



With the transition to Eurocodes gaining momentum, Stuart Alexander, WSP Group, and a member of the Standing Committee on the Implementation of Structural Eurocodes, offers his personal introduction to the language and terminology

The Eurocodes are drafted in English and then translated into other languages. Or so we are told. First-language English-speaking readers may disagree. What do consistence, derogation, normative and quasi-permanent, for example, mean?

The problem has arisen because English is no longer just for the English, and it is convenient for Eurocodes to use English in a way which makes it easier for non-English-speaking Europeans to understand. The fact that it confuses native English speakers appears to have been overlooked. Let me explain.

The code writers have done two things: they have coined new English-sounding words, and they have used existing words to mean new things – or at least things that they aren't usually used to mean. For example, execution is usually associated with Tyburn or the Tower, and action with film directors, but they do have other less familiar meanings. Normative is a complete invention. Both these techniques are neologisms, but a more descriptive term has been invented – Eurospeak.

So I have produced the following lexicon of Eurospeak. It is arranged in alphabetical order: although this does not make for logical reading, it does make it easier for future reference.

Lexicon of Eurospeak

Action. Normally means something done, a deed. However, definition 8 in Collins Concise English Dictionary is 'the force applied to a body', which is its use in Eurocodes. As well as forces (**direct actions**), it includes **indirect actions** such as thermal movements, shrinkage or differential settlement. Actions can be **fixed** or **free** (in location, so imposed load can act on any part of any span), and **permanent** (e.g. dead load), **variable** (e.g. imposed load, wind load) or **accidental** (e.g. explosion, impact). This all leads to **effects of actions** (e.g. moment, shear).

Application rules. Clauses not marked 'P' for **principles** are application rules which show how to satisfy the principles. In practice, application rules make up the bulk of the codes and give the values and formulae to be used in design.

Availability (date of). The date on which CEN makes a particular Eurocode part available for publication by national standards bodies, and which triggers other key dates.

Capacity. Used to identify the ability to conform to a serviceability limit state, e.g. bearing capacity, rotation capacity. See also resistance.

CEN. European Committee for Standardisation, to which the national standardisation organisations (including BSI) belong.

Characteristic. Normally means typical or distinctive. In Eurospeak it is used to define the value of a parameter to be used in design. This is usually the value of an action only likely to occur with a probability of 0.02 per annum or the value of a material property likely to be achieved with a probability of 0.95, but sometimes it is just a notional value established by usage.

Co-existence. Means living together in peace, but in Eurospeak means Eurocodes being in force in parallel with national codes.

Conformity. Compliance with standards.

Consistence. Workability.

Derogation. Exception or waiver, generally from an act or standard.

Directive. An instruction or order. Used in the EU to mean an instruction which national governments must legislate to enforce.

Execution. Used in the sense of carrying out or completing a piece of work, so covering all aspects of physical completion of the work. EN 1991-1-6 bears the bewildering title 'Actions during execution'.

Frequent. Redefined to refer to only a small part of the design life, perhaps a matter of weeks. So could apply while a damaged structure is waiting to be repaired.

Informative. Not a requirement. See also **normative**.

Limit states. Generally used in the way that has become familiar over the last 30 years. They fall into one of two categories: **ultimate limit states** (collapse) and **serviceability limit states** (performance in service). Serviceability limit states are either **reversible** (e.g. elastic deflection of a steel beam) or **irreversible** (e.g. creep deflection of a concrete beam).

Load arrangement. The position and magnitude of the loads, often called pattern loading. Typical load arrangements are all spans loaded or any two adjacent spans loaded with the others unloaded.

Load case (strictly combination of actions). The choice of load combination and load arrangement (including indirect actions where relevant) for analysis. So a particular element might need checking for say 12 load cases.

Load combination. The combination of different sources of load, so a typical combination is dead plus imposed plus wind.

National Annex. The document containing **Nationally Determined Parameters** (NDPs), i.e. values left open in a Eurocode for use in the country concerned. It is therefore an essential supplement without which the Eurocode can't be used.

Non-contradictory complementary information (NCCI). Additional information and guidance that is permitted to be referred to in a national annex, such as design guides or code commentaries.

Norm. Means the average or typical level of achievement. Unfortunately, in many European languages it means standard, and it is converted to this use in Eurocodes. Thus EN stands for Euro-Norm, i.e. European standard.

Normative. Means having the force of a standard, generally used of an annex to distinguish it from an **informative** one.

Persistent. Means incessantly repeated or unrelenting, but in Eurocodes is used to mean relevant for the whole design life. Refers to conditions of normal use.

Principles. Clauses marked P which define structural performance that must be achieved, generally through the use of **application rules**.

Project. Not a definition but a warning: in many European languages a similar word (eg *projet* in French) means design, but is often mis-translated as project (although not in Eurocodes).

Quasi. Means as if, implying but not quite. **Quasi-permanent** means that the action will apply for a large fraction of the design life (defined as over 50%), so is used in calculating deflections in concrete members. **Quasi-static** means the static equivalent of a dynamic action.

Reference period. Normally the design life, but can be any chosen period, such as the duration of temporary works or the time while a cable stay is being replaced.

Reliability. Only used in a statistical sense, to mean the mathematical probability of a structure being able to fulfil the design requirements.

Resistance. The ability to conform to strength limits, so bending resistance, buckling resistance. See also capacity.

Transient. Normally means for a short time only, but re-defined to mean relevant for a period much shorter than the design life and which has a high probability of occurrence. Used for temporary circumstances, e.g. during construction or repair.

Verify. Check the design output, i.e. make sure it complies.