



From the Editor's Desk

What Is In a Name?

Gupta's Laws of Nomenclature

■ Madhu S. Gupta

One of the roles of a technical periodical is to keep technical terminology used in its field alive by serving as the birthplace of new terms; disseminating and popularizing newly coined terms; validating terminology by providing a forum for it to be questioned, discussed, and corrected; encouraging correct usage; and maintaining a historical record as a term evolves to adopt new or extended meanings and become established or even obsolete. *IEEE Microwave Magazine* shares this professional responsibility, thus, we try to substitute common nouns for trade names used by authors, for example, by replacing the name of a specific software package with the term "electromagnetic simulator." Trade name usage might be defensible when the discussion is in some way specific to or dependent on that particular software, but that is rarely the case. Mostly, trade names are used because authors have become accustomed to using them and assume that they are known to every reader or that they represent an entire class of objects of which they are a member.

Madhu S. Gupta is with San Diego State University, 5500 Campanile Drive, San Diego, CA 92182-1309 USA, +1 619 594 7015, microwave.editor@ieee.org.

The engineering profession frequently leads to the need for conceiving names. The names engineers select are usually descriptive and technically accurate, even if cumbersome; but that still leaves a great deal of freedom of choice that can make the names interesting, such as "rat-race hybrids" and "magic-T." At times, there is an understandable pride in one's creation, which may have played a role in the naming of coplanar waveguides (CPW) by C.P. Wen and a method of computational electromagnetics called measured equation of invariance (MEI) by K.K. Mei. Unlike organic chemistry, with its rules for naming organic compounds, the nomenclature of engineering terms is mostly unbridled with rules.

Only a fiction writer like William Shakespeare could have written, "What's in a name? That which we call a rose by any other name would smell as sweet." Those of us in the world of technology and business know that the choice of a name can be extremely important—even critical. Corporations spend millions to come up with (or buy) the right name for themselves and their products and services worldwide that will be usable in numerous languages and cultures. Imagine Intel Corp. being NM Electronics (for Noyce and Moore) if it

had not bought its present name Intel from another company.

If names are indeed important, and there are no rules of nomenclature, how can we comprehend this mysterious process? Here are some general principles to help understand the naming enterprise.

First Law of Nomenclature: That Which Is Important Is Given a Name

Even mathematicians agree—for a function of multiple variables represented as a surface, there are an infinite number of directional derivatives at any point, but the only one that has a name to itself ("gradient") is the one in the direction of greatest slope due to its practical importance—it is the direction in which a marble would roll down the surface! In fact, if something is important enough, it will accumulate multiple names: sociologists have found that the poor have many more slang names for money than for other commodities.

Corollary 1: That which is not important is not given a name. In Hawaii, where the temperature is 80 °F year round, there is no word for "weather" in the native language.

Corollary 2: A name may be given just to create the appearance of importance or novelty. The realization that new names

impress stock markets, financial analysts, and investors has led engineers to coin new names to distinguish their product, even when the only novelty is in its name; consider the name "vericap" used to describe a varactor diode.

Second Law of Nomenclature: A Name Need Not Be Truthful nor Even Meaningful

Naming allows a poetic license but requires no proof or logic. Since there are few constraints, names are not necessarily accurate or literal descriptors. The lack of precision may be intentional, e.g., MIT Radiation Laboratory (so named to camouflage its work on microwave radar) and Greenland (for a landmass mostly covered by ice) or the result of sloppiness: a centipede is so called because most people do not bother to count beyond a dozen or so.

Corollary 1: Names are selected based on their familiarity and connotation, hence, the anthropomorphic bias in naming. Selecting a name by anchoring it to the familiar and well-known is risky, because what is well-known today may not be tomor-

row. For example, the dc operating conditions of an FET are still described as being in the "triode" and "pentode" regions based on the analogy with those electron tubes, a nomenclature that was helpful when all electronic engineers knew what a triode or a pentode was, but conveys no information to the current generation of engineers who may not even have heard of a vacuum tube.

Caution 1: Initially accurate names may not remain so. We still "dial" a number on the telephone, even though we most likely punch it on a keypad these days.


Third Law of Nomenclature: The Name of an Object Can Come to Be Perceived Its Attribute

Contrary to popular belief, a random variable is neither variable nor random (it is a mapping that is deterministic).

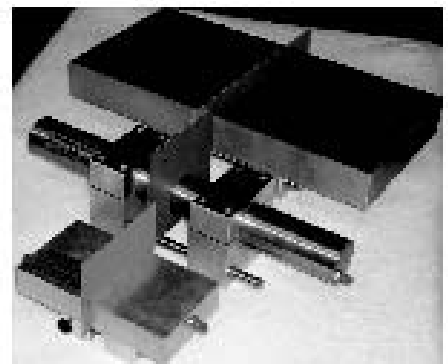
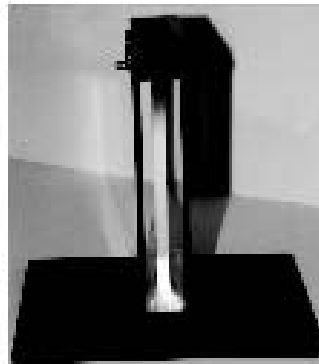
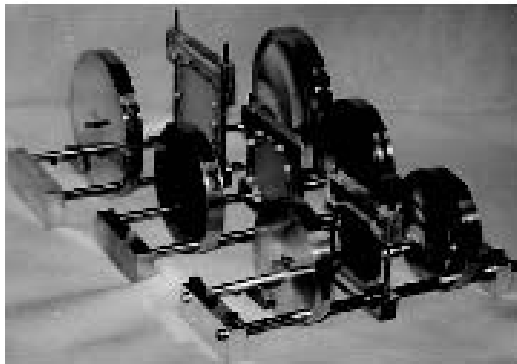
Corollary 1: A name with appropriate associations or connotations can be a more valuable asset than a real physical attribute. Names that are familiar or that can become familiar because they are simple, that are easy to recall, or that have favorable connotations or associations,

can give a competitive edge and become marketing tools. Simplicity is so important that a well-known soft drink advertises itself by its nickname, even at the risk of confusion with a carbon-rich fuel and a narcotic drug. The advantage of obviousness accounts for the registration frenzy and marketing of domain names on the Internet.

Caution 1. Too much familiarity with a name can turn into a disadvantage. The ultimate compliment to a product is that its name is used to refer to all products of that class, for example, calling all photocopies "Xerox copies," instant cameras "Polaroid," or all facial tissue papers "Kleenex." Such a success may be flattering but problematic from business point of view. Aspirin was a trademark until the name entered the common vernacular and could no longer be protected as a trademark, the same fate as that met by formica, escalator, kerosene, nylon, styrofoam, and many other names.

Being the first to identify these principles, I exercise my freedom of naming by calling them "Gupta's Laws of Nomenclature." 

DI Cavities - Dielectrics and Magnetics



100 MHz to 100 GHz

Darraske, Inc. P.O. Box 469
Ceresville, Pa. PA 19331 USA
Phone (610) 358-0700
Fax (610) 558-1029
www.darraske.com

