A NATIONAL STANDARDS COORDINATING COMMITTEE
FOR THE GRAPHIC ARTS TECHNOLOGIES

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My purpose in addressing your association is threefold:

A. To assess the needs for coordinated graphic arts standardization
B. To identify the standards that exist today, and;
C. To acknowledge the fast-moving interrelated technologies within the graphic arts field that are driving the industry toward a new and greater need for standards.

I have also been requested to discuss the process, mechanics and desirability of establishing a national accredited graphic arts standardization committee within ANSI -- the American National Standards Institute.

As we approach the issue of a need for coordinated standard-setting later in this presentation, I want to stress that we recognize the extensive specifications, standards and technology documentation efforts existing within the graphic arts discipline. But I want you to help judge, whether what we have documented now is adequate...and whether the process of identifying and developing current and future needs would benefit from the communication and coordination possible in a national standards committee.

Standards that relate to the graphic arts have and are being developed in the photographic, inks, computer, computer graphic, electronic, and medical imaging fields. We have extensive standards in films and film technology. We also have standards of graphics application interfaces, graphics device interfaces and graphics data transmission and storage.

Although there are generally accepted standards in many areas, others are conspicuous by their absence. What we do not have is an industry-wide committee reviewing current needs, the impact of future technologies, and working on standards that could be acceptable to the industry as a whole.

We also recognize the de-facto significance of vendor systems or specifications often referred to as "standards". Although important, too often they are incompatible with the systems or products of any other vendor.

With that caveat, lets establish a common background to the process of standardization.

It is a common sense process that unites existing standards competence in technical, trade, professional, labor and consumer organizations like yours, as well as in government agencies and commerce and industry.

The path to the establishment of voluntary American National Standards lies within the well-travelled processes established by ANSI.

As national coordinator, ANSI assists organizations to reach agreement on needs for standards, establish priorities, plan to meet identified needs, and avoid duplication of effort. ANSI also accords standard-developing organizations a neutral forum for resolving differences and provides procedures and services to help them use resources effectively.

An Executive Standards Council, a dozen standards boards, and special panels and committees help coordinate objectives.

Through its Boards and National Standards Committees ANSI also represents the United States to the international non-treaty organizations of ISO and IEC. Effective national coordination requires competent, voluntary cooperation from all sectors. ANSI enlists cooperation of this type. Thus the purpose of this presentation.

A request for development of a standard may come from any professional or industry association, governmental agency, professional scientific society, manufacturers' group, universities, consumers group or even an individual.

The market-needs for a standard are not enough; there must be incentives to bring the various interest groups together to develop the specifications and necessary consensus.

These incentives might include; the opportunity to achieve common specifications for test methods and materials to obtain improvements in quality control; the economic benefits obtained through product specifications of form, fit and function to achieve cost-effectiveness in purchasing and manufacturing.

Another reason for developing a standards committee is to share the work. It is far easier to arrive at solutions when the knowledge and practical skills of those affected are brought to bear on a problem.

We also achieve the chance to build a technical forum in which users, suppliers, manufacturers and government representatives may address common needs for current and future technical specifications. This incentive is often one of the most significant.

The openness of a national standards committee offers one of the few ways that United States industries can sit down and exchange views about balance between proprietary products and processes and standardized compatible fit and interface function while adhering to the business laws of the land.

Technology no longer knows national borders. A strong incentive is to make sure that our national interests are represented in international specifications.

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Improvements in communications to users by a common understanding of product characteristics and process technology; thus, through a gestalt effect, like the materials to build your home, the final product is far greater than the sum of its parts.

Finally, ANSI committee participation assures due process of law. All affected interests are given the right to express their points of view.

Great emphasis on due process is embedded in the voluntary consensus standards system.

Due process encompasses:

--Timely and adequate notice of proposed standards development, and proposed committee actions directed to all persons likely to be materially affected by the document.

--An opportunity for all affected interests to participate in discussions, deliberations and decisions, both on procedural and substantive questions. A balance of membership among users, producers and general interest, noting that membership in the organization sponsoring the development cannot be a requirement for participation.

--Effective recordkeeping and timely publication and distribution of minutes of proceedings and contributions.

--Careful attention to minority opinion throughout the standardization process, documented review of objections to specifications with a record of disposition, and an appeals procedure.

The final key element in the standards writing process is a set of rules and procedures to insure the due process and balanced representation we reviewed.

When conditions of due process openness and written procedures are fulfilled, the committee may apply for "accreditation" by ANSI. This accreditation usually results in a national standards committee designation.

The development of standards in such a committee is a delicate balancing process. Safeguards must be maintained to prevent standards from stifling innovation or restricting competition by excluding potential competitors from new or established markets.

There must be a balance between users and suppliers, in that the interests of those who use the materials and products must not be sacrificed to the interests of those who produce and supply them.

Gentlemen and ladies --that's a synopsis to the standards documentation process: A need, due process participation and written guidelines. Of course there are considerably more details in the committee structure. But those are properly the province of the groups responsible and the committee chairman.

I mentioned earlier that we would survey some of the standards now existing or under consideration in the graphic arts industry. The identified needs and the standards action have occurred through many technical, trade and user organizations--some under ANSI--most not.

First, in the field of new technology -- the Electronic Prepress Subcommittee of the Graphic Communications Association (GCA-an affiliate of the Printing Industries of America) has developed a generic coding for electronic manuscripts. This work has evolved into the SGML -- Standard Generalized Mark-up Language -- concerned with coding of text elements which is proceeding through the International Standards Organization's (ISO) review process.

That subcommittee of GCA has also identified a need to develop a common data format to facilitate the exchange of data between electronic prepress systems which it calls Generalized Image Specification Language, or GISL.

As part of the technical consideration, the digital image draft standard developed by the American College of Radiology and National Electronic Manufacturers Association (ACR/NEMA) is being examined as a "point-of-departure-document" to determine if the concept can fulfill needs of the graphic arts industry. The GCA has established documentation for the bar coding of paper stock and more than a dozen other specifications related to the business of publishing.

The work pioneered by Tom Dunn to achieve agreement on the data format of color electronic pagination system (CEPS) images recorded on data tape (the DDES - Digital Data Exchange Standards) has received significant coverage in the trade press. This activity has precipitated a study and review of all of the scanning and pre-press steps and thus is a fundamental step in the exchange and processing of scanned images.

The National Printing Equipment and Supply Association, Inc. (NPES) has agreed to assume the role of secretariat to an extension of the development of the digital data exchange standards as a way of assisting their formal promulgation through ANSI for the graphic arts industry. (Note at the time of writing, the DDES committee has accepted NPES's offer for secretariat support.)

Work to develop computer graphics standards has been undertaken by the X3 technical committee on computer graphics, known as X3H3. It is working on four major graphics standards projects:

Programmer's Hierarchical Interactive Graphics Standards, or PHIGS, an application interface, and the Digital Imaging and Communications Standard, a graphics device interface standard that also relates to picture transmission. Also in that area are the Computer Graphics Metafile (CGM), and their relationship to the CCITT Groups 1 through 4 facsimile standards. The appendix includes additional standards references.

Other efforts on standards to exchange color picture data and incorporating line art considerations into those standards is also under way, using the Videotext/-Teletext presentation level Protocol syntax X3.110-1983. Although of insufficient resolution for printing in its broadcast format it will have application in soft display and transmission in the computer and graphic arts industries because of the ability to modify structure it incorporates higher resolution full tone scale pictures. These potential applications are being considered by ISO TC97 and ANSI X3.

There are other computer graphics exchange specifications that impact on the graphic arts industry such as the North American Presentations Protocol documented by ANSI.

The above has been a broad-brush of the electronics area, now let's profile the present standards serving the more traditional disciplines.

There are many standards that impact upon the traditional graphic arts technologies. Those that have been developed by ANSI committees; those developed by trade associations and scientific and technical societies; and those standards that have been developed by non-U.S. organizations representing European practice that is applicable here.

Space permits only highlighting a few groups of these specifications in this presentation to you. A synopsis listing compiled to the best of our awareness is available by request from the author.

As members of the industry, you may wish to cooperate and supplement this listing from your awareness of technical practices and specifications so that we may document a registry of standards activity as a necessary first step in the industry committee coordination process.

Test methods and troubleshooting of printing inks have been documented under committee D01.56, which is a subgroup of the D-1 committee under the ASTM (American Society of Testing and Materials). The international counterpart is documented under ISO Technical Committee 130.

Early color magazine printing had wide variability. The printing industry of America and the American Association of Advertising Agencies and 8 other associations got together to establish recommended specifications for web offset publications which are known throughout this industry as the SWOP specifications. Although the specifications improved consistency and reduced waste, the ink specifications differ from the European FIPP and the ISO 2846 values. The Gravure industry--through GTA-Group VI standards claim their ink palette matches the SWOP ink palette.

The FIPP document mentioned previously is from the International Federation of the Periodical Press which has been in existence since 1925. This organization embraces 31 countries and 23 national associations of periodical publishers and has developed specifications for the production of film color separations to be printed in periodicals, magazines, catalogs and other literature produced by the web offset press. Although intended for use in Europe the specification is encouraged for adoption by all FIPP member associations and is often compared to SWOP. The FIPP specifications contain the topics on film separation, color proofing detail, viewing of the originals and proofs and alternatives to press proofing.

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The standardization working group of the International Association of Research Institutes for the Graphic Arts Industry (IARAGI) has addressed the "limits" of application of densitometry (spectral response and optical geometry) and the instrumental requirements. In a separate document, the benefits of a standard sequence of inks is considered.

There are other non-U.S.A. national specifications of significance. The West German organization FOGRA, (Deutsche Forschungsgesellschaft fur Druk-Und Reproduktions Technik) has developed a set of specifications which include test materials and test methods.

The National Printing Equipment Suppliers Association (NPES) mentioned previously is also secretariat to the American National Standards Committee B-65 on the safety specifications for graphic arts equipment. It has developed safety standards covering the subject of printer press drive controls, binding and finishing systems, machines with cutting knives and other stand-alone bindery equipment.

Lighting standards provide for consistency in the evaluation of art work, transparencies, proofs and final copy at 5000 degrees K. These specifications are documented by ANSI Ph2.30. Future needs may also demand specifications for self luminant display devices which offer the unique challenge of seeing which standards developer will pick up that gauntlet.

The physical characteristics of films and plates have been documented by ANSI PH1 - Film Technology and all PH committees have their counterpart under ISO TC-42-Photography. The ANSI PH Committees are under the secretariat of the National Association of Photographic Manufacturers (NAPM).

Densitometric and sensitometric specifications are dealt with by the ANSI Photographic Committee PH2. There has been some recent criticism of the "T" specification peak values not adequately fulfilling Graphic Arts needs. If true, committee participation may have been a factor--thus a value to an industry-wide coordination effort is to prevent "you" being a victim of an inadequate expression of your user needs!

The Gravure industry through the Gravure Technical Association (GTA) has expanded its activity by developing new Group I and VI standards for magazines and newspaper printing. Included are specifications for the tools for quality control and test targets, lighting and densitometry.

The Graphic Arts Technical Foundation (GATF) is acknowledged as a long-standing supplier of test materials. Through the practical experience of laboratory certification and evaluation, GATF is a valuable resource in the assessment of the validity of standards specifications and test methods.

It would be difficult for the graphic arts industry to exist without an effective understanding of paper. Through the Technical Association of Pulp and Paper Industries (TAPPI) and their international counterparts and ISO TC-6, extensive documentation exists for most paper products. However, improved industry-wide communications would be welcomed by the Graphic Arts and Corregated Paper divisions of those organizations.

Without question the preceding overview has failed to recognize significant efforts in several areas. As the Imaging Technology Standards Board expands its awareness of the full scope of standards activity in graphic arts, these oversights will be remedied. This effort has, however, highlighted some of the considerable standards activity in the field. But we need activity in such fields as achieving greater precision and specification in color measurement during printing and to document the performance expectations of printing resolution. We are aware of new work being considered for electronic type font definitions. We have identified the need but have no standards for the very large data bases required by printing. And there are, no doubt, many others.

There are those who would argue that the commercial effectiveness of graphic arts has not been thwarted by not having an accredited national standards coordinating committee. The industry, these people would say, enjoys a cost-effective balance between the uniqueness of craftsmanship, dedicated technical and trade association specifications and the de-facto standards of proprietary products and processes.

I must admit that I do not come to address this issue, or to my role as chairman of the ANSI Imaging Technology Standards Board from a graphic arts background. I come from the allied fields of photography, cinematography and television technology. This background and the standards success these technologies have enjoyed make me want to shout to you loud and clear: You can do more -- You can do it more effectively -- You can achieve greater voluntary compliance -- through a coordinated effort. Expand your standards horizons now -- the future demands it.

Let's relate for a moment to another printing industry - motion pictures. The cinemagraphic process represents one of the most successful worldwide standards efforts. It began more than 70 years ago and is still evolving today. That industry developed an enviable system of conformity by making something-out-of-nothing-- the specifications of the perforation hole.

One of the most compelling reasons for strength in their standards activity is economics. The United States enjoyed almost a billion dollar favorable balance of payments through the international distribution of motion pictures in the last reporting year--1984.

Motion pictures are compatible with equipment in any nation of the world. Without standards that make that compatibility achievable, the motion picture industry couldn't have progressed to its present size.

Yet in looking at the graphic arts industry we see that it has reached a level of worldwide eminence with - until recently - very limited standards.

After broad-brushing the extent of your industry's standards activity, I am not here today to say "You don't have standards and you need them." Rather, I am encouraging you to examine your present and future roles and determine for yourselves whether a more effective national standards procedure will provide you with effective ways to increase your quality, efficiency, waste control, compatibility in materials, processes and hardware.

After you take a long hard look -- assess your need and desire for a formalized effort, if positive, we in the Image Board will help you -- otherwise we'll respect your desire to maintain the status quo.

But I would suggest to you that technology and its ever-increasing rate of change may drive you to a need for better ways of communicating among yourselves. In electronic publishing you can be forgiven if you feel yourself surrounded by people trying to talk alike--but not succeeding.

Imagery technologies are becoming increasingly interrelated: electronic, photographic and computer technology working together.
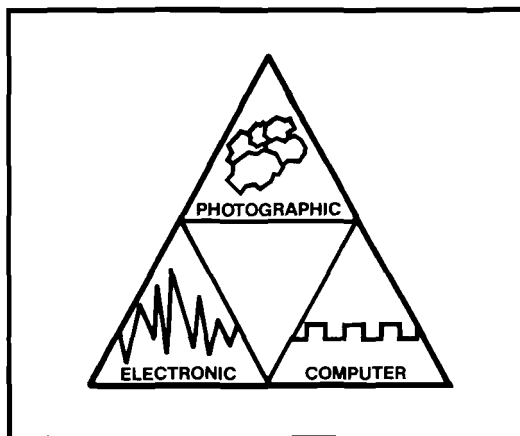

Figure 1: Previously delineated technologies of photographic, electronic, and computer imaging.

Let's look at the ways the traditional barriers between technologies are disappearing--the illustration of the elements of photographic imaging, electronic imaging and computer imaging shows where we were less than a decade ago. By inserting the "T" for transcoding and a "T" for transmission--all of these previously delineated disciplines form a hybrid--we call imagery.
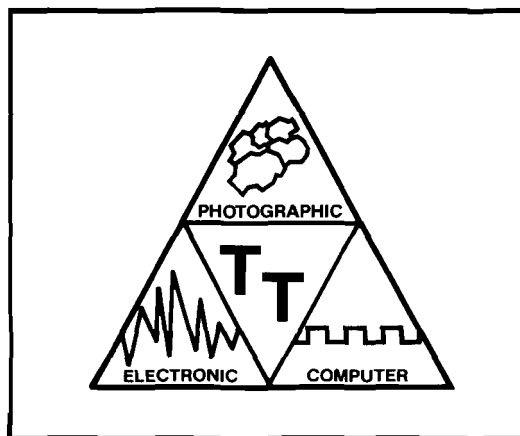

Figure 2: Through transcoding and transmission the delineated technologies merge to form a hybrid called imaging.

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Through the process of transcoding and transmission, the delineated technologies of photo imagery, video imagery and computer imagery merge to one discipline of IMAGERY.

Couple that with the rapid speed of technological change and I would suggest to you that you might have a common discipline in the 1990s--one technology--information technology served by many components.

In the future, pictures for printing may be captured directly by electronics. It will be interesting to see whether through technological change--imagery, and your industry's part of it--graphic arts, will be part of information systems or whether they will continue to maintain their own identity in the 1990s.

This kind of hybrid technology will be influenced also by the growing potential of geographic fragmentation of the graphic arts industry work cycle.

As electronic systems proliferate within the industry, the need for standardized information exchange formats between different systems will grow and become an imperative.

The increasing internationalization of graphic arts also increases the need for a coherent body to provide leadership standardization. Can we generate effective standards that achieve consensus here, or must we risk having standards introduced to us that we took no part in developing?

So in conclusion, I would like to put a figurative "motion" on the table so it can be debated.

My suggestion is that you form a national standards committee for the graphic arts industry, functioning as an accredited ANSI committee. An umbrella to your current effective--but specialized efforts.
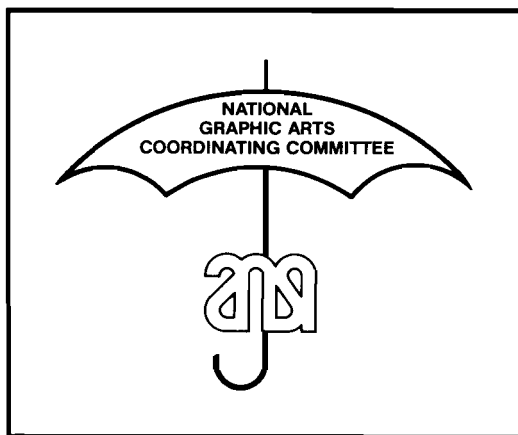

Figure 3:   A national coordinating umbrella structure covering all existing standards development by societies and trade associations.

The umbrella surface itself would represent the overview and coordination function, as well as the focus for international representation of our national interests.
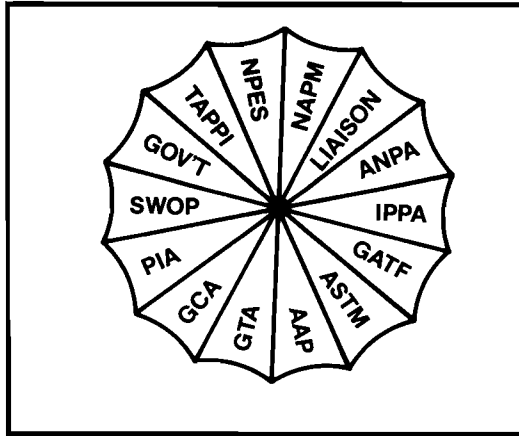

Figure 4: The standards drafting organizations may become technical cosecretariats in the national committee structure.

The segments of the umbrella represent the various groups that have identified themselves as standards developers for your industry. NAPM, NPES, TAPPI, PIA, GCA, GTA, AAP, ASTM, GATF, IPPA, ANPA, Government, others like the DDESC and Liaison.

Each of these groups would be representing standards questions that fall within their own purview or expertise.

Support would come from a secretariat. As you know, NAPM has agreed to act as secretariat for this coordinating committee in graphic arts because it wishes to encourage multi-organization coordination. The choice of administrative leadership is currently an open question. Cosecretariats are provided for under ANSI procedures. At this time we recognize multiple interest to achieve this goal. An open meeting of the ANSI Image Board was held April 16 with industry-wide encouragement to continue to pursue our efforts to form a national coordinating committee.

The base of the umbrella represents ANSI and its standards procedures. The Image Board invites any or all of the associations of the graphic arts industry to its membership and to its meetings. We've pushed the button and the presses are running toward a national coordinated, industry-wide standardization process.

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