A Message From the Chicago Section Chairman

We've all heard the cliche that nothing is as sure as death and taxes. When you receive this issue of the Section News you are very likely either working on your tax forms or wondering if you filled everything out correctly when you recently sent them to "Uncle Sam". Obviously the economy and the future of our country occupy some of our serious thinking time, maybe even more than usual at this time of year. I believe most of us are willing to pay our fair share of the cost of operating a reasonably efficient government and most are concerned at the enormity of our national debt, but the waste, inefficiency, and frequent dishonesty and immorality we hear about bothers most of us a lot. I'm sure we don't all share the same political opinions, but I want to take this opportunity to remind you again to let the politicians know what you believe is right for our economy and the many other important questions that are decided by governments at local, state and federal levels and remind them that the money they spend so freely comes from all of us.

In the Chicago Section we will be announcing the slate of officers and board members for the next Section year at the April meeting so we urge all of you to come out and support these members willing to put forth the time and effort it takes to keep the Section running. These ladies and gentlemen also decide how your dues money is spent at the Section level so they, too, need your input to know what you expect from the Section. The April meeting will include a tour of the Case Technical Development Center in Hinsdale along with a very interesting presentation on harvesting cotton. The details are on the center pages.

One significant service that SAE has to offer is a number of seminars for engineers led by experts in their fields. This year the seminars in the Chicago area are at the Schaumburg Marriott and are being held from April 13 to 15. You should have received an announcement from Warrendale, but if you have any questions, you can call SAE at 412/772-7148. These presentations are on timely subjects and are well done. There are several different subjects covered at various locations around the country and all are available to all members.

Jim King
Chairman, Chicago Section SAE
WHAT YOUR MOTHER NEVER TOLD YOU ABOUT READING A PATENT
by Steven L. Underwood, Esq.

In you’ve ever tried to read a patent, you’ve probably asked yourself (maybe not even silently) why isn’t the darn thing in English? What’s with all the “therebys,” “thereins,” “therealongs,” “therefors,” “said,” “first means,” “second means,” “comprising,” and “consisting of?” And just who is that person “skilled in the art?” The answer to these questions and more will be provided “hereinbelow.”

Often, the difficulty with making sense out of the language of a patent comes simply from the fact that language is a crude human tool. We all have ideas and concepts that we want to share, and in our social contact we all agree to use a common convention to express those ideas and concepts. But an idea or concept is an abstraction. Words will never fully do justice to that abstraction. A patent, even more so, is expressing a new idea never before described with words and must do so in the context of a legal environment. Boy, is that asking for trouble!

You may have noticed that patents are typically broken into sections, each serving a different purpose. The first page contains an “Abstract” and, typically, a drawing, which indicates to the reader the general technology of the patent. If additional drawings are needed to explain the invention, they will follow the front page. The text of the patent will usually begin with a section called “Background,” which discusses the problems which lead to the development of the invention. Following is a “Summary of the Invention,” providing just that, typically along with the various objectives of the invention. Next, a “Detailed Description” of the “Preferred Embodiment” is provided, which explains in exact detail the most desirable structure and function of every important aspect of the invention. Finally, the patent will conclude with one or more claims, which really forms the heart of the document.

Keep in mind that the entire patent described above, especially the claims, is a legal document that describes a piece of personal property. Accuracy matters. If you ever bought real estate, you probably noticed on the deed a legal description of the property (“West by Northwest to the first oak tree, South by Southeast to the second large boulder, ...”). This provides you with an objective and repeatable measure of the boundaries of your property. Anyone walking over the property line without your permission is, under the law, a trespasser. To avoid trespassing, the interloper can go to the Clerk of Deeds, find the legal description of your property, and make sure to stay just on the other side of your property line.

In a large sense, the claims of a patent are just like this legal description of the “metes and bounds” of real estate. The problems come, however, in describing the property in an objective and repeatable measure. Thus, one reason for the strange language appearing in patents is that this piece of personal property, to
be patentable, has never existed before. When you invent something that is patentable, you have discovered something useful, new, and not obvious to those "skilled in the art" (legal shorthand for a hypothetical person having the technical background necessary to understand and appreciate your invention). You cannot, like real estate, rely on the past legal descriptions in the seller's deed. You have to create a definition out of whole cloth.

Moreover, there sometimes are no existing words in the English language to accurately describe the technology. How would you have described "Velcro" if you were the first to invent it? Patent practitioners often must describe features of an invention that have no real English names. To overcome this difficulty, they will often describe the features in general terms. In the example of "Velcro", perhaps the patent practitioner's first draft claim might read "a first sheet having a first engaging means and a second sheet having a second engaging means, such that when the first sheet is brought into physical contact with the second sheet, the first engaging means couples to the second engaging means." Note that this could very well also apply to adhesives, which is old technology. Therefore, later claim drafts would have to be narrowed, for example, to read "a first sheet having a first engaging means and a second sheet having a second engaging means, each of the engaging means including interlocking projections, such that when the first sheet is brought into physical contact with the second sheet, the interlocking projections of the first engaging means couples to the interlocking projections of the second engaging means."

Further, the definitions provided by the claims must be broad enough to capture everything you're entitled to by virtue of your invention, but not be so broad that it starts moving into the property boundaries of your neighbors. There is a real tension in the drafting of patent claims. If they are too narrow, the protection the courts give will be equally narrow. However, if the claims are too broad and could be applied to older technology, they are invalid and no court will enforce them against infringers (trespassers to your property).

A final reason for all the gobbledygook is that the patent practitioner could just be a lousy writer. A widely held tradition in drafting patents includes the use of legal jargon such as "thereby", "therein", "therealong", "therefor", and the infamous "said." Although more and more patent practitioners are using plain English (remember, should you ever have to litigate your patent, a jury of your peers will be trying to understand what the heck is going on), there are still those practitioners that still use unnecessary and confusing jargon. Unfortunately, like taxes and death, there's nothing we can do about lousy writers.

(Steven L. Underwood, Esq., is a practicing registered patent attorney with Keck, Mahin & Cate. He will be writing from time to time for the SAE Chicago Section Newsletter on intellectual property law as it relates to our mobile society. He has been a member of SAE since 1983.)
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<table>
<thead>
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<th>Phone</th>
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<table>
<thead>
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</tr>
</thead>
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JESSE ORSBORN is Manager of Engineering for crop harvesting equipment for J I designing crop harvesting equipment including cotton pickers and cotton harvesters. from Mississippi State University.

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KEVIN RICHMAN is Chief Engineer of Cotton Equipment Design for J I Case. His gro equipment design. Kevin's ten-year career with J I Case and International Harvester st graduated from Purdue University with a B.S. Ag. Engineering degree.

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(See maps on next page)

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See Map for Location

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CONCURRENT ENGINEERING THAT WORKS

"Design for Manufacturability"..."Simultaneous Design"..."Design for Assembly"..."Concurrent Engineering"...All of these terms address the same issues in mechanical engineering. Intensified competition, demands for quality, changing product life cycles, tight profit margins, and intense pressure to cut costs are the driving forces behind the movement to a better approach to product development.

Concurrent engineering describes a product development process in which all operational groups--design engineers, analysts, manufacturing engineers, managerial and corporate personnel--work in a unified, synergistic manner. Decisions are reached by consensus, and each group understands its role and is kept abreast throughout the process.

- Faster time-to-market.
- Cost savings--sometimes in the millions of dollars.
- Dramatic improvements in quality and performance.

It Doesn't Come In A Box

Concurrent engineering doesn't come in a box and can't be simply "installed" in your company. It is, first of all, an attitude, an inclination in favor of communication and the sharing of information.

A primary prerequisite for success in concurrent engineering is commitment from top management, not only to these objectives noted above, but also to dedicating resources such as people, tools, training and vision to make it happen. NCR, for example, has a corporate "Design for Excellence" initiative which has spawned a host of successful new products.

Intelligent Product Definitions

With the more advanced design tools now available, design data is stored as an intelligent product definition data base that embodies the qualities, characteristics, and attributes of the object being created. Once this data base is created, it serves as the foundation for all future design operations--as well as downstream tasks such as analysis, test, numerical control and others.

As a result, everyone involved in a product development project can work from the same source of information, eliminating the error-prone process of recompiling data for each particular task. Advanced design tools provide a number of advantages from a concurrent engineering standpoint:

- Solid modeling allows you to view even the most complex product definition as a lifelike three-dimensional computer model.
- New design tools support concurrent engineering and raises engineering productivity by striking a balance between offering robust functionality and increasing ease-of-use.
- Variational geometry helps you preserve design intent and makes design modifications
easier, allowing authorized users to make virtually any design change without jeopardizing the structural stability of the product, as identified by constraints put into the design.

**Coupled Applications**

Advanced design packages now permit you to create a single product definition, and re-use that same data base for an integrated design-to-manufacturing solution.

- Associativity between software modules lets you change the product definition at any point and have that change be reflected in other modules.
- Increased depth-breadth of simulations allows you to thoroughly simulate and analyze the performance of a new product--even down to the part, assembly, and sub-assembly levels.
- Design for manufacturability methods are in sharp contrast to the old method of “throwing the design over the wall to manufacturing.”

In a dramatic example of the benefits of concurrent engineering, NCR used this approach to develop a new point-of-sale terminal. They were able to reduce part count by 90% and cut assembly time from a half-hour to just five minutes.

**It Takes Time and Patience**

Making concurrent engineering a reality requires patience on the part of everyone concerned. This approach to product development brings changes to the corporate culture--changes that may be resisted by skeptics who need to see proof that it will work. Finally, it takes time. How long it takes depends on your commitment to the concept and how rapidly you can implement the changes in procedures and automation you’ll need to make.

*For more information on concurrent engineering,*

*contact Donn Miller, SDRC (708) 517-1050.*

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**Golfers**

It seems that this middle-aged golfer could still perform a good drive from the tee, but he had trouble seeing where the ball was hit. Finally, and somewhat reluctantly, he went to the caddy shack to hire a caddy. It was a busy day and only one elderly caddy was left waiting on the bench. The golfer questioned the caddy master. “He’s pretty old, isn’t he? Can he see?”

“Can he see! That’s Hawkeye Hansen--sharpest eye on the course.” So Hawkeye was hired and off they went to the first tee. The golfer had a good, long drive that went far down the fairway. He turned to Hawkeye. “Did you see it?”

“Yup,” said the old caddy. “Okay, where did it go?” “I forget,” said Hawkeye.
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