highways met in Paris from 20-24 April 1926. This diplomatic conference looked into new rules that were of great importance for road signing. The four danger signs created and used since 1909 permanently changed

shape from circles to triangles [10,15]. They are still in force today. Two other signs were created during the conference:

- ✓ the unmanned level-crossing, without barriers, depicting a locomotive (at night its orange reflectors would beam back car headlights);
- ✓ the alternative general danger sign intended for use in severe atmospheric conditions (this was a triangular sign with its centre hollowed out; this sign was never adopted in France).

At the same time, the agreement attempted to harmonise the signs in force by deciding to establish signs in vitrified sheet metal (size: 1 meter) in the form of raised white lettering against a blue background.



Fig.1 - The 1909 Geneva International convention signs (Source: M. Duhamel, *"Half a century of road signing"*, Published by the ENPC, Paris, 1994)

In June 1928, at the request of the Swiss towns and the International Road Congress Association, the International Union of towns, along with the International Automobile Federation decided on signing developed by the Union of Swiss towns that the League of Nations' Standing Committee on Highways had just endorsed. They were new international prohibition and direction signs. The details of these signs follow:

- ✓ the so-called "no entry" sign – a red circle erected at the road entry point meaning "passing this point prohibited" with variants for partial prohibitions such as for: cyclists, horse riders and lorries depicted by white shapes against a red background (in fact this sign is the forerunner of the access prohibition sign for a defined category of users);
- ✓ the so-called "direction" sign – a Swiss arrow painted in white on a blue circle (compulsory direction sign);
- ✓ the sign to indicate car parking provision, symbolised by the letter P in white on a blue circle;
- ✓ the parking prohibited sign: a blue circle with a red border (no diagonal slash).

The appearance of signs like these, that are now so familiar, are thus the fruit of international discussions.

At the same time the League of Nations' Standing Committee on Highways was continuing its work in Geneva. It came to a head on 30 March 1931, when an international convention was signed on harmonising road signs, thus encapsulating the work undertaken since 1926 for all types of signs in a single regulation. It made a first set of signs compulsory and this time classified them into four categories:

- ✓ Danger signs;
- ✓ So-called "caution" signs (see Fig.2);
- ✓ Prescription signs (see Fig. 3);
- ✓ Signs including a "single indication".



Fig. 2 - Example of "caution sign" (1933) (Source: M. Duhamel, *Half a century of road signing, id*)

The 1931 International Convention really laid the groundwork for modern road signing.



Fig.3 - The prescription signs, as per the 1931 International Convention (Source: M. Duhamel, *Half a century of road signing, id*)

The decisions made in the 1931 Convention have been transcribed progressively into the national regulations; for example, in France, different texts have been published in 1932, 1933, 1935 and 1937! One should point out that the French panels introduced in 1932 do not refer to the international 1931 design, but to the previous one! In Spain, the 1931 Convention enters the Official Road Traffic Code in 1934 [11].

But the story does not end there, even if the war obviously slowed down developments. No important event should be noticed between 1931 and 1949. But, in 1949, a new international convention ratified the creation of new signs.

A number of additional provisions made to the international protocol of 19 September 1949 were introduced by the European agreement, signed on 16 September 1950 by Belgium, France, Luxembourg, the Netherlands and Yugoslavia [12].

One of the main innovations was the introduction of an additional road identification sign, the "E" symbol, in white letters on a dark green background; curiously enough the meaning of "E", namely "European", was not mentioned in the text!

It is an understatement to say that France did not rush into adopting the European road number plates into its national regulation, as it took almost 40 years to introduce them, and then only partially: the French circular dealing with this subject has been published, on 20 August 1987.

Finally the number of signs steadily rose, from 4 in 1909, to 28 in 1931, and 55 in 1949.

Later on, the European Economic Commission working party circulated new road sign designs to all the signatory countries on 8 November 1957.

Two danger signs appeared for the first time - "stray animals" with a leaping deer and "two-way traffic", the "give way to oncoming vehicles" regulation sign, the "priority over oncoming vehicles" and "one-way traffic" indication signs.

3. THE TWO SYSTEMS USED IN THE WORLD

A United Nations conference on highways and road transport was held from August to September 1949 in Geneva. Delegations came from 28 states. The conference referred to the draft convention (prepared by the Internal Transport Committee of the European Economic Commission) and the 1943 Inter-American convention on the Regulation of Inter-American Automotive Traffic.

The results of this conference were, firstly, to draw up a road signing protocol and secondly, the admission that it was impossible to arrive at an agreement on a uniform road signing system that was universally acceptable to the interested countries.

The difficulty stemmed from the use of two contrasting signing systems:

- ✓ the one produced by the 1909, 1926, and 1931 conventions, ratified by fifteen European states – namely the "international" or "European" system, a modernised variant of which was adopted in the 1949 protocol;
- ✓ the "Manual" published by the American Association of Highways, the so-called "American" system, in existence since 1924.

The first was used in Europe and many Asiatic (primarily China) and African countries. The second was in force in the United States and, with variants, in Canada, Mexico, some Central and South American countries, Japan, Indonesia, etc.

The two systems' sign shapes and colours differed (and still differ!), and also English-language wording was used on "Manual" signs, whereas the protocol signs used symbols almost exclusively, in the interest of international comprehension. The red border prevailed in the European system as against yellow and black in the American system.

Examples of both systems are provided hereafter (Fig. 4):



Fig. 4a - Example of "American" sign



Fig. 4b - Example of "European" sign

Despite the admission of failure in 1949, the idea of an uniform world road signing system was not completely abandoned, but the question was entrusted to Transports and Communications Commission for future investigation. This Commission, who worked under the aegis of the UN Economic and Social Council, appointed an expert group that met in New York from 20 November to 20 December 1950. Its members represented the United States, Africa, Latin America, Europe, South Africa, India and the Middle East.

At the very start of the 1950s these experts began to compare the two signing systems, putting them through road tests (including in France). The results were fairly mixed and, as neither system had the advantage over the other, the two systems were doomed to coexist, despite the experts' last-ditch efforts in June and July 1952 in New York. Leaving aside strictly technical aspects, economic considerations obviously could not be ignored. France in 1951, for example, had a road network of about 330,000-km that boasted no fewer than 1,400,000 road signs...

In the texts drawn up in 1952, directional signing still came under the indication signing umbrella. However, yellow, which was not accepted at Geneva for direction signing, was retained as a possible colour in the draft convention (and this solution has finally been adopted in Germany). In all likelihood, that was a concession to the American delegation, which wanted the "diamond" signs, namely the downward-pointing diamonds on a yellow background, to be adopted generally all over the world as danger signs, although the other experts wanted the danger signs to stand out from the rest of the signing. However, it was recommended that "as a general rule, indication signs carry black wording on a white background". More precisely, this recommendation had been envisaged, but not adopted in the 1949 text.

This draft convention was not ratified in the end, but was appended to the traffic convention in 1952.

4. THE VIENNA CONVENTION

European countries, aware of the need to harmonise their regulations, had formed the habit of meeting regularly since 1949, under the aegis of the European Economic Commission, the United Nations in Geneva, and the European Conference of Ministers of Transport (ECMT).

After a string of international agreements as described above, efforts toward standardising and harmonising road signs reached a milestone in 1968 when the Convention on Road Signs and Signals – the so-called ‘Vienna Convention’ [2] – was agreed and supported by a great many countries, many of them within the European area (but some Asian countries, including China, also signed the Convention). The text has been published in three languages: English, French and Russian. The list of signatories of the Vienna Convention (sometimes designated as VC in the follow up) is given in the Appendix.

To be honest, it should be pointed out that Chinese have gone into middle terms. They have taken shapes following the European signs (e.g. triangle for danger warning) and colours following the American one (e.g. yellow background and black border). So danger warning in China is a yellow with black border triangle!

The regulation signs are perhaps a little bit closer to our signs, but it is not so evident, as shown on the figure 5...



Fig.5 - Chinese regulation signs (Source: personal collection of Jacques Nouvier)

The Vienna Convention (7 October to 8 November 1968), like the 1949 Geneva Convention, was organised around four committees. Signing issues were discussed by Committee II.

It may be hard to imagine how many experts were involved debating these issues, but it should be remembered that 66 countries took part in the Vienna Convention (not to mention the five that had only sent observers), in addition to many inter-governmental organisations and a score of non-governmental organisations.

One of the innovations introduced by this Convention was the adoption of symbols inspired by European symbols by the Americans, to replace the wording being used on the other side of the Atlantic at the time.

However, each side stood its ground on the shape of the danger signs (triangular with a white background in Europe, and diamond-shaped with a yellow background on the American continent). They went so far as to accept that signing needed to be harmonised by continent, rather than across the world.

This convention had an Appendix listing the sign symbols. Sadly, the designs were rather "indecisive", and very small, about two centimetres square! No doubt that it is one of the reasons why the designs, that should have been perfectly harmonised, are quite distinct from one country to another (if there is any need to prove this, simply look at the signs warning drivers in the Convention signatory countries that children are in the vicinity!).

Countries supporting the VC are not obliged to use all the traffic signs retained in the Convention. However, they are not allowed to develop their own model of panel, if a sign with the same meaning already exists in the Convention.

Furthermore, countries supporting the VC normally have a period of 10 years in which to implement the necessary investments and changes in their road infrastructures to abide with the new standards. Supposing that most countries took that much time, then the changes decided in 1968 were mostly implemented by 1978. However, road safety and mobility issues did not stop in 1968, rather, their pre-eminence did nothing but grow –and worsen. In 1950 there were about 55 million motor vehicles roaring in our world and this number had multiplied at least tenfold by the late 1990s [3, 4].

More vehicles, faster, more powerful and more diverse, were creating mobility and safety problems but the trend towards enlarging the road networks indefinitely (more motorways, more lanes) began to foresee its limits by the late 1970s. The solution to road problems could not just mean 'more roads', but better organised ones and better informed road users.

Fortunately, information technologies were maturing and both experts on road transport and communication envisaged new alternatives to problems of mobility (congestion) and safety (accidents). In Europe, for example, alternatives such as the COST projects during the 1970-1980s and projects under the Framework Programmes (e.g., Drive, Transport) throughout the 1990s, promoted the use of new information technologies to solve road traffic problems [5]. Broadcasting road information and using Variable Message Signs are the first results of such efforts toward the development of Intelligent Transportation Systems (ITS).

5. TOURIST SIGNING

All or almost all signing comes from "tourist signing". If we look back to the early days of signing, and thus long before the beginning of the history described in this paper, it is quite clear that tourists were among the first users targeted by signing, and moreover from 1884 the touring clubs were at the forefront of this "struggle" for signing [16].

Tourist signing developments followed general signing developments with, perhaps, a little more inventiveness.

5.1. Animation signing

In passing we wish to mention animation signing on motorways [12].

In May 1972, the chief officer of the board of one of the French motorway concessions (SAVR; now ASF) suggested to the Minister for Infrastructure that a new type of signing should be erected along motorways to "position the motorist in the geographical space being driven through, explaining what could be seen, drawing attention to the cultural and tourist assets of the region being crossed, pointing out the most interesting monuments and sites to visit not far from the motorway".

The operation had three main aims:

- ✓ to break monotony and boredom (to prevent drivers dropping off to sleep);
- ✓ informing the road user about the towns, rivers, mountains, etc., visible in passing and giving bearings to enable drivers to work out where they are in relation to the regions being crossed;
- ✓ kindle the desire to leave the motorway and explore a site, an element of architectural or cultural heritage, etc.



Fig.6 - Animation signing on the A1 motorway in France (Source: M. Duhamel-Herz and J. Nouvier, *Road signing in France, from 1946 to the present day*, published by AMC, Paris, 1998)

This is how the first brown background animation signs came about (see figure 6). The French authorities dithered for a long time before coding the use of this signing, so much so that the first official rules governing this type of signing were finally published in Germany! (and it is the reason why this type of road signing has been evoked here).

5.2. An ECMT initiative

In April 1988, an ECMT report tackled tourist signing in a very interesting way and came up with some recommendations:

1. "Avoid the proliferation of tourist signs [...].
2. Do not erect such signs where many prescription or traffic safety-related signs are already concentrated [...].
3. Tourist signs should only be erected reasonably close to the place indicated [...].
4. Tourist signs should be clearly differentiated from other types of road sign, by the use of square or rectangular shapes or the shape of an arrow and if possible, using brown, or failing that, white or a combination of the two [...].
5. Replace the use of written wording by symbols or pictograms on tourist signs as soon as possible [...]."

This text was finally approved in Luxembourg in 1988.

6. CASE OF DIRECTION SIGNING

6.1 The first attempts at harmonisation

The general context is marked by the very limited scope of international agreement.

After the international convention signed in Paris on 24 April 1926, the international Geneva Convention on 30 March 1931 introduced direction signing.

That was followed by the Geneva protocol signed on 19 September 1949 by seventeen countries. Direction signing was covered in this 1949 protocol under the indication signing umbrella and broke down into three distinct parts:

- ✓ indication signs in the true sense;
- ✓ advance direction signs and direction signs;

- ✓ road location and identification signs.

As for indication signing itself, with penmanship worthy of Monsieur de La Palisse himself, Article 42 provided that "these signs are either made up of wording in a dark colour on a light background, or wording in a light colour on a dark background".

Nonetheless, this text can be viewed positively if we consider that thought had already been given to good visual contrast!

The 1968 Vienna Convention has survived, as far as direction signing is concerned in the general terms of the former protocol, and it is this text that is still in force today.

Thus it comes as no surprise that when we go from one country to another, we find very marked differences in the use of colours (see Fig.7), and direction signing rationale.

Fig.7 - Directional sign background colours in several countries (source: M. Duhamel-Herz and J. Nouvier "Road signing in France, from 1946 to the present day", id)

Country	Secondary road signing colour	Main road signing colour	Motorway signing colour
Germany	Yellow (and white for local places)	Yellow and white for local places)	Blue
Belgium	White	Blue	Green
Denmark	White	White/blue	Green
Spain	White	Green	Blue
France	White	White (before 1982) Green and white (after 1982)	Blue
Italy	White	Blue	Green
Great Britain	White	Green	Blue
Netherlands	White (local indications)	Blue	Blue
Finland	Blue	Blue	Green
Portugal	Green	Green	Blue
Sweden	Blue	Blue	Green
Switzerland	White	Blue	Green

If we limit ourselves to colour, the figure 7 gives an overview of the issue, and on its own merits rejects the argument that there is a customary solution in Europe, "to which we only have to subscribe" (a fairly commonplace comment made by laypersons, of course!).

6.2 An IRF initiative

It is interesting to look at an IRF (International Road Federation) initiative in 1989 [12]. On 25 October 1989, its Chairman sent a dossier aimed at promoting the harmonisation of vertical signing in Europe to Jacques Delors, the incumbent President of the European Community Commission. Incidentally, this proposal was the follow-up of another one submitted in 1988 that dealt with horizontal signing.

We quote the most important proposals it made for direction signing:

- ✓ In the first place, it was proposed that sign background colour should be directly linked to the sign emplacement road category (therefore, this was more like the British system than the French system):

- blue background, white letters on motorways,
- green background, white letters on trunk roads,
- white background, black letters on other roads.

- ✓ Tourist information signs were to have a brown background and white letters.
- ✓ As for upper case (only used in France and Italy) and lower case lettering issue, it merely indicated that consistency would be preferable, but gave no solution.
- ✓ In the case of town names, it was recommended that the original names be used (e.g.: Regensburg), if necessary supplemented by their local translation (Ratisbonne, in our example for French).
- ✓ Another very interesting idea was to get the European network marked "E" to start installing these new signs.

This request was not followed up, or rather was turned down in 1995 (see hereafter).

6.3 French efforts

The year 1995 could have been crucial with repercussions on quite another scale, when France occupied the presidency of the European Union during the first half of the year, and despite the difficult political context (co-government, presidential election campaign, and so on) it made some ambitious proposals in a number of areas. Road signing was one of them, and the French proposals revolved around the following major themes:

- ✓ "improving so-called safety signing and with it, applying the Vienna Convention – namely harmonisation;
- ✓ continuity of direction signing and, in particular, harmonising town naming languages, unifying route numbering, improving motorway exit signing, and the generalised signing of a few major European cities-centres".

The French project included other ideas, such as giving priority to harmonising signing on the trans-European road network.

To be generous, it was not a resounding success, as borne out by some of the reactions we have given below. Only Luxembourg and the Netherlands took on these proposals without reservation. In contrast they aroused fierce opposition primarily from the Danish and German delegations, who went as far as to claim that "harmonisation could even be a factor leading to safety problems, by diverging from populations' habits"! The Irish delegation was also negative, "harmonisation could force heavy economic sacrifices on it". This last assertion is probably the key to the problem, as we noted previously. In any case, a superb opportunity was missed.

To be optimistic, one should say that, more than 10 years later, however, and this time in the frame of the project IMPROVER (Impact Assessment of Road Safety Measures for Vehicles and Road Equipment), funded by DGTREN [22], some of the earlier French proposals come again: harmonised application of the Vienna Convention throughout the TERN, harmonised use of exit lane countdown marker signs, exit numbering on motorways, E-road numbers...

7. TEMPORARY AND VARIABLE MESSAGE SIGNING

It should be highlighted that this part is being written in a context where international agreements are now practically non-existent, although several harmonisation projects are currently going on.

While the Vienna Convention had plenty of time to arrive at the nearly 150 signs agreed in 1968, with its careful approach to new road situations in a relatively slow-changing 'road universe', the last decades of the 20th century have seen rapid growth in the number of cars on the roads and in the number of road problems... and not so much time has been devoted to developing the latest stage in the road information cycle: road signs displayed on VMS. As VMS has gained in popularity (for example, there are now 1,600 VMS in Spain) the various road management administrators and road operators have tried to make the most of the possibilities afforded.

The COST 30 action (COST = European Co-operation in the field of Scientific and Technical research) was launched in 1970. Twelve countries took part (Germany, Austria, Belgium Spain, Finland, France -who chaired the group, represented by Yves David-, Italy, the Netherlands, United Kingdom, Sweden, Switzerland and Yugoslavia).

Its general aim was to improve road safety and traffic flow by using electronics.

Nine topics were identified after a preliminary phase (1970-1977), which gave rise to the publication of a report. This was followed by two study phases (COST 30 phase, 1977-1980, followed by COST 30 bis, 1980-1985) [12, 13, 14].

A number of actions were recommended for variable message signing, in particular:

- ✓ the use of new pictograms, including the advisory diversion arrow, and the "Recommended Speed" symbol, and also new "Accident" and "Traffic jam" pictograms. Furthermore, as no fixed signing versions of these pictograms existed, they were thus the first to be created for operating needs.

- ✓ the introduction of colour inversion, namely light symbols on a dark background, in the current regulations (this is now used Europe-, and even world-wide except for Italy).

Note, the "Risk of Fog" sign that the group envisaged, was finally dropped. Some of the main recommendations of the COST experts (notably the design of the congestion pictogram, and the possibility of inverting the colours - making the most of existing technical display capabilities) were introduced in the 1995 amendment of the 1968 Vienna Convention.

But the COST initiative on electronic traffic innovations was, in fact, only the first one. Of the many European projects, a number of R&D projects on variable message signing should be highlighted: from VAMOS (Drive 1, 1991) to TROPIC (4th FP, 1999), via EAVES (Drive 2, 1994), not to mention other more general projects such as PLEIADES and MELYSSA (1995).

In addition to the studies we have quoted, we must mention the MAGIC and TELTEN initiatives. A major report on TELTEN and TELTEN 2 was produced in 1995-7 covering several areas, including variable message signing.

The Euro-regional projects were launched by DG VII aiming to "disseminate telematics tools in Europe", thus harmonising signing was not their prime target.

Nonetheless, the SERTI project (South European Road Telematics Implementation) to make cross-border traffic easier included a study on operating signing consistency in the relevant countries (France, Germany, Spain and Italy) [18].

In 1996 the "WERD" - the West European Road Directors - commissioned the Netherlands through the RWS (Rijkswaterstaat), to carry out the so-called FIVE ("For better use of existing infrastructure") study. FIVE eventually became the "Framework for Harmonized

Implementation of VMS in Europe”, including VMS design rules according to the specific road signing function performed (regulatory, danger-warning, informative).

However, if we now look at the VC “catalogue”, we see that only a few variable-event-pictograms (e.g., congestion, slippery roads, wind) have been introduced and that the only additional innovation taking account of the technological aspects of VMS, introduced in the 1995 amendment, was the authorisation to use the colour inversion (as explained previously). At the same time, however, far from being stuck in their ways, most road administrators and road operators have tested (or improvised) new pictorial designs in order to find answers to their particular road traffic problems. Several European projects under the Framework Programmes [FP6 and FP7] have tested the required designs (notably accident or fog warnings). Europe has also contributed with the Framework for Harmonised Implementation to VMS in Europe, introducing some message composition rules for VMS [8]. None of these, or any other, improvements have been introduced, assessed (and adopted) by the UNECE WP1 forum, at least up to now.

In 2003 this situation was considered by official members of several European countries and a proposal was submitted to the UNECE WP1 committee: the possibility of updating the road signs catalogue and adding variable signs within the VC frame (three of the four signatories of the current paper, i.e. Alberto Arbaiza, Antonio Lucas and Jacques Nouvier, did the presentation in Geneva).

We would like to take this opportunity to remember Bernard Périsset, the former chairman of this Committee, and also Claude Caubet, from Sétra, France, who worked a great deal with us on all these subjects.

Our ideas can be expressed in the following terms:

- ✓ Set out guidelines to organise the information displayed on VMS;
- ✓ Identify the pictograms required, and acquire them;
- ✓ Consistently promote signing solutions that can be applied internationally–

adopted by all nations.

The aim of such goals is to fight disparity and promote more international VMS display.

This proposal was accepted by WP1 and the “Small Group on VMS” was then formed with members from Germany, France, Netherlands and Spain. The group then began work, meeting several times and presenting its results to the WP.1 Committee, also integrating some of the points raised by members from other countries.

The main points of the group’s proposal are the following [9]:

- ✓ To use the design of fixed signs (or design very close to those of the fixed signs).
- ✓ To avoid the conflicts between fixed signs and variable message signs.
- ✓ To admit and even to encourage the colour inversion.
- ✓ To ban the use of VMS for some types of signing, e.g. priority panels.
- ✓ To add some new messages, which should be used only on VMS (e.g. accident).
- ✓ To provide some rules regarding the use of VMS (structure of message, use pictograms, use of red triangle, banishment of the advertisement or commercial messages, etc.).

To be honest, the group discussed a lot about the possibility to give priority on the messages displaying by VMS over the messages displayed by fixed signs (for example if a speed regulation is in action). Even though this perspective is very interesting, it clearly appeared that some legal problems have to be clarified prior any proposal in this sense.

VMS are widely used, particularly on the developed countries, but the alternative design approaches put into practice differ markedly, at least concerning possibilities for international harmonization. For example, in the US VMS display basically text messages, not pictograms [21], it also should be pointed out that some non-signatories of the VC countries have had a completely different approach: In Japan, for example, the VMS have been designed by cartoon-designers; Hence the fact that the Japanese VMS look very different from the posted signs (some examples are provided hereafter).

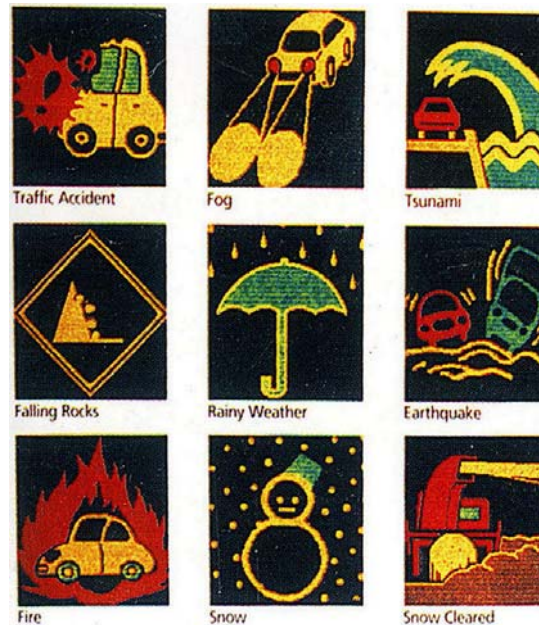


Fig.8: Japanese VMS (Source: M. Duhamel-Herz and J. Nouvier, *Road signing in France, from 1946 to the present day*, published by AMC, Paris, 1998)

8. FUTURE PERSPECTIVES

Further steps are requested regarding the harmonisation: in this field, besides the above mentioned “Small Group on VMS” within the UN context, or the IMPROVER and SOMS projects, the Mare Nostrum VMS (MN-VMS) project is also working under the umbrella of the Euro-regional projects (notably SERTI, ARTS and CORVETTE) since 2003 [23]. MN-VMS involves several European countries (currently France, Great Britain, Italy, Netherlands, Portugal, Slovenia, Spain and Sweden) with the aim of establishing common design principles and messages for VMS used in a variety of specifically defined road and traffic situations. These principles will help to make sound proposals for the revision of the Vienna Convention.

In vehicle displays, ADAS (advanced driver assistance systems) or the so-called e-Safety vision are developing. But it is necessary that the pictograms used remain in harmony with the road signing. It is not so simple, in a word where the automotive market is world-wide, whereas two different signing systems exist. It is obviously one challenge for the future.

Another challenge is to try to establish a kind of hierarchy between all the traffic signs, and notably to render the variable signs pre-eminent versus the static ones (this could be very useful for some applications such as speed regulation).

Of course, all the evolutions of the signing should take into account all the research works, and notably those of Professor Martin Krampen [1].

These interrelated trends reveal an interesting and promising future concerning the management of signing systems, yet a very complex one whatever the context (local, national, international). In addition to complex technical issues (e.g. concerning data exchange interoperability, TMC decoding systems, or the vehicle-to-vehicle and vehicle-to-infrastructure communication challenges), the information provided to the end user remains a priority issue. In a multicultural global scene, be it in Europe, the US or China (where more than 150 million people do not speak standard Chinese), where the use of road transport is expected to rise, the achievement of international agreements concerning road signs seems all the more urgent.

9. CONCLUSION

It is clear that the international conventions have made a lot for signing harmonisation. Even if we have to deplore the coexistence of two major systems in the world and the fact that harmonisation is still incomplete in each of these systems.

But all that did not happen automatically or by chance alone. The determination of the nations, and sometimes the determination of a few individuals, enabled this essential progress to be made on getting international traffic flowing safely. Furthermore, we should emphasise that now the specialists on these issues know each other well in Europe, primarily through the European Commission projects, which makes many things easier, and also benefits to the national regulations.

Naturally, all this needs to be taken further forward, but the slow pace of the Vienna Convention developments is attracting some criticisms. If the authorities are not careful, the seeds of disorganisation will be sown, tempting each authority to go its own way, as the "official" way is really considered too long-winded.

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APPENDIX: List of signatories of the Vienna Convention

Road Signs & Signals, 1949: 38 signatories:

Austria, Belgium, Bulgaria, Cambodia, Cuba, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, Finland, France, Greece, Haiti, Holy See, Hungary, Italy, Kyrgyzstan, Luxembourg, Monaco, Montenegro, Netherlands, Niger, Poland, Portugal, Romania, Russian Federation, Rwanda, San Marino, Senegal, Serbia, Slovakia, Spain, Sweden, Thailand, Tunisia, Uganda, United Kingdom.

Road Signs & Signals, 1968: 54 signatories:

Albania, Austria, Bahrain, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Central African Republic, Chile, Côte d'Ivoire, Croatia, Cuba, Czech Republic, Democratic Republic of Congo, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, India, Iran (Islamic Republic of), Iraq, Italy, Kazakhstan, Kuwait, Kyrgyzstan, Latvia, Liberia, Lithuania, Luxembourg, Mongolia, Morocco, Norway, Pakistan, Philippines, Poland, Romania, Russian Federation, San Marino, Senegal, Serbia and Montenegro, Seychelles, Slovakia, Sweden, Switzerland, Tajikistan, The former Yugoslav Republic of Macedonia, Tunisia, Turkmenistan, Ukraine, Uzbekistan.

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