

More English borrowings in a specialised field:

English acronyms and abbreviations in French general aviation

Introduction

It is frequently stated that particular fields are richer than others in English vocabulary. Thody (1995) focuses on anglicisms in the areas of business, commerce, politics, food, drink, travel, the arts, media, sport, youth, clothes and entertainment, deliberately setting aside more specialist vocabulary. George (1975, p.7) states that “the vast majority of anglicisms in contemporary French are (...) jargon terms, forming part of terminologies relating to specialised areas of human activity, e.g. sport/fashion” and (p.8) that “the terminologies of other fields such as commerce and finance, though less accessible, are well represented in the national press”. However, he adds “it is in the highly specialised jargons, almost completely closed to the general public, that the influx of English loan-words is most appreciable. This is the main area of influence, and whereas the average native French speaker is quite unaware of its existence, the *Académie française* and other official bodies are only too conscious of it” (George, 1975, p.8).

Jargons closed to the general public

It is, indeed, true that such “jargons” are often closed to the general public, though the *Commissions de Terminologie* have studied some specialised vocabulary, now providing French equivalents for civil servants. One such “jargon” is that used in civil aviation. It is not readily accessible to the general public and has received little attention on the part of the *Commissions de Terminologie*. Listening to radiotelephonic communications requires a licence only valid in aircraft and works on general aviation are usually only available in specialist bookshops.

Aviation provides a particularly fertile field of analysis. Its borrowings are of various types determined by a variety of social and political factors and their use is often supported rather than undermined by legislation even though some aviation vocabulary has been covered by the *Commissions de Terminologie* in the *Arrêté du 12 août 1976 relatif à l'enrichissement du vocabulaire en usage au ministère de la défense*, the *Arrêté du 5 octobre 1984 relatif à l'enrichissement du vocabulaire en usage au ministère de la défense* and the *Arrêté du 12 janvier 1973 relatif à l'enrichissement du vocabulaire des transports*.

English: the language of international aviation

English is the language of international aviation by agreement of the members of the International Civil Aviation Organisation (ICAO). Its use in international radiotelephony is predictable and could be argued to be necessary on grounds of safety. The extent of its penetration in Private Pilot's Licence-equivalent training in France is predictable in part but is not necessary. Neither is it always a legal requirement. Its presence is most obvious in French flying courses for the *Brevet de Pilote Privé* and the *Brevet de Base* in the form of acronyms and abbreviations which will be analysed in this article. The majority of the English acronyms or terms discussed in this article are to be found in the 1996 fifth edition of the *Manuel du Pilote d'Avion* published by Cépaduès-Editions and the Ministère des Transports Direction Générale de l'Aviation Civile Service de la Formation Aéronautique et du Contrôle Technique, thus with ministerial approval. Others may be found on French aeronautical charts or in light aircraft registered in France.

While native French acronyms do occur in French general aviation, they are outnumbered by acronyms of English or American origin. These English or American acronyms are of various types, but the feature and disadvantage they share is their apparent lack of motivation for the native French speaker with little knowledge of English. In the *index analytique* of the *Manuel du Pilote privé*, under 20% of the abbreviations and acronyms are French.

Integration of English acronyms

The foreignness of non-French acronyms is an advantage rather than an inconvenience according to Guilbert (1975):

Le sigle se trouve d'autant mieux intégré comme mot du lexique que l'effacement de la motivation syntaxique originelle est plus facile; elle va de soi lorsqu'elle se fonde sur une séquence syntagmatique appartenant à une langue étrangère. La reconstitution de la séquence des composants de base est alors le privilège de ceux qui connaissent cette langue: UNESCO<United Nations Educational, Scientific and Cultural Organisation; Laser<Light Amplificator by Simulated Emission of Radiation. Pour le locuteur français, la séquence syllabique ne peut correspondre qu'à un signe global défini par la matière phonique du signifiant et par le signifié. La prononciation de cette séquence syllabique selon le phonétisme français n'est entravée par aucune référence au phonétisme de la langue d'origine, puisqu'il s'agit d'un mot entièrement nouveau dans sa substance phonique.

(Guilbert, 1975, p. 276)

The above points are clearly applicable to the acronyms of type I in our categorisation. TAF ([taf], Terminal Aerodrome Forecast) is taken as one unit, following a French phonetic pattern. The syntax of the original is not detected by the unknowing French speaker and TAF is seen as an indivisible *signifiant* with a corresponding *signifié*, *temps prévu sur l'aérodrome*. The syntax of the English phrase Terminal Aerodrome Forecast (N+N+N) for which the acronym stands would not be possible in French.

English has been said to provide greater freedom in word-formation. Indeed, Rey-Debove (1987) comments on the value of the flexibility of English and, after brief exemplification of *mots librement formés en anglais*, including *amalgame entre 2 mots* (motel), *composition avec raccourcissement* (contraception), *acronymes mixtes avec mélange d'unités* (sonar) and *troncation* (pro.), states:

Cette « créativité qui change les règles » possède une grande force néologique dans la mesure où presque toutes les combinaisons sont admises. En revanche, les produits sont démotivés, ou bien les règles nouvelles sont si nombreuses qu'elles sont inutilisables. Il semble que l'opacification du lexique ne fait pas peur aux anglophones, et que la syllabe est une unité de deuxième articulation qui leur est plus sensible que le morphème ou unité de sens (...).

(Rey-Debove, 1987, p.262)

If there is already opacification or blurring in composition and derivation in English morphology, the degree of opacification is without a doubt greater in English borrowings in French where the mechanism is even less clear to the non-native speaker who often learns the acronym, abbreviation or amalgam as one indivisible unit.

While in the early days of aviation, French seemed to be the source language, for decades now it has been English. Arguably French words still used in English aviation include *empennage*, *fuselage*, *aileron*, *monocoque*, *pitot*, *aeroplane*, *helicopter*, *carburettor*, *chandelles*.

Various political, social and commercial factors have led to the extensive use of English terms in French general aviation. In due course, a range of labels and

abbreviations will be analysed according to their area of use in aviation, but first we shall explore a system of categorisation of abbreviations and acronyms.

Abbreviation according to Germain

Germain's analysis of acronyms assesses various established definitions before providing a new framework which we have summarised in table form below outlining « les trois types de signes abrégatifs » (Germain, 1988, p.61–63, adapted):

nom du résultat	l'abrégé	l'abréviation	le sigle
nom du procédé	abrégement	abréviation	siglaison
procédé	la réduction phonique d'un monème ou d'un syntème amalgamé	la réduction graphique d'un monème ou d'un syntème amalgamé	la réduction graphique d'un syntème discontinu d'usage courant et spécifique
exemple	<i>sensas</i>	<i>km</i>	<i>BNQ</i>
méthode	amputation	suppression de lettres avec maintien d'au moins l'initiale: 1) <i>nom</i> > <i>n</i> . 2) <i>adjectif</i> > <i>adj</i> 3) <i>kilomètre</i> > <i>k m</i> .	assemblage de lettres et/ou groupes de lettres initiales (exceptionnellement initiales et finales) d'un syntème discontinu, d'usage courant et spécifique, assemblage susceptible d'être soumis à des contraintes d'ordre économique et/ou phonique

Germain's framework distinguishes between two types of abbreviation, one phonetic, the other orthographic. The *sigle* may be further divided as indicated in

the final column. It does not highlight the fact that combinations of *abrégé/abréviation* and *sigle* also exist. This is reflected in the next section of our discussion.

A simplified categorisation of abbreviations and acronyms

In the next simplified table, we have categorised abbreviations and acronyms. It should be noted that a combination of i or ii with I or II may be possible.

Abbreviation i	abbreviation ii	ACRONYM I	ACRONYM II
phonetic reduction of a moneme or syntagm	graphic reduction of a moneme or syntagm	initial letter of each element of the syntagm, the resulting letters being pronounced as a word	initial of each element of a syntagm, each letter being pronounced separately
apocope truncation	deletion of some letters	deletion of all but initial letter	deletion of all but initial letter
MET	ft	TAF	IFR

The basic acronym types are as follows: I is pronounced as a word (as in TAF [taf], AFIS [afis] , VOR [Σ Σ Σ]) and II is pronounced letter by letter, metalinguistically (as in IFR [i f r Σ], VFR [ve f r Σ]). The abbreviations may be phonetic or orthographic in origin; i is phonetic in origin, involving apocope or truncation and the result may be pronounced as one or more syllables, ii s orthographic in origin and often bears little resemblance to its phonetic form.

Combinations of abbreviation types i and ii and acronym types I and II may result in phonetic sequences pronounced as words (i+I is pronounced as a word in (NOT)AM [n Σ ta m]) or letters (ii+II is pronounced letter by letter as in CTA, CTR, although these may be read in full as e.g. *zone de contrôle* (CTR) rather than as acronyms).

Speech and writing

According to Guilbert (1975, p.276), the *sigle* results in the reversal of the relationship between speech and writing.

On assiste à un renversement du rapport entre langue parlée et langue écrite dans son principe, en effet, le sigle est d'origine graphique, puisque la lettre initiale ne peut être isolée du mot que par référence à la forme minimale de la lettre de l'alphabet qui ne correspond pas systématiquement à un segment phonétique.

(Guilbert, 1975, p. 276)

This is true of simple acronyms in which each letter corresponds to the initial letter of each word of the full sequence. Some acronyms, however, contain an element of abbreviation which may be phonetic in origin (e.g. NOTAM).

Acronyms and abbreviations in use

We shall now examine English acronyms and abbreviations according to their use in specific areas of French general aviation: in instrument labeling, meteorological forecasts and reports, aviation charts, distances and speeds.

Labeling of instruments

The US is a major supplier of light aircraft used in French general aviation. Cessna, Piper, Beechcraft, Grumman, Maule, Mooney and Rockwell, aircraft are in competition with the French-built Reims Cessna, Robin, Mudry and Socata. With the American aircraft comes English labeling of instruments and their respective markings. Hence the labels *OFF*, *S(T)BY* (standby), *ON*, and *ALT* (which conveniently corresponds to the English and French *altitude*) on the transponder and *TO* and *FR* on the *VOR*, not to mention its *OBS* (Omni-Bearing Selector), the *GS*, *DME*, *EGT* and *ADF*. The table below indicates the acronym or abbreviation type used.

Acronym/abbreviation	Term in full	Mechanism
S(T)BY	S(T)andBY	ii
VOR	Very (high frequency) Omni-directional Range	II + abbreviation of the acronym VHF
OBS	Omni-Bearing Selector	I
DME	Distance Measuring Equipment	II
EGT	Exhaust Gas Temperature	II
ADF	Automatic Direction Finding	II
GS	Glide Slope	II
FR	From	i
HDG	Heading	ii
BFO	Beat Frequency Oscillator	II

Goudaillier relates US imports of goods and lexical borrowing:

un jargon technique essentiellement composé de termes anglais («franglais») s'est progressivement forgé, conséquence directe de l'hégémonie technologique, économique de «Made in U.S.A.» (le produit est importé, la technique en même temps que les termes les désignant).

(Goudaillier, 1977, p. 91)

The above borrowings have come along with the imported equipment on board the aircraft, but the same labels will be heard in radiotelephonic communication.

Meteorological forecasts and aerodrome reports:

acronyms and abbreviations

Meteorological forecasts and aerodrome reports use the following acronyms:

VOLMET, CAVOK, METAR, TS, FG, RA, SN, DZ, FZ, SH, RVR, NOSIG, GRADU, SIGMET, TAF, BKN, EMBD, SKC, SLW, LYR, OVC and SCT. The mechanism used is given in the table.

Acronym/ abbreviation	Term in full	Mechanism
VOLMET	V ^(HF) METEOROLOGICAL report (VOL=in flight?)	i+I? (+abbreviation of an acronym)
CAVOK	Ceiling And Visibility OK	I+I
METAR	METEOROLOGICAL Aerodrome Report	i+I
TS	ThunderStorm	ii
FG	Fog	ii
RA	Rain	ii
SN	SNOW	ii
DZ	Drizzle	ii
FZ	Freezing, supercooled	ii
SH	Showers	ii
RVR	Runway Visual Range	II
NOSIG	No Significant change	i
GRADU	GRADUAL(ly)	i
SIGMET	SIGNIFICANT METEOROLOGICAL information	i
TAF	Terminal Aerodrome Forecast	I
BKN	BROKEN cloud	ii
EMBD	EMBEDDED	ii
SKC	Sky Clear	ii
SLW	SLOW	ii
LYR	LayeR	ii
OVC	Overcast	ii
SCT	Scattered	ii

It is ironic that where sufficient differentiation was required in the abbreviations, abbreviations of French words were chosen for a minority of meteorological phenomena — FU (fumée), BR (brume), MI (mince), GR (grêle). These are, of course, correspondingly unmotivated for the non-French speaking English speaker.

Aviation charts

The French half-million and 1 000 000 aeronautical charts use the opaque *AMSL*, *AAL*, *AGL*, *FL* abbreviations.

The following French aeronautical chart acronyms and abbreviations are to be found on the 941 *France Nord-Ouest Aéronautique* (Institut Géographique National, 1996) chart.

Acronym/ abbreviation	Term in full	Mechanism
ASFC	Above Surface	II+ii
TMA	Terminal Manoeuvring Area	II
CTA	Control Area	ii+II
CTR	Control Zone	ii+II
ATZ	Aerodrome Traffic Zone	II
AMSL	Above Mean Sea Level	II
AAL	Above Aerodrome Level	II
AGL	Above Ground Level	II
FL	Flight Level	II
VFR	Visual Flight Rules	II
IFR	Instrument Flight Rules	II
AFIS	Air Flight Information Service	I
NOTAM	Notice to AirMen	i+I
NDB	Non-Directional radio	II
AIP	Beacon	II
AWY	Aeronautical Information	ii
GCA	Publication Airway Ground Control Approach	II

The profusion of abbreviations and acronyms on aeronautical charts highlights the difficulty for the non-native speaker of English in learning and recognising units which often defy further analysis.

Distances/Speeds

Altimeter calibration and vertical separation are generally in feet, airspeed in knots and distances in nautical miles, although visibility is given in metres. The following abbreviations are common. Feet and knots will normally be read as

« pieds » and « nœuds ». At a time when Europe is predominantly metric, the imperial foot seems all the more remarkable. The nautical mile (Nm) is the international one of 1852 metres, not to be confused with the British nautical mile of 1853·18 metres!

FT	Feet	ii
KT/kt	Knots	ii
Nm	Nautical Miles	II (but not read in abbreviated form)

Safety speeds

French students learn their safety speeds with the following labels: *VS1*, *VNO*, *VNE*, *VFE*, *VSO*, *VLE*, *VS*. These may be mistaken for pure codes. However, v is obviously the speed and the different letters are in fact acronyms, e.g. *NE* stands for *Never Exceed*, *FE* *Flaps Extended*, *S* *Stall*. These labels should not, therefore, be confused with codes of the type given under Q codes below. They are clearly motivated.

Acronym/abbreviation	Term in full	Mechanism
VLE	Landing gear Extended	II
VNE	Never Exceed	II
VFE	Flaps Extended	II
VS0/VS1	Stall	II+digit

Q codes

Q codes are used in France as elsewhere. These have the disadvantage (or advantage) of being initially incomprehensible to all users worldwide, precisely because they are codes, originally relayed in Morse by radiotelegraphy before voice transmission from aircraft by radiotelephony was established. During the Second World War, the combinations of letters replaced whole phrases but did not resemble the phonetic or orthographic form of the phrases in question. The large stock of Q codes has now been considerably reduced to just a few still in common use and transmitted by radiotelephony as the letters they use: *QNH*, *QFE*, *QGO*, *QDM*, *QFU*, *QDR*, *QGP*, *QNE*. They are unmotivated.

QNH	Atmospheric pressure at sea level	Code
QNE	Standard atmospheric pressure	Code
QGO	Aerodrome closed due to met. conditions	Code
QDM	Magnetic heading to a station in zero wind	Code
QFU	Magnetic heading of runway in use	Code
QDR	Magnetic bearing to steer from a station	Code

	in zero wind	
QGP	Order of aircraft on landing	Code
QFE	Atmospheric pressure at airport runway threshold or airport elevation	Code

The codes are particularly interesting for the current discussion as they are merely different from one another in form and meaning but offer no advantage to the user speaking one language over the user speaking another as they are not related to any particular language. They are, nevertheless, borrowings of a kind from English aviation usage.

Radiotelephony

French radiotelephonic exchanges today also use numerous English expressions: *break break* to indicate a separation between messages, *roger* or *reçu*, *wilco* and of course the international RT spelling alphabet provided below. French private pilots who wish to travel abroad must take a special exam in aeronautical English: the Qualification Restreinte de Radiotéléphonie Internationale (QRR1). Professionals take the QRI. To ensure clear communication, letters are given unambiguous names which have been agreed internationally.

The international radiotelephony spelling alphabet

Although there are agreed pronunciations, these are often variable. The accents on *Québec* and *Hôtel* and the spelling of *Zoulou* to be found in the *Manuel du Pilote...* are not standard.

Letter	Word	Letter	Word	Letter	Word
A	Alfa	J	Juliet	S	Sierra
B	Bravo	K	Kilo	T	Tango
C	Charlie	L	Lima	U	Uniform
D	Delta	M	Mike	V	Victor
E	Echo	N	November	W	Whisky
F	Fox (trot)	O	Oscar	X	X-ray
G	Golf	P	Papa	Y	Yankee
H	Hôtel	Q	Québec	Z	Zoulou
I	India	R	Romeo		

It is in the use of the spelling alphabet that one begins to note the opposite phenomenon to abbreviation. Callsigns, for example, will be given not as letters (F-COXZ), but as the names of the letters (*Fox Charlie Oscar X-ray Zoulou*). This would appear to be a type of abbreviation in reverse.

Expansion and spelling out: abbreviation in reverse? Abbreviation may occur in reverse in other instances. Cases of syntagms being reduced to acronyms have been examined above. The resulting acronyms may be converted into longer sequences to ensure clear communication. The phenomenon is somewhat ironic, but does occur.

V_{MC} (standing for Visual Meteorological Conditions) may be pronounced *Victor Mike Charlie* in radiotelephony. The Second World War Q code, Q_{FE} (atmospheric pressure at airport runway or airport elevation) may be given in radiotelephony as *Québec Fox Echo*. Mode c for the transponder may be given as *mode Charlie*. That the last two should be given using the international spelling alphabet is not so surprising in view of the opacity of Q_{FE} and c. The case of V_{MC} is essentially different in that it is a clearly motivated acronym. It undergoes the following transformations: *Visual Meteorological Conditions* > V_{MC} > *Victor Mike (Charlie)*.

Effects of foreign abbreviations and acronyms

It has already been noted above that abbreviations and acronyms lead to a primary concern for Martinet's *unités de deuxième articulation*. Rey-Debove claims that

L'acronyme perturbe la seconde articulation dans la mesure où il réunit des lettres et des phonèmes de façon aléatoire et produit n'importe quel groupe inconnu dans la langue; mais l'acronyme emprunté ne présente justement aucune différence avec l'acronyme formé en français

(Rey-Debove, 1987, p.264)

This, surely, is true only at the level of *deuxième articulation*.

The fact that some English acronyms were once banned by the *Commissions de Terminologie* is surely to do with motivation. VTOL now has a French equivalent (ADAV). According to Munday (1985):

Acronyms and abbreviations have occasioned difficulties. In some spheres — for example, in military circles — such forms of speech are commonplace and the French have tended in the past to adopt acronyms which represent the initials of English phrases

(Munday, 1985, p.231)

There is no shortage in general aviation! He continues:

Any thoroughgoing purge of the French language demands that they be banished along with all other Anglo-American impurities. This is hardly strange. NATO, after all, has always been l'OTAN for the Frenchman. It will not occasion surprise, then, that in 1976 the Ministry of Defence decided that VTOL (meaning vertical take-off and landing) and STOL (short take-off and landing) had to be replaced by ADAV (*avion de décollage et atterrissage verticaux*) and ADAC (*avion de décollage et atterrissage courts*).

(Munday, 1985, p.231–232)

His conclusion is a little dismissive:

These acronyms are perhaps no more attractive than those they replace; they simply enjoy the advantage of representing a French reality.

(Munday, 1985, p. 232)

Both represent a French reality, but the French acronym may be analysed by the native French speaker with no knowledge of English. This is not an advantage to be readily dismissed .

Guilbert (1975) states that:

Le sigle résulte du double souci d'obtenir une réduction graphique et phonétique dans la séquence syntaxique estimée trop longue pour être facilement utilisable dans la communication, et de maintenir la relation syntaxique entre les éléments par référence à chaque composant constitutif de l'ensemble.

(Guilbert, 1975, p. 276)

This relationship is lost if the elements of the acronym are not understood individually. Opting for French acronyms is not just a political matter. Acronyms, unlike certain other borrowings, are originally motivated. Foreign acronyms offer no such advantage to the uninitiated.

The linguistic sign and the written form

According to Saussure, the linguistic sign is « *une entité psychique à deux faces* and *le lien unissant le signifiant au signifié est arbitraire* ». Our written form is once removed from that relationship in so far as it merely represents the spoken form which has its acoustic image or *empreinte psychique de ce son*, (Saussure, 1979, p.98–100) in the brain along with its matching concept. The sign is distinct from the symbol in that the latter is never totally arbitrary. Combinations of signs lead to *motivation relative*. While Saussure describes *vingt* as arbitrary, « *dix-neuf*

(...) *présente un cas de motivation relative* » (p.181). Analysis of *éléments formatifs transparents* leads to an appreciation of *motivation* (p.182).

It therefore follows that most of the terms we have been dealing with in the current article are outside this primary sign for a variety of reasons. Abbreviation is the closest to the Saussurean *signifiant* in that it exists in the spoken form as an abbreviation of the existing term *meteorology*. It happens to be represented by its orthographic form, but that relationship is clear. Ft. (or ft.) is further from that phonetic reality. It is a representation of the phonetic form, but its relationship to it is more distant. It fails to convey the same phonetic information as the first example. The RT alphabet is non-linguistic in that it is a phonetic representation of a graphic code (what Prieto would call a *code doublement substitutif*). The Q codes use letters of the alphabet, but their use is not conventional. They illustrate the truth of Saussure's statement that « *dans la langue, il n'y a que des différences sans termes positifs* ». One code is simply what the next is not. The letters are merely features of a sign, but those features may not be broken down into smaller significant units. To use Martinet's framework, the Q codes illustrate *seconde articulation*, not *première*. Q_{FE} may not be analysed further to isolate individual elements of the corresponding phrase: *atmospheric pressure at airport runway threshold or airport elevation*. Some semes may be divided into units which exist separately and have meaning in isolation. They are said to reflect *première articulation*. This is not the case for the Q codes. This fails to take advantage of the quality highlighted by Prieto:

la première articulation rétrécit l'arbitraire, de façon qu'à égalité du nombre de sèmes, pour manier un code présentant cette articulation il faut retenir un nombre de rapports conventionnels moindre que pour manier un code composé de sèmes non articulés

(Prieto, 1968, p.128)

The disadvantage of the Q codes is clear in the following extract from Prieto:

Il ne faut à aucun prix perdre de vue la différence fondamentale qui existe entre la première et la seconde articulation. En vertu de la première on découpe ensemble le signifié et le signifiant du sème, et, par conséquent, les unités qui en résultent, les signes, sont des entités à deux faces. En vertu de la seconde articulation, par contre, on découpe le signifiant, et seulement le signifiant, et naturellement on obtient les entités à face unique que sont les figures.

(Prieto, 1968, p.132)

The four code types (Prieto)

I	no articulation	red light
II	<i>première articulation</i> only	mathematical formulae
III	<i>seconde articulation</i> only	bus routes
IV	double articulation	languages

(Prieto, 1968, p.136–137 (adapted))

The opacity/transparency scale

One further look at our aviation terms in the light of the above frameworks reveals the following scale of opacity, from opaque to transparent:

Q codes	RT alphabet alpha	Acro I TAF	Acro II FR	Acro/abbrev Nm	abbrev ii ft	abbrev I MET	indigenous terms <i>Aileron</i>
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Conclusions

- 1) Combinations of letters will not be perceived in the same way by the user depending on whether they are motivated or not, whether they are perceived to be motivated or not.
- 2) Borrowed and indigenous acronyms will not normally enjoy the same linguistic status.
- 3) Foreign acronyms are more readily integrated than foreign lexical items as their foreignness is disguised.
- 4) Aviation vocabulary and acronyms and abbreviations used in general aviation have largely escaped the attention of the Commissions de Terminologie and have been supported internationally by ICAO.
- 5) International aviation agreements have resulted in the dominance of English terms in aviation within France as well as abroad as planned.
- 6) Political factors (the Second World War is a prime example of international cooperation) have brought about the dominance of English despite the early dominance of French in aviation.
- 7) The commercial success of American aircraft has led to the importation of American English along with the aircraft.
- 8) Acronyms, many foreign abbreviations and codes fall outside the normal linguistic relationship of the sign.

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