



"You Can't Hide Behind a Line"

by Robert J. Demarest

Twenty years ago, in my Presidential Address before this Association, I said that we need not be intimidated if, in the future, all of our pencils become electronic. I believed, then as now, that it is the mind behind the pencil, electronic or otherwise, that makes all the difference.

Today, with many of you working on monitors, with computer images part of our daily life, I am going back to the fundamentals. Fundamental strengths which will ensure our future. If we neglect these fundamentals we will quietly, but surely, turn our future over to outsiders who are already producing images that they do not understand. Our strength is in our knowledge, our skills, and our ability to communicate medical and scientific information. We must not hide or neglect these strengths.

Underlying all of the accomplishments of our Association is the vitality of the profession itself. And behind the vitality is the quality of the product that we produce. Whether we work with pen and ink, brush or computer, there are certain fundamentals that must perfuse our output.

There are, if you will, fundamental truths with which we must not lose touch. We need to articulate them on occasion. So, I will be talking about fundamental things today. You need not agree with all I say. You may argue with my definitions. You may want to substitute or add, react or even object to some of my thoughts. But think about them you must. For what I will be talking about is the very fiber and substance of our field.

I started preparing this talk many times before I realized that I have only one speech, one message. Those of you who have heard me speak through the years, have heard bits here and parts there. Sometimes more, sometimes less. But really only one message. It is my best message. So for those of you have heard it, there is new packaging. For those of you who have not, well I look forward to saying it anew. I think you will not be bored, I hope you find it meaningful.

INTRODUCTION

Our world is changing. Visual methods of presenting information are gaining legitimacy and acceptance. The medical illustrator is riding the crest of the information wave. Our pictures are seducing even the most sophisticated audience. Our work is starting to grab the legs of the physician and even the most verbal of all professions, the lawyer is being affected. This is fairly recent. I think most of you were born before the first piece of demonstrative evidence was introduced into the courtroom. But visual illiteracy is still the norm with many of our clients. They have little or no idea of what an illustrator can do to help them communicate information.

The average client who comes to an illustrator comes to buy a pair of talented hands to do what he tells those hands to do. Seldom does he come to buy the intelligence behind those hands. But that's O.K. We don't have to parade our minds before our clients. The spectacle would be unbearable.

But I am tired of hearing one or another variation of "it must be nice to get paid to paint pictures". Implicit in this is the assumption that what we do is easy, that the results flow from the brush without effort, that the results just happen. That we were told what to do. Indeed, it is behind much of the work-made-for-hire problem. Fortunately, they're changing. Truly, if that was all there was to it, just taking directions, I wouldn't be here today, you wouldn't be here—and I wouldn't have had such an exciting life, nor would I feel that I've spent my life in such a worthwhile way!

UNIQUENESS

What is unique about what we do as medical illustrators and what separates us from other illustrators? Unlike most artists or general illustrators we must be subject matter experts, amassing an ever increasing body of knowledge—a bank of information—which grows throughout our lives. We develop motor skills, learn painting techniques, and then, when an assignment comes in, we draw on all of this. We tap our knowledge pool which includes content experts, resource books and data banks to create medical illustrations... illustrations teach, that communicate information.

HOW DO WE DO IT?

Let's follow an assignment

its familiar route and while were doing this let's look behind those talented hands.

The client comes in with a request, he wants to show how he clips an aneurysm, or show his technique for a total hip arthroplasty, or any one of the hundreds of requests that we all get.

Let's go into the O.R. with him. Here we are with a camera and a sketch pad and what do we do? We ask questions! That's what we do! What is this? Why are you doing that? Explain what you just did. Why do you remove that? Where's the nerve? So many questions that the surgeon wonders why we aren't taking pictures or sketching. And if he knew what I was taking my pictures for, when I did take them, he might be surprised. It's for the position of the hands, the instruments, the pull of the skin or the way the towel is folded. The main reason I'm there is to ask question and understand what he's doing. The photos and sketches are peripheral. My illustrations of the surgery emanate primarily from understanding the procedure, not from my sketches. We draw what we know and we can only draw well if we know the subject and know it well. This is an axiom in our field. "We can only communicate what we understand". Everyone of you can look at a drawing of a femur by a pair of talented hands that belong to an general art student and recognize it for what it is, an interesting study of a bone but totally useless as a medical illustration. No matter how good an observer, if you don't understand the "why" of the femur you have simply created a study.

We can only communicate what we understand. That should be inculcated in every medical illustration student and

whispered to ourselves whenever we start a new assignment.

Illustrating what we know is easy to say but look at what's involved. We can't understand surgery unless we understand the anatomy, and the physiology. Often the embryology makes everything clear, as in so many congenital heart defects. This knowledge which many of our younger members are starting to acquire now is the base upon which they will build their careers and you should never stop adding to that base.

This business of illustrating what we know concerns me a great deal. I like to turn it around so it doesn't become too familiar a cliché. What it really means is that we must know what we don't know! If you put down a line - that line is a statement of fact! If you don't know why you are putting it down you'd better look it up! Unfortunately, I work with too many professionals who don't heed that advice.

As we start to prepare our illustrations we ask ourselves who is going to learn from them, who will be the audience. And that leads naturally to:

KNOW YOUR AUDIENCE

Sounds easy "know your audience" but that means knowing what the audience knows and doesn't know. That means putting yourself in the audience, in their state of unknowing. It's different with every audience.

And we must give each audience enough familiar material so that the new fits in and they understand it. As we move through a book, from chapter to chapter, the audience's understanding grows. Likewise, just as a child or a student moves up the educational ladder, his knowledge base grows with him. With

any audience, what we include in our illustrations must change with our knowledge of our audience and our audience's knowledge.

You'll note in my neuroanatomy book that I start with an illustration of the brain in head. With a nose, which shows the front, the head for size and situation. I can soon drop the nose, the head, for very quickly the cortex becomes orientation enough. Later the thalamus alone may be sufficient orientation for the groups of nuclei that we're depicting. Here, however, I would not change the direction of the front or back. I would not arbitrarily go from the right hemisphere to the left. I don't want my audience to stop and ask "where am I?".

This leads naturally to how much we should include in an illustration. How much information is enough. There is very real temptation to overload an illustration or a plate with many separate pictures crowded together. The day when the cost of reproduction was a major consideration in an illustrated book has evolved into an era where a profusely illustrated book is a major selling point. Today we can, and should use more illustrations, each making a single point. Each with just enough orientation to guide the viewer, using accent and highlighting for the message-then move on to the next and the next point to be made. The illustrations should pace the text or pace the lecture.

In an era of fast moving television shows and commercials, a great many images are essential. A lecturer can no longer get away with a few slides overloaded with information. Here, I'm reminded of the lecturer who uses one overloaded slide, filled with information, too small to

see. He keeps referring to it line by line, point by point. Soon you start to notice the dust webs in the corner of the screen. You watch them wiggle in the fanned air - this becomes the most interesting thing on the screen.

How do I avoid overload? I reduce my thoughts to paper, to thumb nail sketches. A visual plan to see how much information to include in each illustration. If the thumb-nail sketches "read" I feel confident to go ahead to detailed sketches. Always resisting the temptation to add more information or to try to show too many steps in one.

Through the years I've come up with some interesting ideas for projects, sold them to pharmaceutical agencies and companies. Many of them conceived or described at lunch, and sketched on paper napkin. You've got to draw quickly on a paper napkin, particularly with a felt tipped pen, the ink bleeds. But if you can get the idea across on a blurry paper napkin, you know it works.

We talked about the intelligence behind an illustration, I like to describe what goes on in our head when we embark upon an assignment. Let's take a dynamic, moving procedure, a surgical operation of, say, some four hours in length, and you reduce it to maybe 6 illustration. You, the illustrator, have witnessed an ongoing surgical procedure for hours on your tip toes. You make a few notes, ask a lot of questions and then you go back to your desk and you sketch it out. A visual recreation. You take a dynamic, 3-dimensional procedure with a moving perspective and a tactile aspect and you reduce it to a 1/2 dozen, 2-dimensional static illustrations that capture the procedure and can teach it to others! A reader or viewer who has never seen the actual event can understand it.

He's oriented, there is just the right amount of detail- and while he can't touch or feel the real thing and while he can't move his head around the operative field, he can reproduce the actions you've illustrated! Wow, and they come to us for our talented hands?

I just mentioned "touch and feel". That's an important point. Surgery is a tactile as well as a visual discipline. We as artists can't put tactility into our illustrations and that's a hindrance. So we have to substitute graphic devices for the feeling finger. We can show the bony landmarks, ghost in a structure that's underneath, go the cross sections, etc. These devices make medical illustrations more than visual records.

But what about the moving perspective? I referred to this when I said "a surgical procedure with a moving perspective". The surgeon is always moving his head around, changing his viewpoint, looking under structures, looking, if you will, at both ends of the barrel—and then he wonders why we can't or won't show both ends of the barrel at the same time. After all, he keeps saying that he can see them.

Perspective has been defined as the elimination of everything you can't see from a particular viewpoint. Think about that, the elimination of everything that you can't see from a particular viewpoint. The camera, the monocular lens, has had an enormous influence on the look of our work.

Photography is a field with which I am familiar but certainly not accomplished. Obviously indispensable to the world of medicine and in sheer volume overwhelms the world of medical illustration. But what's nice is that there is little or no overlap.

Only the uninformed still ask "hasn't medical photography put you artist out of business?"

Photography's impact on the world needs no review here, but its impact on the medical illustrator is real and like so may great boons, its dangers are little understood. Too many illustrators think the camera "sees" reality. That photographic perspective is the only true perspective, that it is truly confining and good illustrators consciously override it! We don't walk around with shutters in from of our eyes. We don't keep our eyes closed most of the time (at least most of us don't) and only open them to freeze a moment, to look at a subject from a fixed point of view. No, were constantly moving, gaining a different viewpoint. And what are we doing with this visual information? We're building a more complete picture, impression, and understanding of what we're viewing. Whether surgery, a cadaver dissection or a sailboat, it doesn't matter. We study it with our eyes, saccading over the scene, seeing by building a matrix.

So, I say, throw out the limitations of fixed point perspective whenever it gets in your way. Let's show both ends of the barrel if the assignment dictates it. If the need is to show more than the camera shows, move your viewpoint around, you'll be a better medical illustrator for it!

Certainly the camera's important. It's an aid to our depictions. But no more than that for us as illustrators, a tool! An art director once told me that he could tell what lens was used and how far from the subject an illustrator was when he made support photos for his illustration. I can see people at some future time looking back at our supposed Golden Age of illustra-

tion and denigrating some of our popular and venerated commercial illustrators because of their photographically dependent and thus photographically distorted illustrations.

FOCUS

Focus, a photographic term, an item of great interest to illustrators and one that overlaps into orientation, emphasis, and viewpoint. Focus is what many of our illustrations are all about and one that we all too often neglect. How we direct the eye to that which is important is what makes an illustration work.

How do we direct the eye? We can do it a number of ways. We can use composition, strong contrast, accents on the important features, sloughing off the less important background. Changing from full color to monochrome or line or other graphic techniques. The camera with its shuttered down lens and great depth of field often supplies us with pictures in which everything is in focus and we often rely on these as a resource. And we can end up with fully rendered illustrations in which no one thing is more important than anything else. We can lose our visual way. Artistic focus, emphasis, call it what you will, is the key to effectiveness and is often overlooked in our rendering zeal. It is hard for us to get beyond rendering. We spend so long mastering it that we must be careful that it doesn't master us.

Let me tell you a little story on myself. It involves the first time any of my work won the "best of show" award at an A.M.I. meeting. I had seven full color illustrations to do for Abbott Laboratories and I didn't have "7 full color time" in which to do it. What could I do? I had to meet the deadline. We are business

people, remember. Well, I transferred all of my sketches and with a light pencil line I circled the key areas in each. I painted the circled areas in full color and when I reached that pencil line I segued into line-simple quick line that filled the remainder of the board and was essentially background ...orientation. The results? Punchy focused, effective and the client loved it. So much so that they submitted it to the Society of Illustrators and it was accepted in their annual show. I took it to the A.M.I. and it won a first. All because I was short of time and looking for a way to get out of a difficult situation with style. I discovered a way to be a more effective illustrator, focus. Spend your time on the main thrust of the picture. You don't need or want to render in sharp detail everything in the field. Here's where less time actually led to a higher quality illustration.

CREATIVITY

This is the sexy word of the 80's. Everybody wants to be creative. Creative jobs, creative pictures, creative lives. Prospective students ask "is medical illustration creative?". No one knows what "creative" means but everybody wants it. Try and define it and you lose it. Like love it is better left without too close an examination. But we know what it is not.

We in the western world have a sentimental view of creativity. We have detached it from its roots in mastery.

Creativity is not a free wheeling, effortless, rootless flight of fancy. It grows out of discipline and mastery of your craft. It comes from knowledge. The writer who says that the story idea just happened upon him or the artist who says he was simply

inspired to create, is only using verbal shortcuts to answer the "how" question. We probably wouldn't listen if he described the labor behind the creation. No mention is made of the countless hours spent perfecting his craft, the years of study, the slow evolution from incompetence to mastery.

Creative medical illustration? You bet! The more you know, the more creative you can become. You can bend, you can distort, you can compose your image for drama, for effect. All with the proviso that you know where the fences are. You must know your audiences limitations. The subject matter limitations. The better you are at your craft, the more creative you can be. The more you know, the more creative you can become.

MEMORABLE MEDICAL ILLUSTRATIONS

The last major item I will touch on is how do you produce an illustration that jumps off the page? An illustration that sticks in the mind? One that has what I call a "high memory quotient".

Were getting into terrain more difficult to define now. These are more subjective areas. But some medical illustrations have it while some are all too forgettable. And if our illustrations are to teach we surely don't want them to be forgettable. What makes the difference?

For one thing, a clear concept. The essence of the subject is presented. How do we find and show the essence? You certainly aren't going to stumble upon it. There is only way, you must know the subject. If you are planning to present a memorable stomach, you must know stomachs-plural! You must know the structure, the function, the curves. What shape it takes

when you're standing and what it looks like when you are lying down. You must be familiar with the look and function of the pylorus, and the ligament of Treitz. And not one specimen but dozens! You bleed your author, your content expert, for everything he or she knows (questions again). You build upon his knowledge, and then, and only then, do you start sketching. Looking, searching for the line that says, "truth". With knowledge, hard work, with talent in depiction and a skilled technique, you'll have a stomach. And that stomach, or brain surgery series, or whatever, will jump off the screen or page and click into the memory grid of the viewer. He or she will learn from your illustration, your picture will have a "high memory quotient".

I can think of no more important place to stop and say that if you remember nothing else, remember my beseeching you to work toward creating memorable pictures. They jump out at you through the ages. The Brodels, not just well executed, well drawn...you remember them! A Tom Jones stomach and duodenum. The Spalteholz mid-sagittal female pelvis (probably the most copied picture in medical illustration). The indirect ophthalmoscopy illustrations by Stenstrom. The Magic Anatomy Book by Carol Donner, almost anything by Hodge. Why are these memorable? One basic reason...the artist knew the subject matter cold! He or she searched for that viewpoint or viewpoints that said it well.

I remember telling Bill Andrews that I loved the way that his great vessels arched up from the aorta and disported themselves across the page, playful, realistic. He smiled and said that all he did was to not smooth out his crooked lines! What he didn't say was that

he works with a heart team, he works on hearts. He knows hearts and vessels. And as a result of this knowledge he can depict them in ways that we know them less well are constrained from doing.

Implicit in these memorable illustrations is the foundation, anatomy. This is, given your artistic ability, the base upon which you will build much of your career. Too often it is a neglected foundation, an inadequate base. It is a life long study. It must be constantly refreshed and added to. I see too many illustrations by trained medical illustrators that tell me that he or she doesn't know anatomy. Of course, it is not an all or nothing state. No one will ever know everything anatomical. But unfortunately every line we put down is a statement of fact. You can't hide behind a line. A line is clean. It shouts your ignorance or your competence. I don't expect that any of us will ever have produced a continual parade of illustrations that shout their competence, but let's strive for a few.

PASSION

A love of this incredible machine that we inhabit must be a precondition for success in our field. That love and understanding leads us in our study. I like the intellectual side of my work as much as the artistic side. I like the struggling with my assignments, finding effective ways to illustrate a communications problem. I know that I will continue to be hired for my talented hands, not my mind. But I take comfort in what John Dewey said in the classic work, "Art as Experience". I found this passage: "The idea that the artist does not think as intently and penetratingly as a scientific inquirer is absurd. An artist must constantly undergo the effect of his every brushstroke

or he will not be aware of what he is doing or where he is going. To apprehend such relations is to think and is one of the most exacting modes of thought".

And again John Dewey: "A genuine work of art probably demands more intelligence than does most of the so called thinking that goes on among those who pride themselves on being intellectuals".

This pursuits, this journey to be the best medical illustrator that you can be is a life long one. But it is what life is all about, always striving. I'm reminded of one of my favorite stories. The true (I hope it's true) story that Hokusai's daughter tells about her father. (Parenthetically, if you've never seen the Hokusai Iris prints at the Chicago Art Institute, you must go. It remains one of the great museum experiences of my life). Hokusai, then in his 90's, near death, tells his daughter, "If I had ten more years, 5 more, even 1 more, maybe I could learn to draw!". Here, we find the consummate artist, maybe Japan's best ever, still striving, still aware that there is more to uncover, more insight, more skills to develop. In a small way, that's the way that I feel. I think medical illustrators are very fortunate. We have life-long goals and something else, we disseminate information that leaves the world just a little better off. And, when something goes right, something clicks, when a part of an illustration really works, that makes it so worthwhile!

That's why I feel fortunate to have discovered this field. To be on a life long quest for a mastery I will never achieve. But along the way I can share the joy and adventure with the marvelous people of the A.M.I.!

Thank You.