



The Year
2044

One Hundred Years of Innovation

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Abstract

This essay was presented in Palm Springs, California on October 16, 1994 at the Fall Meeting of the Commercial Development Association. The theme of the meeting was 'Rethinking the Innovation Process: Doing it Better, Quicker & Smarter.'

The authors take the audience 50 years into the future before looking back at one hundred years of innovation. Historic and futuristic slides are presented, which aid the audience in visualizing the innovation process that the authors expect will be prevalent in the year 2044. From that vantage point, the authors traced how innovation in the year 2044 was the result of evolutionary developments since the early 1940s. The authors describe innovation as a visualization process by which people shape a holistic mental picture of a subject and then move to recreate their picture.

Introduction

Visualization is defined as the formation of a mental picture. If the mental picture is based on knowledge, then it is highly probable that the picture will be real. If the mental picture is strictly based on imagination, then it is likely that the picture will be a fantasy. No innovation is ever accomplished without numerous knowledge based visualizations.

This is well documented and some familiar examples are:

- The chemist Kekule's understanding of the structure of the benzene ring after he dreamed of a snake holding its tail in its mouth.
- Wolfgang Mozart's statement that, when his thoughts flowed best and most abundantly, the music became complete and finished in his mind, like a fine picture or a beautiful statue, with all parts visible simultaneously.
- Albert Einstein's discovery of the theory of relativity because he pictured himself riding on a ray of light.

Visualization is misunderstood. It is not a spontaneous occurrence limited to geniuses, but, is instead a normal human function which uses the right side of the brain to look at a complete, or holistic, picture. In fact, as Stephen J. Covey states in his book [The 7 Habits of](#)

[Highly Effective People](#), "*All things are created twice. There's a mental or first creation, and a physical or second creation... Most business failures begin in the first creation.*" It is then necessary for those of us in the field of commercial development to get that first creation—the visualization, the holistic picture—correct.

We suggest that, through the use of the universal language of mathematics, holistic pictures can be formed, shared, and perfected; thus assuring the success of the second physical creation, the commercial development of a new business.

The CDA has undergone many changes in its past and will continue to do so in its future. These changes have not been merely cosmetic and superficial, but have reflected the scientific, financial and societal theories of their period. Now it is time to acquire a holistic picture of the commercial development field, the innovation process and our association; so that we not only *visualize* the future—we *become* the future.

Let's begin. Listen to my instructions before you do anything. At great risk of causing you to go to sleep, I am going to ask you to close your eyes semi-tightly and look for a blue dot of light. Remember, don't do anything until I tell you to begin or I can't guarantee where you will end up. After you close your eyes, if you can't see a blue dot, find a yellow or red dot, but blue is preferred. When I tell you to begin, leap astride the light and at the same instant, leap off. I want you to reflect on that for an instant. You must be astride and off the light source simultaneously. Then open your eyes.

All right, at the count of three, close your eyes and step on and off the blue light simultaneously. One! Two! Three! Open your eyes. You are now in the year 2044. From our vantage point and knowledge of innovation in 2044, let's review the last one hundred years.

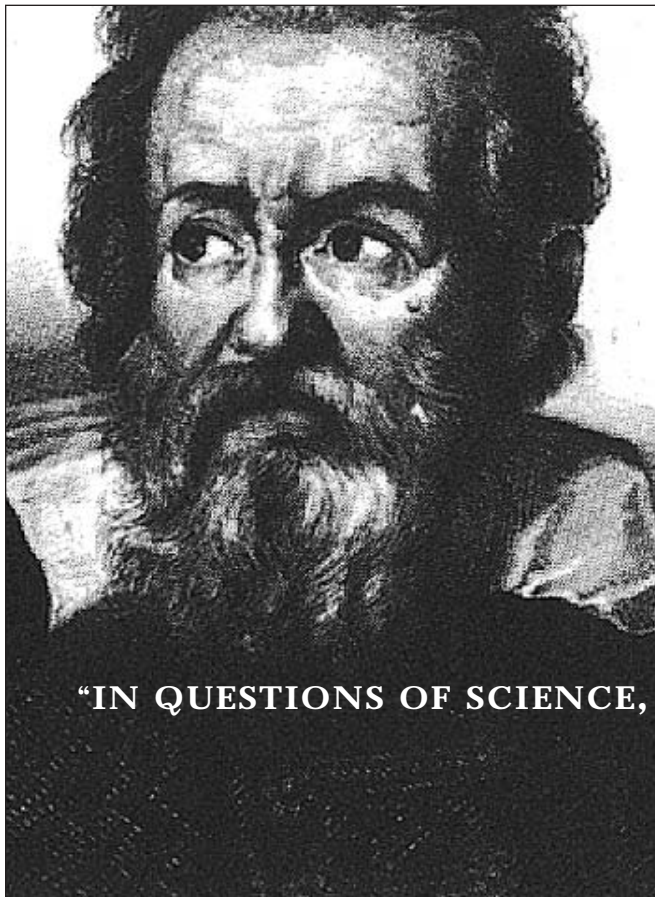
Today, in the Year 2044, we realize that innovation is the right brain/left brain interchange process by which holistic pictures are explained through the language of mathematics. The innovation process works as follows:

1. Individuals shape a holistic view of a complete picture with their right brain.

2. Individuals then use their left brain to explain their picture through the language of mathematics.
3. Individuals then use their left brain again to develop mathematical equations to reproduce their original vision.
4. Individuals then return to the right brain activity of holistic thought.

We have known for most of the last one hundred years that the right brain is the older of the two hemispheres and functions in an all-at-once mode to produce a complete picture. In contrast, the left hemisphere excels in sequential functions such as words, abstract thinking and numbers.

It is very normal for humans to look at a complete picture (a right brain activity). The development of the left side of the brain probably occurred when there was an early understanding by the right hemisphere that skill sets such as language and tool making were important to understand and change right brain visions. Through practiced use of these skill sets, the left hemisphere enlarged, until it was large enough to



handle all of the skill sets required for the foreseeable future development of the human race.

Nevertheless, the right side of the brain remained large, but became unpracticed during the 1900s. It seems to us that Einstein’s view of what it would be like to sit on a light wave is a right brain holistic view. He then had to cram his left side full of enough skill (application of sequential principles) to allow him to explain his vision of riding on a light wave. He used the language of mathematics to explain the picture that he had developed in his right brain.

We suggest from this, that, mathematics is the connector between the two hemispheres of the brain and discoveries are made when pictures are explained through mathematics. Knowledge blocks consist of the explanation, through mathematics, of a holistic picture or vision. Only humans, who alone have developed the skills and language to explain visions can have knowledge.

Computer science has revealed that words can be converted into digital data and back again into words. Fractal geometry has revealed that mathematical equations can be iterated to produce beautiful pictures of life and fractal geometry has been used in the 1990s and into the third millennium to create and store pictures that are clearer than can be achieved through photography.

In the year 2044 we take for granted that the design and function of the human brain has everything to do with innovation. Now let’s go back one hundred years to see how we developed this understanding.

1940s

Research and commercial development during the 1940s was influenced by World War II and later into the 1950s by the Korean War. New materials of all types were required to replace natural

THE AUTHORITY OF A THOUSAND IS NOT WORTH THE HUMBLE REASONING OF A SINGLE INDIVIDUAL.” — GALILEO

materials that had been unavailable during World War II and to support the upgraded property requirements of both war efforts. Most properties were recognizably deficient and as demand for performance increased, synthetic chemists invented new chemicals and materials. Later this effort to fill property voids carried over into the peacetime economy.

All of this work to get chemicals and materials into the hands of potential customers and give them practical hints concerning how to use the chemicals for specific applications involved left brain activities. In the 1940s, there was no apparent need for anyone to use their right brain to develop a holistic view of a complete subject.

Einstein would live 15 years beyond 1940, and 50 years beyond his 1905 article that laid the ground work for us to understand the creative process. Nevertheless, in 1985, Peter Drucker would state in his book, Innovation and Entrepreneurship Practices and Principles: *“We cannot yet develop a theory of innovation. But we already know enough to say when, where, and how one looks systematically for innovative opportunities, and how one judges the chances of success or the risks of failure. We know enough to develop, though only in outline form, the practice of innovation.”*

By the practice of innovation, Drucker meant the organizational structure and pathway that people take towards the development and commercialization of new products over time. In 1985, Drucker didn't realize that innovation is centered in individuals. In the year 2044, we have learned to look no further than ourselves for innovative opportunities, of which there are an infinite number.

Individuals, who know how to develop holistic pictures, see the past and future as present. Like Einstein in 1905, they have learned to see everything as if they were astride a light wave. This is what we mean by presencing or visioning.

Traveling at high speeds introduces distortions in the shape of ordinary objects. For example, things seen off to the side appear vertically elongated, and at higher speeds their tops begin to curve. Right angles are replaced by arcs. In addition, this viewpoint allows

one to see more than one side of an object simultaneously. Consequently, at the speed of light, sequential time has no meaning and we can see all the detail of the past present and future at the same time. In simple algebraic terms, past, present and future blend together to become one. They are equal.

If one attempts to forecast the future from the present without thoroughly understanding the past, for that person the past won't exist. In other words, the past equals zero. Since the past, present and future are equal, astride a light wave, the present and future will also equal zero. ***We can't vision the present and future without the past.*** Likewise, if we have a fuzzy incomplete understanding of the past, then we can only develop a fuzzy and incomplete understanding of the future. Presencing or visioning the future requires that one look at the past and present intensely to record all the detail.

In the 1940s, there was such a lack of detail that the left brain activity of data generation was of paramount importance. This decade gave us the beginnings of a past that we still need in 2044 for us to merge past, present and future as we ride astride the light wave of innovation.

1950s

The 1950s was a decade of manufacturing. Large plants were engineered and built as labor and management demonstrated their ability to increase productivity on an ongoing basis.

The 1950s also saw the early development of computer technology, which led to the next four decades that we now think of as the information age. In the year 2044, we know and have realized for some time that information is not knowledge. Information is nothing more than facts, figures and data. Knowledge, on the other hand, is the right brain holistic view of the building blocks required to invent and produce. In the 1940s and 1950s we still thought that chemicals, materials, devices and composite structures were the products of our efforts, but in the latter part of the 1980s the following definition of a knowledge block appeared:

“Knowledge blocks have the following characteristics:

- belong to people,
- clearly written,
- required to prove a concept,
- probability of truth has been estimated,
- based on valid experiences,
- fits market observations, and
- accepted as true by a group.”

During the 1950s our data bank of the past expanded, but we had not yet learned how to convert data and know-how into blocks of knowledge. Consequently, industry added professional staff groups of all disciplines, since knowledge was thought to be synonymous with skill sets.

1960s

Much happened in the 1960s to increase our understanding of innovation. This was a decade of tumult, with the armed, political Vietnam War and the arms building, political Cold War. It was also a decade during which individuals, in great numbers, questioned all society. From an innovation perspective, the 1960s saw the emergence of the importance of individuals.

Industry still added skill sets, but the emphasis was sales and marketing to sell out the large plants that were built in the 1950s and continued to be built in the 1960s.

Although individuals emerged during the 1960s, research and commercial development emphasized the historical framework of science, which consists of step-wise left brain activities. During the 1960s, research directors didn't understand that innovation was a right brain visioning process that began with individuals. Management delegated program generation to market researchers, who attempted to surface the beginning of something through unaided right brain dialogue without left brain/right brain mathematics connectors.

The information age was about to pass through its infancy and enter its early growth period. Companies continued to add skill sets, but the skills were more costly and the social benefits designed to attract and hold these additional skill sets established the entitle-

ment psychology that would soon end the view that companies were like families.

Much information was generated during the 1960s, but little progress was made in converting this information and know-how into usable knowledge blocks. In addition, the US accelerated the loss of craftsmanship skill sets that were required to produce uniformly high quality products.

During the 1940s and 1950s very few research projects didn't produce a commercial success. During the 1960s, despite the fact that individuals emerged on the societal front, the role of individuals was de-emphasized in the corporation and teams were considered to be the creative force. This took place when the cost of skill sets was rapidly increasing and the percent of commercially successful projects was decreasing. This naturally led to the financial emphasis of the 1970s, and severe inflation towards the end of that decade.

1970s

During the 1970s, companies added new financial skill sets. Technically trained MBAs were in great demand in the historical manufacturing industries. The thinking was that, many research projects failed to produce commercial successes because of lack of understanding of financial criteria. It was thought that better financial criteria would produce successful projects in greater numbers.

Manufacturing industries continued to stress left brain sequential activities during a decade that saw spiraling costs of this type of task. Control was passed to the decidedly left brain skill set of finance and accounting.

As the information age passed through its early growth period, many new information processing and communication industries were spawned. However, all of these new industries and skills were still aimed at simplifying and reducing the cost of society's left brain activities.

Today, in the year 2044, we know that sequential, scientific and logic activities reside chiefly in the left hemisphere of the brain. However, just as creative all-at-once activities like art need left-sided sequence, so

science and logic depend on right-sided inspiration. Visionary physicists frequently report that their insights occur in a flash of intuition; an epiphany that is at once nondestructive, nonlogical and authentic. In these cases, the painstaking labor necessary to shape each intuition into the language of mathematical proofs occurs after the insight. Einstein expressed this when he said: *“Invention is not the product of logical thought, even though the final product is tied to a logical structure.”*

Looking back on the 1970s it seems surprising that so much space age work, based on Einstein’s theories of relativity and space-time, was taking place at the same time that many companies had de-emphasized the role of the individual.

This naturally led to the restructuring of the 1980s, which we now trace back as the rebirth of individuals as the creative force.

1980s

The 1980s saw the beginning of the hammering of nails into the coffin of left brain finance and accounting skills that were being applied to innovation. The last nails would finally be hammered tight during the latter part of the 1990s. In the year 2044, we understand that the death of left brain finance was the birth of right brain managerial accounting and finance as an innovation tool. Astride our light wave, we have learned how to presence ourselves in the timeless understanding that we have gained of the innovation process. This is how we are able to see the birth of innovation tools as if they were created today.

Restructuring meant that industry jettisoned individuals because they were no longer required for their left brain activities. Industry had not realized that the know-how of these individuals was a valuable asset, if it could be converted into usable blocks of knowledge. This is understandable because these incongruous thoughts required the holistic visionary right brain activity that had become fallow during the prior several decades.

The 1980s was the decade during which contract pro-

fessionals, the rule rather than the exception in 2044, emerged. These pioneering professionals shaped many of the projects of the 1990s and 2000s by developing their visioning skills and learning how to connect their left brain with their right brain through the language of mathematics and the digital processing capability of the personal computer.

Today, in 2044, we take for granted that our opportunities are infinite, since knowledge is infinite. Because humans are finite, we will never acquire all knowledge and since knowledge is the building block of everything, our opportunities are infinite as has been proven so dramatically during the first few decades of the third millennium.

During the 1980s, experiential modeling technology, that we take for granted in 2044, was invented. To ensure that this 100 year chronology of innovation is complete, I will quickly define experiential modeling as it was known at that time. Experiential modeling surfaced equations by tapping the judgment of individuals, who had spent decades working on left brain activities. This has the effect of stimulating the right brain function that we now know is the basis of innovation. But in the 1980s, experiential modeling was new, novel and incongruous to firmly established manufacturing industry paradigms.

1990s

The 1980s saw the end of the Cold War, the emergence of individuals as the center of innovation, the birth of managerial finance and accounting as a creative tool, and the further development of experiential modeling as a right brain vision stimulator. During the 1990s, we proved that experiential modeling surfaced right brain holistic pictures. If the picture, produced with these early experiential models, happened to be original, we learned that experiential modeling was a creative tool. If experiential modeling produced a picture that described nature, then experiential modeling served as a connector between left brain and right brain activities. In this sense, we learned how to use experiential modeling to facilitate the writing of equations. In either case (abstract thought or the writing of equations), experiential modeling was shown to have great value.

The 1990s also saw the end of communism, socialism and liberalism, which were the last vestiges of political structures that de-emphasize individuals.

I also remind the Innovation Society that 1993 was the 50th anniversary of the CDA, our precursor society that proudly claimed 50 years of taking technology to market. At that time we hadn't learned that innovation was the right brain, light wave, visioning process, that we know it to be in 2044 and consequently stressed the left brain activities of taking technology to market.

During the 2010s our society changed its name to the Knowledge Development Association (KDA), in recognition of the fact that knowledge is the building block of everything. During the 20s we changed our name again to the Innovation Society (IS), because not only is it our acronym but 'IS' means 'Being' or 'Presencing'.

2000s

Some of you were not born during the beginning of the third millennium, and most of you had not yet begun your innovation career. However, I want you to remember that much of what we now take for granted in our left brain/right brain innovation profession was developed during the first decade of the third millennium. You should also know that those early pioneers had mastered our technique of viewing innovation astride a light wave. As such, for those who had developed their right brains, there was no separate past, present or future. There was only presencing. Those pioneers, who are no longer with us, would therefore not be surprised at our innovation profession in the year 2044, because astride their light wave, they are actually still here.

Until this point in the chronology, I have stressed right brain activities; however, it was left brain activities that produced the virtual reality technology and processes that we now rely on to describe our right brain visions. Virtual reality spawned three distinct skill sets that are crucial to the world's economy. These skill sets are:

- left brain activities that produce goods and services efficiently and reproducibly.
- right brain activities that vision knowledge blocks

required to invent and produce tomorrow's goods and services.

- left/right brain connectors to communicate between left brain and right brain activities.

The decade of the 2000s also saw the rapid and dramatic change of the role of management. Prior to this time, management was seen as the discipline that delegates and empowers individuals to perform left brain activities efficiently. This discipline had to change shortly after it was recognized that individuals are not only the center of innovation, but of all left brain, right brain and connector activities.

Since that time and clearly in 2044, management uses its left brain, right brain and connector activities to ensure that the unique interests of the owners of the company are pursued. Since most companies are owned by their employees who have developed their left brain, right brain, connector and managerial skills, there isn't any hierarchy. There is only the virtual reality of producing and visioning goods and services.

Individuals perform and develop their skills at different levels of ability. Therefore, there has always and will continue to be the opportunity for individuals to advance in society according to their abilities.

2010s

The 2010s or 10s, as we have labeled the second decade of the first century in the third millennium, finally saw education catch up with the needs of individuals. Many of the courses that have become required curriculum in 2044, were developed in the 10s by superbly experienced free-lance individuals who had returned to apply their innovation skills to education.

Courses like: left/right brain connectors, experiential modeling, knowledge characteristics, philosophical thought, managerial accounting and finance, presencing, visioning and fourth dimension statistical proofs, were developed during the 10s. Nevertheless, the fundamentals of language, mathematics, communication, art, history, religion, earth geography, space and the solar system are still the main stays of primary and secondary curricula.

Virtual reality technology, products, software and service caught and surpassed experiential modeling. During the 10s, it first became possible to circumvent the experiential modeling process by converting thought to mathematical equations, simultaneously with virtual reality experiences.

The need for new knowledge blocks continued to increase and as we now know will never be even partially satisfied. The 10s saw worldwide recognition that our opportunities are infinite.

2020s

New left brain skills continued to be required and hence were quickly developed with our refined right brain and connector skills. We learned during the 20s that right brain skills are difficult to learn, but when learned, are always the fastest, since they are used all-at-once, independently of time; connector skills are much slower, but still faster than all solely left brain skills. Left brain sequential work seems to be the limiting time dependent factor in the innovation process.

Throughout history, the time required to acquire skills has decreased continuously. This caused gifted visionaries to create and refine machines to replicate certain human skills faster, better and more reproducibly than the inventors of the machines. Left brain sequential skills were made dramatically more effective. A major effect of this creative work was to shorten the life cycle of all goods and services and the effective life of equipment used to make the goods. This meant that right brain visionaries had to presence themselves in plants with new types of multifunctional equipment, capable of handling short life cycles and changeovers in an efficient manner. This was an especially difficult task since it required the development of new materials and manufacturing systems that we had not yet experienced. Therefore, during the 20s we again saw right brain activities become limiting, which I am certain will happen whenever we move so far forward that there isn't any historical past. As Einstein learned in 1905, and some of us became aware of in the 1980s and 1990s, whenever there isn't any past there also isn't any future.

2030s

The 20s saw the reemergence of the limitation of right brain activities and raised questions concerning whether all of the detail required for individuals to write equations to describe holistic pictures exists prior to the writing of the equations. If data exists, so does equations, since data is really just the continuous iteration of equations. If equations exist, so does data, since the only thing we have to do to produce data is iterate the equation. It seems self evident that equations, which describe nature must exist prior to human discovery of the equations. On the other hand, equations which describe abstract human thought are original and consequently could not exist prior to human discovery. This is a problem that remains for us to solve in the 40s.

We believe that both equations and detail have always been present from the point of the creation of light. Since the time of creation, past and future have always been there since light exists and we know that when riding astride a light wave, future and past are the same. Since detail and equations exist, it makes sense to assume that those prepared minds, who wish to think intensely about a subject, can gain insights into very complex issues. We also believe that more than one person can consider the same subject from different perspectives. As a boy, Einstein thought about what the world would look like traveling at the speed of light. Dr. Leonard Shlain, in his book, [Art & Physics, Parallel Visions in Space, Time & Light](#), proved that it should not be unexpected that artists like Picasso, Duchamp, and Pollock also thought about the effects of light. It also seems plausible to us that artists may have been the first to consider the effects of light because their profession causes them to study subjects intensely. The key to innovation, as we began to learn in the 1980s, 1990s, and now know in 2044 is the intensity and thoroughness of the visioning process.

2040s

This brings us forward to today, the year 2044. Our 100 year chronology of innovation has cycled back and forth from left brain to right brain activities and connectors. 100 years ago, we felt limited by skill sets and left brain activities.

During the next 40 years companies jettisoned the skills they had acquired before they realized the latent potential of right brain activities and that these activities were the limiting factor of the innovative process. This released individuals, who developed their right brain activities.

During the next 40 years we refined and developed our right brain activities until they were no longer the limiting factor and left brain sequential activities again became limiting. We have learned that left brain limitations are always rapidly overcome by our developed right brain activities.

Two decades ago, we reached the hurdle that we are still trying to overcome. Namely, we have approached the limit of our historical background. Since we don't have the clear past, required for us to vision the continuous stream of goods and services that we have become accustomed to expect, some of you are begin-

ning to say that we have reached the limit of innovation.

On the light wave of innovation, no past means no present and future. But our innovation theory teaches that light is a constant from the beginning of creation. Since light exists, so do equations and data, the very food we need to accelerate the innovation process. Intense thought is the prerequisite and our challenge is to use our developed right brains to envision new right brain activities. This will certainly lead us to a new stream of left brain sequential goods and services and probably another period in which our left brain activities are again limiting. Ladies and gentlemen the future has never been brighter.

Now we want you to close your eyes again. When you see the dot of blue light, hop on, but just as you get on, get off again and if you followed my instructions carefully, you will be in the Year 1994. Look on either side of you and in the front and back. If anyone who joined our ride is missing, perhaps he or she got off too early or too late. In any event, the journey we have taken together has probably awakened these individuals to the necessity of developing their right brain visioning abilities. Otherwise, they will be present in space time forever. OOPS, we shouldn't have said forever because that word implies a time limitation. ■

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William Roy Kesting has a BS in Chemistry and Mathematics from Manhattan College, an MBA in Finance from Fairleigh Dickinson University and 15 years additional graduate course work in Chemistry and Chemical Engineering. Mr. Kesting has over 35 years senior management and consulting experience in research, general management, innovation, technology assessment and marketing in a variety of industries. Mr. Kesting is the founder of Kesting Ventures® Corp. and the inventor of experiential modeling technologies and the Market Value System, which deciphers the mechanism by which markets make 'buy decisions'. Since 1984, Mr. Kesting has personally completed over 70 major innovation programs for clients around the world.

Kathy Woods has a BFA in illustration from the Rhode Island School of Design. She has over 15 years experience in communications, including positions of Art Director at GOLF Magazine and GAMES Magazine, and Vice President and Principal of Woods Creative Services. Mrs. Woods has contributed to KVC's technical communications since its founding in 1984.

Kesting Ventures® Corp.

Kesting Ventures Corp. (KVC) has developed experiential modeling as an innovation tool to surface complete pictures of complex technical, market and/or business subjects. KVC's programs are conducted by an experienced executive, in conjunction with work on an urgent and important project. KVC's programs involve unique tools, methodologies and skill sets to accelerate the formulation, development and implementation of business blueprints. Start®, Extend®, TMP®, and Kesting Ventures® are KVC's registered trademarks. KVC also has extensive literature, templates, computer software and knowledge based program copyrights.

Woods Creative Services

Woods Creative Services specializes in the design and production of complete communications programs including: Corporate identity, brand name and promotion, technical literature and manuals, advertising, exhibit design, and multimedia presentations.

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