


Fall 1980

The Gamut: A Journal of Ideas and Information, No. 01, Fall 1980

Cleveland State University

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CLEVELAND STATE UNIVERSITY

THE GAMUT

A JOURNAL OF IDEAS AND INFORMATION

Number 1

Fall 1980



ON THE COVER: "Jacknifed," high-contrast print by Martin F.W.J. Szutter. Martin Szutter, a native of Cleveland, began work as a graphic artist immediately after graduation from Lakewood High School. In 1968 he set up as a free-lance artist, supporting himself by his paintings, photography, and printmaking, and also doing preparation for offset lithography and photoscreenprinting. He has developed original styles and techniques especially in photographically derived silk screen prints, of which the cover picture is an example. He has exhibited paintings, prints, and photographs in over 150 juried shows in this country and abroad. His work may be seen in The Guild Shop on Huron Road.



Martin Szutter

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Anthony Addison *on opera*

Patrick de Winter *on a prized work from the Cleveland Museum of Art*

Stuart M. Klein *on modern management in Cleveland city government*

Walter T. Olson *on visiting the planets*

Helen Weinberg *on contemporary fiction*

plus five more articles and graphic art

AN INTRODUCTION . . .

Northern Ohio can boast a remarkable concentration of nationally recognized leaders in diverse arts, sciences, and professions, who have interesting things to say about their areas of expertise; it also has a large population of educated people who should enjoy reading substantial, challenging articles on subjects outside their own vocations. *The Gamut* proposes to serve these readers by providing a showcase for the best ideas and achievements of the region, and a meeting place for various disciplines and fields.

The Gamut takes its name, as many readers probably know, from the medieval term for the musical scale: *gamma* and *ut* were the first and last notes. In other words, *The Gamut* covers an entire spectrum of subjects for the serious reader. We believe that the lawyer, the physician, the salesman, the painter, the engineer, the musician, and the company president who know what is going on outside their immediate circles are not only wiser and happier human beings but more effective in their particular work. *The Gamut* can help every reader transcend the intellectual limitations into which our daily activities inevitably lead us.

Readers will find valuable not only the contents of the articles, but also the different approaches taken by the authors. How, for example, does a vice president of a large corporation address a complicated economic problem? What are the thought processes of an intensely committed theatrical director or of a specialist in demography or popular culture? What questions do they ask and what are their assumptions? Because articles in *The Gamut* are written by the experts themselves, the reader can gain new insights into the procedures and terminology of each discipline.

The Gamut pays a rare compliment to its readers: it is neither watered down to a low common denominator nor hyped up to artificial sensationalism. The contents are sometimes demanding, often rewarding, never patronizing. We do not promise that the articles will be immediately comprehensible in every detail to every reader, but we do pledge our efforts to make them timely, significant, substantial, and authoritative.

. . . AND AN INVITATION

The editors hope that *The Gamut* can attract the best minds of this region as both readers and contributors. We encourage readers to send us their comments and suggestions for future articles, and we welcome submissions of sharply focused, well documented articles relating to any profession, science, or art; this invitation includes creative works — fiction, poetry, photography, such other visual and plastic works as can be represented in black-and-white illustrations, and even musical compositions.

The Gamut also invites brief notes, letters, comments, additions, and corrections, to be published in a special section called "Back Matter."

Finally, dear reader, even the loftiest journal cannot live on good wishes alone. Oppose mediocrity! Support intellect! Subscribe to *The Gamut*. A year's subscription costs less than a tank of gas, and it will propel your thoughts on a veritable Grand Tour of enjoyable and valuable reading.

Gene Kangas

NORTH AMERICAN DECOYS AND FOLK SCULPTURE:

The Utilitarian and the Aesthetic in a Self-Taught Art Form

The word "art" to most people suggests an extreme degree of sophistication, conjuring up associations of marble-and-gilt museums, avant-garde openings, and orchestra players in tails and long black gowns. There is some basis for this impression: support of the arts by the wealthy usually follows the lead of connoisseurship, and artists with formal training tend to work within the currently accepted aesthetic criteria. But the creative impulse is not limited to the wealthy and the cultivated. Creativity is an innate human urge that appears in every social, economic, and geographical setting. One example which can be studied is folk or primitive art — terms usually applied to works by artists who lack academic training — which has been found in every time, place, and society of our continent's history.

This irresistible impulse to "make things" can be illustrated by the more or less spontaneous "environmental" folk works that are found in many locations. Among the better known of these are Simon Rodia's Watts Towers in Los Angeles, S.P. Dinsmoor's concrete Garden of Eden in Lucas, Kansas, and Fred Smith's Wisconsin Concrete Park in Phillips. These complex outdoor constructions took years in the making and were an obsession with their makers.

Harry Andrews of Loveland, Ohio, designed and built a castle made by casting concrete blocks from discarded cartons; in Fresno, California, Baldasare Forestiere dug his entire underground home out of the earth — all by hand; and Will Garrett, a retired Rockingham, North Carolina, dentist, constructed an A-Frame non-functional house from castoff objects of every conceivable nature. The motivations of these folk artists were varied. Some worked on their projects for over fifty years, while others began only when they neared retirement. Some of the projects make political statements or document historical figures and times; others have a religious basis.

Though folk or self-taught art at times (but not always) lacks technical refinement and often is not in step with the current fashions in so-called high art, it can nevertheless express original aesthetic impulses that are both powerful and subtle. The diverse environmental works just mentioned achieve effects that have only just begun to be explored by artists such as Cristo and Noguchi. Strong geometric designs of colorful nineteenth and twentieth-century quilts, especially those of the Amish, predate academic optical and color-field painting. Attempts at hyper-realism,

Gene Kangas, Associate Professor of Art at Cleveland State University, has recently completed two major public sculptural monuments, one commissioned for the Cuyahoga County Justice Center, and the other at the Frank J. Lausche State Office Building. His pictorial steel sculpture has been exhibited throughout the United States and won many awards. A native of Fairport Harbor, Ohio, Kangas received a BFA from Miami University of Ohio and an MFA from Bowling Green State University. He has written a number of articles on North American folk art; some of the pieces from his own extensive collection are used to illustrate this article.



now fashionable in contemporary painting and sculpture, have been seen in primitive painting and folk art and in the current generation of decorative decoy carvers discussed later.

A proper appreciation of folk art requires some adjustment of existing critical criteria. One problem that arises is the antiquarian pleasure and appeal of older primitive works. Nineteenth-century folk works may seem much more attractive than modern ones of equal merit. But are twentieth-century works any less valid than older ones? Each reflects the ideas, dress and customs of its time. The earlier pieces have, through age, developed a patina that has mellowed the original bright colors and softened once crisper edges, while contemporary works still retain their newness, bright colors, newly made cuts, and current imagery. In the same way, those who appreciate antiques have been conditioned to the acceptance of, or actual preference for the mellowed appearances of earlier works. In contrast, those who purchase new academic art are attracted in part to the pristine condition and brightness of its imagery. We can then ask: Is contemporary folk art inferior to contemporary academic work? The answer should be no. Quality is not determined by the time in which a work is created but rather by an ability to stand up to an informed judgment (which often takes years to become established). A few historians feel that contemporary folk artists cannot exist in today's world of easily accessible mass media without being influenced by it. Yet we know that there was extensive travel as well as technological sophistication in the late nineteenth century, and works of folk art from that period have been unconditionally accepted by all as valid primitive art. Mere exposure to mass media is not enough to train an academic artist. In truth, anyone with or without technical skills, and with or without the influence of others, can create; but without the disciplines of academic study, the results will usually be in some way naive. Art training may well be the only major difference between academic and self-taught artists.

A number of false or questionable criteria have been applied in the evaluation of various types of folk art. For example, it is wholly acceptable for individual folk sculptors to produce images which are either technically crude or technically sophisticated. On the other hand, technical expertise is

an obligatory criterion in the evaluation of fabric art such as patchwork and applique quilts. Crudely fabricated quilts are seldom, if ever, considered important works of folk art. A double standard exists. Another stereotype applied primarily to folk art is that a particular piece under consideration should have that certain "folk look," which usually means staring-eyed hydrocephalic youngsters such as are seen in early portraits; architecture wildly out of perspective; or, in sculpture, stiff-jointed, oddly proportioned stick-like figures. These have been the popular image types; but why should art works created by so many different types of people out of a whole assortment of materials have a certain expected "look"? The primary reason is that such pieces are easier to market, since having a "look" eliminates any need to make significant aesthetic judgments. Connoisseurs of naive art should strive to overcome stereotyping and should try to understand and evaluate each piece on its own merits.

Several basic criteria exist for most good works of art. First, a personal idea is absolutely necessary; and second, the person in pursuit of that idea must work consistently with the chosen materials and within his or her technical capabilities. It does not matter whether the medium is chewing gum or crystal or a combination of the two as long as it is consistent with the initial idea. Consistency and content are fundamental to all art; quality is achieved in the way the artist manifests his thoughts through his materials into reality.

Another obstacle to properly judging folk art is that it is often connected with some utilitarian function. Many people have a developed prejudice that beauty and usefulness are incompatible. Academic artists need no excuse to devote weeks and months to their work beyond the fact of producing a work of fine art, which may be exhibited in a gallery or mounted in a public building. But the naive artist normally cannot afford to devote so much time to his creation, since he usually earns his living at another occupation. He may even feel guilty about wasting time producing a useless picture or sculpture that is merely pretty, and the guilt is often reinforced by comments from family and friends. Still, the urge to create manifests itself in one way or another. In interviews some naive artists have justified their work by saying God told them to do it. Others call it a

hobby and not anything special, certainly not art. Most often the creative impulse is channeled into some useful form, such as quilts, stoneware, furniture, certificates, weathervanes, or — the main concern of this essay — hunting decoys.

The decoy is a particularly interesting form of art for several reasons. It is one of the two folk art forms recognized as being indigenous to America, the other being jazz. American Indians were the first men known to use these hunting lures; the oldest extant examples are those found in Lovelock Cave, Nevada, dated circa 1000 A.D. Decoys are linked to the geographical areas in which they are made: the birds most often imitated are the tasty species that are hunted in the particular region.

The well-known rule of academic art that "form follows function" holds strikingly true for decoys. The hunter-carver creating his decoy rig was influenced by the many special circumstances of his area: water conditions, available materials, the species to be hunted, and the hunting methods, as well as the technical abilities of the maker. Decoy designs, like boat designs, vary according to their purpose. Hunting decoys made for the choppy lakes and fast rivers of the North use sturdier materials and designs than those made for the quiet Louisiana bayous, which are delicately

styled of light woods. Ice spear-fishing decoys found in the midwestern and north-eastern states are unknown in warmer climates where other fishing methods are used. The designs of regional decoys that worked best became models in a process of evolution over many generations. While each carver sought to improve his designs, he continued to work within the framework imposed upon him by natural circumstances. That is why a decoy from Connecticut looks different from one made in New Jersey, or Louisiana, or Michigan.

Perhaps most interesting are the creative processes that can be observed in decoy making. Originally designed as a practical simple means of attracting edible game, decoys have recently evolved into a specialized and technically complex art form with enthusiastic collectors, competitions featuring "decoratives" (non-functional pieces) as well as "field" or working decoys, seminars, and several magazines, such as *North American Decoys* (Hillcrest Publications, Spanish Fork, Utah). Thus decoy carving, along with other animal sculpture, has become a means of expressing a love of the beauty of wild creatures rather than a means to hunt them. An extremely large percentage of all folk art is concerned with a depiction of life. This may be one reason for its growing popularity.

Originally, working decoys had to embody only so much of the essential character of the waterfowl as was needed to attract the hunter's prey, and the decoys intentionally lacked many naturalistic details. Few working decoys were intended as literal representations; rather, they were symbolic forms created in the minds of the carvers. Many decoys — especially earlier examples — possess a grace and are elegantly simplified in a manner reminiscent of the academic sculptor Constantin Brancusi, who sought ideal forms that embodied the essence of life.

The earliest American Indian decoys were constructed by shaping bundles of tule or native rushes, stained with natural dyes and stuck with feathers. Some of them were quite convincing images of canvasback ducks. The fact that these decoys were stored in a cave in a carrying basket suggests that they were being saved for future use. They must have worked. The Indians are also believed to have utilized ephemeral decoys made by stacking stones in the shape of ducks or molding mud into



Crow, maker and date unknown, from Massachusetts and the 19th Century. 20 1/2" x 8". Carved and painted wood with glass eyes and applied wings. Crow decoys were often used to lure other crows toward the farmer's shotgun. As an artifact of hunting history, this crow is a fine example of both the functional and the aesthetic. Private Collection.

simple bird forms, again adding either sticks or feathers for effect. Thus, the earliest known decoys were created directly from readily available and familiar natural materials and retained the qualities inherent in those materials.

As settlers began to practice decoy making, constructing simplified images from assorted pieces of wood, they continued to adapt natural materials. As they walked through the woods, they must have noticed, in fallen branches, sticks, and roots, forms that resembled snakes, turtles, and the heads of birds. It was Mother Nature's own Rorschach ink-blot test. Sculpture made from such forms has an immediacy that sets it apart from conventional carving; it often embodies a genuine feeling for nature that has developed from long observation of wildlife, and an appreciation for the natural flow or twist of a particular stick. Decoys which utilize found natural shapes, especially for the head and beak, are called "rootheads" or "knotheads," and they often display a special facility in adapting a unique material to the sculptured form.

The roothead was a ready-made form. Its wood grain carried strength through every part of the neck and head, preventing major cracking. Because they are made from unique "found" formations, rootheads are normally thought of as one-of-a-kind; yet they must have been made in a certain number to suit their makers' needs. The ad-



Stick-up Mallard Drake. Probable carver "Frank Pl-z-" signed on bottom. 16 1/2" x 6" x 19". The carving and painting styles are unmistakably those of the Illinois River region. This is an uncommon full-bodied field decoy which may also have been used on the ice. Its construction is a three-piece laminated body, hollow, with separate head and neck, glass eyes, and extensive wing and tail carving. Private Collection.

BRANCUSI, Constantin. *Fish*. 1930. Gray marble, 21 x 71"; on three-part pedestal of one marble and two limestone cylinders, 29 1/8" high. (Similar to much smaller marble *Fish*, 1922). Collection, The Museum of Modern Art, New York. Acquired through the Lillie P. Bliss Bequest. An academic work which employs simplified form similar to that found in some naive sculptures such as decoys.



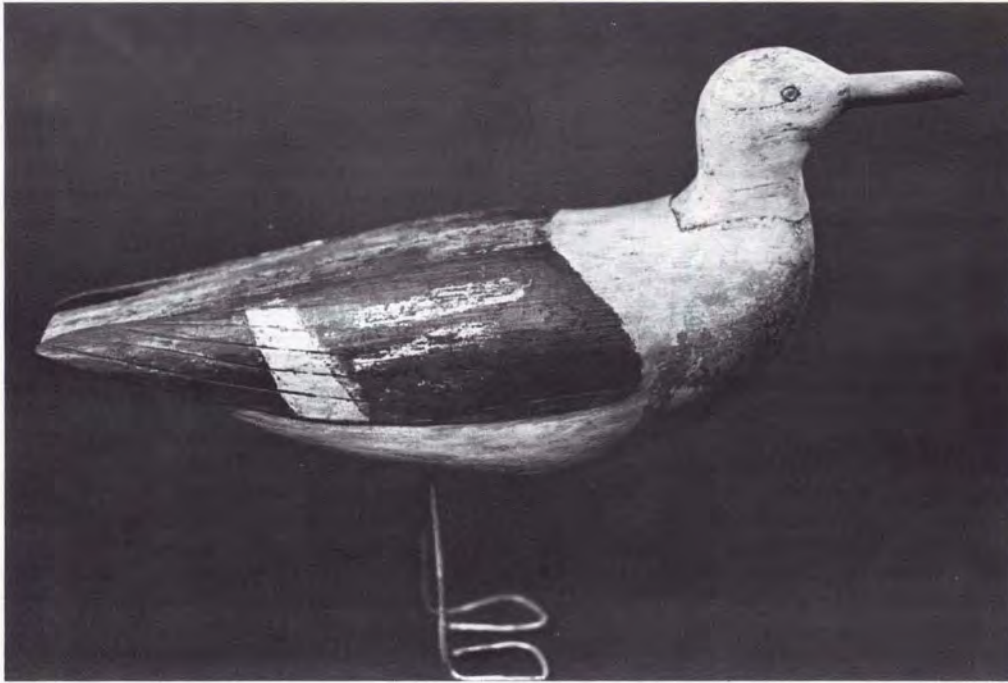


Loon, maker and date unknown, Maine or Nova Scotia origin probable. This rare decoy was possibly made in the 19th century. It is a "rothead" applied to a very simplified, streamlined carved body in a swimming attitude. Loons were not hunted, but the decoys were used to lure other ducks since all knew the loon to be a wary bird. Courtesy of the Shelburne Museum, Shelburne, Vermont.

Whistling Swan used as a "confidence" decoy on Back Bay, Virginia, in the Twentieth Century. Construction is canvas over wire, painted. The head and bottom board are wood. 30" x 23". The use of such materials made this huge bird lighter and easier to carry. Canvas birds were traditionally used on the coasts of Virginia and Massachusetts. Private Collection.



Canada Goose by Joseph Lincoln, Accord, Massachusetts (1859-1938). 38" x 19". Commonly referred to as a "slat goose," this type of goose decoy employs very large wooden slats as the sides and back of the lure. They are bent and nailed to the frame, and then painted. The head and neck are carved out of solid wood in the fashion of most decoys. Such large decoys were used 1/2 to 1 mile offshore to draw the high-flying goose flocks toward the hunter and his larger rig of decoys near land. This usage accounts for two other nicknames for this oversized bird: "milers" and "loomers." Private Collection.



Sea Gull by Gus Wilson, Maine, c. 1920. 18" x 12". Carved and painted wood with inset head and wire legs and feet. This bird was made by a well-known decoy maker as a non-functional gull to decorate fences, porches, gates or pilings. He gave many to friends and neighbors. Private Collection.

Sea Gull by John McLaughlin (Arizona, but carver originally from Bordentown, New Jersey), c. 1973. 20" x 7" x 8 1/2". This non-functional waterfowl carving reflects McLaughlin's extensive earlier carvings and influences from the New Jersey area, as he retired to Arizona for health reasons in his later years. Most decoratives today have more elaborate feather carving and detailed painting which renders them useless for decoying. Private Collection.



vantages of simplicity and strength offered by natural twists and joints were too obvious for early decoy makers not to exploit. Not only did they carve birds of most species, but they also used this method to create decoys with unusual head positions such as swimmers and "feather pickers," to be used either as stickups or floaters.

The roothead decoy has been employed throughout this continent by many unknown and a few known carvers. One of the most famous was Nathan Cobb of Cobbs Island, Virginia, who used tough sections from either locust or holly root for his gestural decoy heads. For extra strength, he added oaken bills to some, splining them from the back of the head. Many of his well-crafted decoys date from before the Civil War and have survived after years of service. He certainly possessed an imagination capable of seeing countless head positions in the driftwood branches he refined to eliminate the "stick" characteristics.

Wood is the most common material used for the making of decoys. While a wide variety of types have been used, cedar and pine predominate. Other materials and variations on construction methods are documented. For example, in the Back Bay area of Virginia, large bird decoys such as swan or geese have been fabricated by an ingenious method of stretching canvas over a bent wire frame. Onto this lightweight yet durable body is attached the head. Canvas has also been sewn into hollow duck shapes, stuffed with kapok, and then waterproofed. Another unusual but practical construction method is that of the greatly oversized slat geese used in Massachusetts. Thin strips of wood attached to a shaped wooden framework create the effect of large Canada Geese. Joseph Lincoln of Accord, Massachusetts, is probably the most recognized expert in this technique. Black socks stuffed and thrown into trees have been used to attract crows. Oil cans painted black and white have brought in canvasbacks and bluebills. A wide variety of common materials and a wide range of techniques and degrees of care in construction all may be successful given the proper circumstances.

As duck decoy carvers spent more and more time preparing decoys for a growing number of yearly competitions, the hunting block began to be replaced by fancy display birds. Working decoys take only a few hours to produce, while each competition



Canvasback Drake by unknown maker, Michigan, c. 1900. 16 1/2" x 6 3/4" x 7 1/2". One of only 15 known birds of this particular style employing the "pistol grip" head and neck design. This unique style was to aid the hunter in handling the decoys; however the necks were so small that all broke under the strain of usage. Although this captivating design was to prove impractical, the wide-bodied bob-tailed "block" was efficient on open rough lakes, the lack of a tail preventing breakage when stacked. Private Collection.

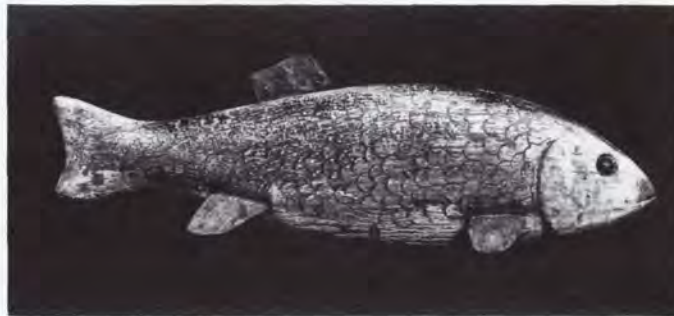
carving requires hundreds of hours. The competitive show era has created new decoy concerns. Newly acquired information and technical facilities enable carvers to develop their blocks into more and more exact duplicates of live birds. With the advent of meticulous taxidermy-style carving, feather insertions, and the painting of individual feathers and minute detailing, a new period of the decorative decoy came into being in the mid-1960s. Function was no longer important.

Although these highly decorative and realistic bird sculptures seem distant from the first working decoys, they are direct descendants, bound through a long lineage of technical improvements and aesthetic changes. Today a variety of new paths are being opened by contemporary carvers that go considerably beyond decoy traditions. Sculptural examples depict such complex scenes as birds in flight, in the grasp of predatory fish, or fighting in mid-air. These ideas are but a few of the many that are being explored throughout North America by the new generation of decoy artists whose roots are tied by each preceding generation to the original decoy makers. They are learning from the past and are using the tradition each in his own style.

Fish decoys of Eskimo origin. *Top:* 9 3/4". Collected prior to 1898 by the Alaska Commercial Company. *Middle:* 6 1/4". Collected by Charles L. Hall in 1895. *Bottom:* 7". Collected by Charles L. Hall in 1895. All are carved bone and designed to be used for ice spear fishing in Alaska. All are now in the Collection of the Lowie Museum of Anthropology, University of California, Berkeley, which kindly furnished the photograph.



Fish decoy by Abraham Dehate, Mt. Clemens, Michigan, c. 1920. 14" long. Carved and painted wood with metal fins. This early lure by Dehate is an outstanding example featuring both finely carved eyes and scales with an inletted bottom board which conceals its lead ballast. Private Collection.



In addition to carved replicas of waterfowl, folk artists have depicted almost every conceivable wildlife form. The range of technical competency and sophistication in animal carving is as wide and varied as the range of decoy bird images.

While duck decoys were used for hunting on the surface of the water, another means of hunting food was developed in the frozen waters of North America: the fish decoy. Carved replicas of fish were used as tools to enable spear fishermen to lure large game fish to be speared from above. The traditional process of making duck decoys in various regions resulted in quite obvious varied regional styles directly due to the surface water conditions. The fish decoy, on the other hand, is used *below* the surface of frozen water. Since underwater conditions

from region to region are more alike than dissimilar, it is unlikely that major regional styles will be discovered beyond slight variations in form as introduced by individual makers. These important personal interpretations are what set fish carvers apart. The interpretive element is the basis for an expressive art statement. Fish decoys used in frozen waters were commonly made of wood and boldly painted. The majority of fish were carved and used during the depression years of the 1930s. However, numerous early Eskimo fish decoys have been collected in Alaska prior to 1900. Most of these were carved from bone with inlaid eyes, carved gills and scale patterns. These Eskimo lures are the likely predecessors of twentieth-century fish decoys.

Pit-Fighting Bull Terrier by Nobil Stuart, Medina, Ohio, c. 1945. 34" x 26". Carved from cherry roots and branches, a single piece except for tail, ears, and teeth. The finish is clear varnish over the natural wood. A most interesting example of "root sculpture." Mr. Stuart attached the terrier to a base with wheels, and in his later years would wheel it from room to room with him. Private Collection.



Bird by Angelo Testa, Ravenna, Ohio (1893-1978), c. 1950. 9" long x 9 1/2" high. Mr. Testa's forte was incorporating found objects into two and three-dimensional works of art. This bird in the shape of a dove is made of carved wood and surfaced with applied stones and glass. The gnarled root-like object on which he stands is another "found object." Private Collection.

Root carving and other imaginative adaptation of common materials in animal sculpture are not limited to decoys. Nobil Stuart of Medina, Ohio, passed by a cherry tree on his farm for fifteen years always feeling strangely attracted to its shape. Suddenly one day he realized that the tree was formed in the shape of a dog. He cut down the tree and carved away to let the form take shape. A pit bull dog emerged to which he had only to add ears, eyes and teeth for the finishing touches. Stuart's root terrier is the result of the recognition of an existing form in nature, and then the natural development of that form to its utmost.

Root shapes are one natural source of influence on the final form a work takes. In each case, what is found is directly related to who is looking. Angelo Testa of Ravenna, Ohio, loved to be outdoors, spending many hours in his garden. He collected and saved leaves, seeds, stones, bits of glass, shells, sticks, string, etc. These materials were later used in the creation of complex, heavily textured, two-dimensional collages colored by their natural components. The surfaces of Testa's three-dimensional forms are also built up of many added colorful and textured fragments. For example, his carved birds are perched on sections of driftwood or burl. The surface of each wooden bird is totally covered with small pieces of colored string, creating a fuzzy look, or with hundreds of tiny colorful pieces of stone and



Lynx by Felipe Archuleta, Taos, New Mexico (1910-). 33 1/2" high. Mr. Archuleta makes caricatures of animals often over-sized. This enormous lynx was carved from the trunk of a cottonwood tree. It has an open mouth with exposed teeth and tongue (typical of the carver), gaudily painted body, plastic for toenails, and painted rope for body hair. Private Collection.

glass, creating a mosaic effect. Like many other artists, Angelo Testa creates using an extensive palette of materials; the one constant material that can be found in all of his works is wood.

Contemporary folk artist Felipe Archuleta of Tesuque, New Mexico, demonstrates his consistency of concept and end product in his portrayal of animal life by selectively using a mixture of common materials such as electrical wire for the long slender tongue of an anteater and shredded rope for its shaggy tail and hairy body: a discarded deer hide gives his ferocious life-sized badger its ground-hugging furry body. The strength of Archuleta's ideas (given by God) enables him to transform with a minimum of tools these diverse materials into life-like and life-sized creatures, each endowed with its own personality. Each is an impressionistic caricature of sorts and is made economically with materials on hand.

Some artists create images with a more extensive knowledge of their subject, as did Howard Quiggle who was a lifelong professional horse groom at local northern Ohio race tracks. He knew the complex muscular body of the horse both at rest and at its peak of performance. At his chosen occupation, he had tended every muscle and bone horses use. When he whittled small models of his beloved racers, each detailed equine sculpture exemplified his special first-hand knowledge of horses and tracks.



Horse by Howard Quiggle, Ohio, c. 1950. 15" x 13 1/2". Painted wood with handmade leather halter. Quiggle carved many horses with an expert eye and hand. His many sculptures showed horses singly, in pairs and in teams — draft and thoroughbred, standardbred and ponies. Private Collection.



Land-locked Salmon by Phillippe Sirois, Maine, (1893-). 23". This distinctive full-bodied salmon has a gaping mouth with tiny nails for teeth and incised lines suggesting scales. The contrasting silver, black and white painting is a difficult combination of colors but has proven successful for Sirois. These salmon are natives of Maine and one of the most important coldwater game fish. Private Collection.

Phillippe Sirois of coastal Maine is an accomplished North American folk artist, a fact attested by the significant body of high-quality carvings he has produced during the past half century. His fish carvings are his own design in several respects. They can be related to the works of late nineteenth-century trompe l'oeil painters such as William Harnett and Alexander Pope who, among other expressions, attempted to render "eye-fooling" hanging game paintings. Sirois' bas-relief fish carvings are a documentation of the sport of fishing in the true trompe l'oeil sense. Each of his fishes is an exact scale carving and painting of one he caught primarily to eat; and at first glance, Sirois' fish carvings appear to be as real as the fish he caught. They appear totally lifelike in all aspects, but in reality they are created in a stylized and almost mechanical manner especially in their illusionistic detailing. Similar design concepts are found in working duck and goose hunting decoys (he has carved and repaired a few) which may look surprisingly real from a distance, as was their intention; but upon close inspection most are found to be an economical combination of basic form and simple paint patterns.

Sirois has carved not only fish, but also other wildlife as he branched out into making sculptural wooden impressions of a number of animals and birds. He has successfully intermingled his intimate life-long

loves of nature and fishing into a sportsman's art form. It is an honest portrayal of his life's direction, and represents the best artistic qualities possible given his circumstances. His special knowledge was received informally over a lifetime of looking, learning, and most importantly, application.

Thus decoys and related folk sculpture illustrate a more generally applicable truth about naive art. It is not the degree of skill or imagination that distinguishes naive from academic art, but rather the different variables that determine the forms each type of art takes. Works of academic art are classifiable because they reflect certain elaborate and more or less intellectually transmitted fashions or traditions, not only in matters of technique, but also in choice of materials and subject matter. We can usually identify an academic artist by his relation to a known school or tradition. The naive artist, on the other hand, though he may be influenced by other craftsmen, is much more the creature of the environment in which he works — the landscape, the commerce, the recreation, the religion, and the available materials. Consequently, we usually identify the folk artist not by his school but by his region. The beginning of an intelligent understanding of folk art is the recognition that it must be judged by its own appropriate criteria, not by the conventions of any school of academic art.

Christopher D. Geist

THE SORDID SOUTH¹

Racism, Sex, and Violence in Recent Popular Novels of the Antebellum South

Since the appearance of Kyle Onstott's *Mandingo* in 1957, the image of the antebellum South in popular fiction has been shifted away from the old "moonlight and magnolias" picture painted by writers like Thomas Nelson Page and Margaret Mitchell. We now find paperback racks bulging with novels depicting a far more sordid South, a miasmatic wasteland of slave-breeding plantations, populated by vicious masters, their drunken wives, generously endowed "breeding studs," and eager and wanton "breeding wenches." The white-columned mansions and mint juleps are still present, but "sucker pens" have become more characteristic structures and sex is now a more popular pastime than drinking

on the fictional antebellum plantation. It would be easy to scoff at and ignore this literature as "trash," which most of it undoubtedly is, but this would be a mistake. Because of its wide availability and voluminous sales, this body of fiction helps to perpetuate erroneous popular conceptions of American history. Further, many of the characterizations and incidents in the novels can only be classified as racist. This fiction, based as it is on a vulgar and poorly informed version of the antebellum South and folk beliefs and misconceptions related to blacks, may be an important force in the perpetuation of racial hatred in the recent past.²

¹I wish to thank the National Endowment for the Humanities for providing a Summer Stipend with which I had the opportunity to prepare this article. A shorter and slightly different version of this paper was presented to the 1980 meeting of the Southern Historical Association. I also wish to thank my colleague, Dr. Jack Nachbar, for valuable suggestions made during the preparation of this study.

²The prototype for the recent plantation novel is, of course, Kyle Onstott, *Mandingo* (Greenwich, Conn.: Fawcett Books, 1957). This volume and its many sequels have shaped the literature ever since. There are numerous imitations which come so close to the original as to verge on plagiarism. Two recent studies of *Mandingo* and its sequels, the "Falconhurst Series," are Earl F. Bargainnier, "The Falconhurst Series: A New Popular Image of the Old South," *Journal of Popular Culture*, 10 (Fall, 1976), 298-314, and Marsha Marks, "Two Worlds that Never Were: Falconhurst and Gor," *Studies in Popular Culture*, 1 (Winter, 1977), 56-66. However, Bargainnier and Marks approach the works primarily from a literary perspective and say far too little on the subject of popular history. The best treatment of the "moonlight and magnolias" tradition, at least through the mid-1920s, is still Francis Pendleton Gaines, *The Southern Plantation: A Study in the Development and the Accuracy of a Tradition* (New York: Columbia University Press, 1924). A more recent and related study is Jack Temple Kirby, *Media-Made Dixie: The South in the American Imagination* (Baton Rouge: Louisiana State University Press, 1978).

The post-*Mandingo* novels of the Old South may be examined collectively as a popular literary formula, what John G. Cawelti refers to as "a conventional system for structuring cultural products." Novels within a given formula have basic and significant similarities in setting, characters, patterns of action and theme. Although these similarities might suggest that formulaic fiction lacks depth and meaning for students of culture, nothing could be further from the truth. Each formula, be it the hard-boiled detective formula, the western formula, or, in this case, the plantation formula, carries out several cultural functions simultaneously. For example, on the most simple level formulas provide a readily identifiable system for structuring escapist entertainment. They also, as Cawelti explains, "enable the audience to explore in fantasy the boundary between the permitted and the forbidden," reaffirm existing cultural attitudes, and provide assistance in adapting changing cultural values to popular literature.³

In short, formulaic narratives are keys to understanding interrelated patterns of assumptions which reflect, and possibly even shape, cultural values. Thus, formulaic narratives are best studied within the context of the formula from which they emerge. Though it might be profitable and intellectually stimulating to dissect an individual novel in minute detail, we would learn far more about the novel's author and that single work than we would discover about the cultural milieu out of which that narrative emerged. When the same novel is examined alongside numerous others within its formula, however, we begin to discern cultural patterns of some importance. The repetitious, uncomplicated, and standardized structure of popular fiction has been condemned by many critics. Yet when any formula is examined in depth the conventional elements which appear in a majority of the works within that formula provide clues to major cultural assumptions. Thus, the very source of the critical condemnation of popular fiction is

³John G. Cawelti first outlined the formulaic approach to popular literature in "The Concept of Formula in the Study of Popular Literature," *Journal of Popular Culture*, 3 (Winter, 1969), 381-390. He then practiced on a single formula, the western, in *The Six-Gun Mystique* (Bowling Green, Ohio: Popular Press, 1970), and refined the approach in his important and masterful *Adventure, Mystery, and Romance: Formula Stories as Art and Popular Culture* (Chicago: The University of Chicago Press, 1976). Formula analysis has become one of the most common approaches in popular culture studies largely because it offers a means to approach vast volumes of material and does not limit the inquiry to a single dynamic of popular appeal.

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also an important source of strength in the study of popular literary formulas.⁴

In order to save space I have outlined the characteristic elements of the plantation formula in the table below. Each novelist, of course, will select or omit specific details, alter certain relationships, and bring his or her own talent to bear on the material. Yet it is safe to say that all plantation novelists will utilize the formulaic setting and many of the formulaic characters. There will almost always be a tension between white and black characters, and this tension is normally based upon interracial sexuality. These patterns, repeated again and again, make up the significant — and at times disturbing — cultural patterns which shape the popular literary version of the antebellum South.

The primary documents for this study comprise my collection of two hundred plantation formula novels written since 1957. My comments are based on the collective portrayal of the antebellum South in these sources. I will concentrate, therefore, not on the achievements and failures of individual artists, but rather on the boundaries of the surprisingly rigid formula within which the writers create their narratives. Authors who vary too far from the established formula risk alienating the audience, an untenable situation for com-

mercial writers and their publishers. Since this literature has enjoyed wide popularity — some of the novels have sold several million copies, and total sales in the formula have reached hundreds of millions — they may be viewed as what might be termed the “popular historiography” of the antebellum South and slavery.⁵

From a cultural perspective, the plantation formula becomes important precisely because of the unified vision of a warped and sadistic South which emerges from the novels. We can learn many things about popular conceptions of the past through the novels. For example, a study of the settings in recent plantation fiction would help to explain the persistence of the popular conception of the Old South as “one big plantation.” Indeed, most plantations in this literature are little more than Tara with a different name. Many of Francis Pendleton Gaines’s findings, published in 1924 in *The Southern Plantation: A Study in the Development and the Accuracy of a Tradition*, still hold true.⁶ All of the planters live in elegant mansions such as the one in *Eden*, by Julie Ellis, which stands “majestically tall and white, with eight massive two-storied columns across the front gallery.” Though there is an occasional big house in the Georgian style, the white columns of

⁴Cawelti, *Adventure, Mystery, and Romance*, pp. 7-10. This is perhaps the most important difference between the approach to works of art in the high culture tradition and those in the popular culture tradition. Scholars have pondered the subtle nuances within single works by Henry David Thoreau, Herman Melville, and James Joyce for generations. Yet most individual works by popular culture creators provide very little food for thought—very little, that is, when examined in isolation. Collectively, however, the products of popular culture become rich and rewarding sources of scholarly inquiry. It should also be remembered that infinitely more people likely have read the works of such popular writers as John Jakes than have read the works of Thoreau, Melville, and Joyce.

⁵Though precise sales figures are quite difficult to obtain, a few observations begin to outline the widespread popularity of plantation fiction. Nearly every major paperback publishing house issues at least one series in the genre. Some, most notably Fawcett and Warner, publish several series. According to Earl Bargainnier, the Falconhurst books alone had sold over sixteen million copies through 1975. See “Falconhurst Series,” 299. A letter from the most recent author of the series, Harry Whittington, to Christopher Geist (June 29, 1978) indicated that total sales of the Falconhurst books come closer to thirty million copies. According to letters from Richard Tresillian (May 24, 1978) and Norman Daniels (May 15, 1978), their plantation novels have initial print runs of 700,000 and 400,000 respectively. These figures are unusually high for paperback originals. Fawcett Books informed me in a letter dated July 10, 1978, that several of their plantation novels have sold over 2,000,000 copies. The primacy of the marketplace and the importance of pleasing the popular audience is discussed in Russel B. Nye, *The Unembarrassed Muse: The Popular Arts in America* (New York: The Dial Press, 1970), pp. 3-7.

Most of the novels are paperback originals, although a few have been issued first as hardbacks. I have limited my study to novels which are set in the South or, in some cases, the slaveholding regions of the Caribbean. All of them are set prior to the Civil War, though some of the novels conclude during the conflict or shortly thereafter. This sort of novel has been around for a long time, but it is only after *Mandingo* that the emphasis shifts from moonlight and magnolias to miscegenation and sadism.

⁶Gaines, *Southern Plantation*. See also Earl F. Bargainnier, “The Plantation: Southern Icon,” in *Icons of America*, ed. by Ray B. Browne and Marshall Fishwick (Bowling Green, Ohio: Popular Press, 1978), pp. 271-283. Note especially Bargainnier’s outline of the major elements in the romantic image of the antebellum South, pp. 276-277.

the Greek Revival are predominant even in novels set prior to 1820, when this style actually came into vogue.⁷

Moreover, these homes are at the center of vast stretches of land, almost always far larger tracts than those commonly held by the typical antebellum Southern farmer. Lonnie Coleman's fictional *Beulah Land* plantation includes sixteen hundred acres,

and this is not at all unusual to this literature. The one-crop economy is almost always based on cotton culture, whether the novels are set in Virginia (where tobacco was the real crop), the South Carolina sea islands (indigo), or the Gulf Coast (rice, cane, cotton). Not unexpectedly, these imaginary plantations are worked by multitudes of slaves; there are eight hun-

⁷The passage is from Julie Ellis, *Eden* (Greenwich, Conn.: Fawcett Books, 1975), p. 34. In the South, the Greek Revival period dated from about 1820 to 1860. See Talbot Hamlin, *Greek Revival Architecture in America* (New York: Dover Publications, Inc., 1964). Margaret Maitland uses the Greek style in *Tidewater* (New York: Tower Publications, Inc., 1977) even though the novel is set prior to the Revolution. There are many other writers who make this error. One of the more curious things about this literature is that replicas of George Washington's Mount Vernon are commonly seen in cover illustrations. See the covers of Norman Daniels, *The Law of the Lash* (New York: Lancer Books, Inc., 1968), and Raymond Giles, *Rebels of Sabrehill* (Greenwich, Conn.: Fawcett Books, 1976).

Table: Major Elements in Recent Plantation Fiction

A. Typical Setting

Time: 1820-1860. (Earlier eras are also used, but in these cases historical anachronism abounds.)

Location: Any slaveholding region. (All southern states and sometimes the Caribbean. Geographical errors common.)

Plantation: Enormous, wealthy; tended by a multitude of slaves; Greek Revival Mansions.

B. Cast of Characters

1. White Characters:

Planter (Has black mistress.)
 Planter's Wife (on pedestal.)
 Planter's Son ("Good Ol' Boy.")
 Planter's Daughter (Destined for the pedestal.)
 Overseer (Vicious; forces himself upon female slaves; occasional.)
 Northerner (Occasional character; an abolitionist.)
 Poor Whites (Rare; appear to do planter's dirty work.)

2. Black Characters:

Plantation Cook/House Slaves (Traditional stereotypes; often provide sex for the master.)
 Plantation "Stud" (Must impregnate female slaves.)
 Planter's Mistress (Beautiful and light skinned; eager for sex.)
 "Breeding Wenches" & Children.
 Minor Characters ("Voodoo Slaves," etc.)

C. Typical Patterns of Action and Themes

Major:

Breeding Slaves as a Cash Crop (almost a must)
 Planter Rejects Wife — She Turns to Black Lover
 Planter Discovers His Wife and Slave Together (he destroys them)
 Planter's Deep Love for his Slave Mistress
 Training Planter's Son in the Ways of Southern Aristocracy
 Violent Punishment of Slaves for Various Acts

Minor:

Slave Rebellions
 Superstitions and "Magic" of Black Slaves
 Slaves Trained to Fight Each Other to Amuse Whites
 Growing Fear of North and Abolitionists
 Slaves Close to Master Plot to Gain Control of Plantation
 Slaves as Violent Beings Who Can Not Be Trusted

dred, for example, on the plantation created by author Norman Daniels in his Wyndward series. The planter at Beulah Land, with his relatively modest one hundred and fifty blacks "more or less," though holding far more slaves than the twenty or so which admitted the real antebellum Southerner to the planter class, is actually rather poor when compared to dozens of other planters in these books. Historians know that the majority of Southern slaveholders owned fewer than twenty slaves, and one scholar, Frank L. Owsley, asserts that "60 per cent owned from one to five slaves."⁸ In short, as one critic writes, the plantation novelists treat the antebellum South "as if its geography, culture, and people are all the same."⁹

A majority of the planters in the novels engage in slave breeding of one form or another. Many of them produce slave children as their major cash crop. The institution of slavery was horrible enough in reality, but there is little evidence that this particular abuse was systematically practiced. One of the most respected historians of American slavery, Kenneth M. Stampp, has studied this matter and concludes, "evidence of slave plantations that were managed in a way analogous to stud farms is rare indeed."¹⁰ Many planters did, of course, reward fecundity among their

slaves, but this is not at all the same thing as systematically breeding slaves for market.¹¹

Furthermore, the fictional breeding scenario suggests that slaves had little or no feeling for their families, whereas the reverse has been amply documented both in records of the time and in recent historical scholarship. In the fiction blacks are portrayed as sensual creatures who will breed whenever and however the master wishes. It is common for the master to reward good work among the black males with a visit to the "wenching shed." There the slave is assigned the task of impregnating one of the slave women.¹² Typically, the male slaves can be persuaded to do almost anything if they are promised wenching privileges. Moreover, black women are portrayed as eager to receive them. If a child is born, the master simply removes it to the "sucker pen" for care and nurturing. As soon as the child is old enough the planter sells it. There are only rare indications that this system disturbs the slave parents. In reality, it is unlikely that many American slaves would have put up with such antics on the part of their masters for very long. In spite of the restrictions placed upon them by their masters, the slaves developed family ties and traditions which were far more resilient than any of the novelists have shown.¹³

⁸Lonnie Coleman, *Beulah Land* (New York: Dell Publishing Co., Inc., 1973), p. 9; Norman Daniels, *Wyndward Passion* (New York: Warner Books, 1978), p. 231. For further exaggerations, see Julie Ellis, *Eulalie* (New York: Fawcett Books, 1970), p. 5; Gardner F. Fox, *The Stonehedge Slaves* (New York: Tower Publications, Inc., 1969), p. 8, and George McNeill, *The Plantation* (New York: Bantam Books, Inc., 1975), p. 25. Frank L. Owsley, *Plain Folk of the Old South* (Baton Rouge: Louisiana State University Press, 1949), p. 8. See also Clement Eaton, *The Growth of Southern Civilization 1790-1860* (New York: Harper & Row, Publishers, Inc., 1961), pp. 10-11, and Eugene D. Genovese, *Roll, Jordan, Roll: The World the Slaves Made* (New York: Vintage Books, 1974), pp. 7-8.

⁹Bargainnier, "Southern Icon," p. 281.

¹⁰Kenneth M. Stampp, "Introduction: A Humanistic Perspective," in *Reckoning With Slavery: A Critical Study in the Quantitative History of American Negro Slavery*, by Herbert G. Gutman, et al. (New York: Oxford University Press, 1976), p. 21. See also Kenneth M. Stampp, *The Peculiar Institution: Slavery in the Ante-Bellum South* (New York: Vintage Books, 1956), pp. 245-251. The slave breeding scenario seems to have originated in Onstott's *Mandingo*. Prior to writing *Mandingo*, his first and only novel, the others credited to him having been written by Lance Horner, Onstott made a living writing books on dog breeding. He was equally imaginative in this sphere. His son once commented that, "What he didn't know [about dogs] he'd make up." One of the best accounts of Onstott's life and work is Rudy Maxa, "The Mad Master of *Mandingo*," *Potomac* (the Sunday magazine section of *The Washington Post*), July 13, 1975, pp. 13 and 20-22. See also "The Best Seller Breed," *Newsweek*, May 13, 1975, p. 122.

¹¹Herbert G. Gutman and Richard Sutch, "Victorians All? The Sexual Mores and Conduct of Slaves and Their Masters," in Gutman, et al., *Reckoning*, p. 155.

¹²For one such incident see Eric Corder, *Slave* (New York: Pocket Books, 1967), p. 45.

¹³Compare the fictional portrayal of black family ties with Herbert G. Gutman, *The Black Family in Slavery and Freedom, 1750-1925* (New York: Pantheon Books, 1976). Useful, too, are John W. Blassingame, *The Slave Community: Plantation Life in the Antebellum South* (New York: Oxford University Press, 1972), especially pages 77-103, and Leon F. Litwack, *Been in the Storm So Long: The Aftermath of Slavery* (New York: Vintage Books, 1979).

The novelists also continue to rely upon what Clement Eaton terms "the legend of an aristocratic society."¹⁴ Almost all of the planters in the genre are quite wealthy, do very little physical labor, and are fond of juleps, the social amenities of the genteel life, and their mulatto mistresses. Moreover, along with their families and an occasional Northern tutor, whose abolitionist views set him off as a foil for the planter, these aristocrats make up the sole white population of the South which has been conjured up by the modern novelists. Nowhere do we find the rich and variegated social structure which historians have described. There are no small farmers, no merchants, no artisans, mechanics or urbanites; all of these elements and more played crucial roles in shaping the economy, society, and culture of the antebellum South.¹⁵ There are, to be sure, occasional and brief appearances by "po' white trash" figures who are despised by slave and master alike. But usually these contemptible characters appear only to do the planters' dirty work; many of them are overseers. One poor white character, a slave catcher, was described as "a swarthy, greasy man, dirty and ragged" with whom the planter would no sooner have dinner than with a black man.¹⁶

However, there are also some fairly accurate elements in the fiction. Many of the planters, though rich and given to aristocratic pretensions, are clearly shown to be of rather humble origin. It might be argued that one of the most accurate portrayals of at least a portion of the planter class is in *Mandingo* and the other novels in the Falconhurst series, which otherwise remain among the most ludicrous books

ever set in the antebellum South. Surprisingly, the protagonists as characterized by the authors, Kyle Onstott, Lance Horner, and Harry Whittington, are little more than backwoods poor folks who struck it rich through land speculation and luck. This fictional family, the Maxwells, followed a path to the planter class much like that in the real antebellum South as described by Frank L. Owsley in his *Plain Folk of the Old South*. Additionally, the Maxwells are very similar to some of the people Frederick Law Olmsted met on his famous journeys through the South. Olmsted's published travel narratives are among the most important antebellum documents, and it is no doubt possible that some of the plantation novelists are familiar with them. Even with such touches of realism, however, the overall picture of antebellum society in recent popular literature remains very similar to the three-tiered structure originally popularized by the abolitionist press: cruel planters, miserable poor whites, and brutalized slaves.¹⁷

Politically and ideologically, one cannot imagine a more solid and monolithic South than that portrayed in plantation fiction. All of the whites have similar attitudes: they support the institution of slavery with unquestioned devotion, they despise Northerners, they fear free blacks, and they believe a woman's place is on the pedestal. Though a few of the planters express doubts about the morality and economic expediency of slavery, none of them believes it would be wise to abandon the institution. The South is absolutely united in the face of an increasingly hostile North. This sectional antagonism even appears anachronistically in novels set prior to 1800. The South was,

¹⁴Eaton, *Southern Civilization*, p. 150. A similar view is expressed in Francis Nash Boney, "The American South," *Journal of Popular Culture*, 10 (Fall, 1976), 290-297.

¹⁵The plantation novelists would greatly benefit from the study of the following works: William Byrd, *Histories of the Dividing Line Betwixt Virginia and North Carolina* (New York: Dover Publications, Inc., 1967); Carl Bridenbaugh, *Myths and Realities: Societies of the Colonial South* (New York: Atheneum, 1952); Eaton, *Southern Civilization*; and Owsley, *Plain Folk*.

¹⁶William Lavender, *Chinaberry* (New York: Pyramid Publications, 1976), p. 116.

¹⁷In addition to *Mandingo*, the other novels in the series are *Drum* (1962), *Master of Falconhurst* (1964), *Falconhurst Fancy* (1966), *The Mustee* (1967), *Heir to Falconhurst* (1968), *Flight to Falconhurst* (1971), *Mistress of Falconhurst* (1973), and *Taproots of Falconhurst* (1978). Although some of the other novels bear Kyle Onstott's name, he wrote only *Mandingo*. The first seven sequels were written by Lance Horner, and the latest was the creation of Harry Whittington, whose pseudonym is Ashley Carter. All of the novels are available in editions published by Fawcett. For comparison see Frederick Law Olmsted, *The Slave States*, ed. by Harvey Wish (New York: Capricorn Books, 1959). The importance of the abolitionists in the creation of this image of southern society is mentioned in Eaton, *Southern Civilization*, p. 150. Owsley discusses how poor cattlemen rose to the planter class in *Plain Folk*, pp. 33-34.

of course, never so unified, not even in the dark days of the Civil War. There were Unionists and abolitionists in the South as well as proslavery fire-eaters. None of the novelists seems fully informed on the complex social and political structure of the real South.¹⁸

Another problem with these narratives is the authors' stereotype of the Southern white woman. With few exceptions the women are frail creatures who know little about plantation management. They never work, and they spend endless hours lusting after male slaves. Many are slightly deranged; still more are hopeless alcoholics.¹⁹ Part of their way of life is the result of the novels' genteel settings. But in the real antebellum South, as historian Anne Firor Scott properly notes, "Even great wealth could not buy leisure for a planter's wife." Even on the wealthiest plantations, Scott continues, "the mistress was expected to understand not only the skills of spinning, weaving, and sewing, but also gardening, care of the sick, and all aspects of food preparation from the sowing of the seed to the appearance of the final product on the table." Additionally, Southern women had a great deal of responsibility in the care and management of the slaves. This included feeding them, acting as their midwife, clothing them, and generally tending to their problems. Though there is an occasional woman who participates in these activities, most of the fictional planters have selected wives who will "appear at the proper moment beautifully gowned and groomed, to move graciously among the guests, and perform the duties of hostess with smooth efficiency."²⁰

The few women in the novels who manage to step down from the fabled

pedestal have great difficulty vis-à-vis the male characters. In Raymond Giles' Sabrehill novels a young white woman, Lucy Sabre, owns and manages Sabrehill plantation quite successfully. Indeed, she is the sole white resident, although she does employ a free black overseer. In spite of her demonstrable abilities, she is scorned and distrusted by her neighbors who constantly badger her to either marry or hire a white overseer. Every unfortunate incident related to slaves in the area is blamed on Lucy's "mismanaged" plantation. If a slave runs away, it is somehow Lucy's fault. Slaves who talk back to their masters must surely be under the influence of the improperly supervised Sabrehill slaves. Underlying these accusations, however, is an even more serious charge. Lucy's neighbors secretly fear that she is guilty of the ultimate sin against the cult of Southern womanhood—they believe that she goes to bed with her black overseer.²¹

Lucy Sabre's supposed miscegenation points toward one of the most constant and important themes. Recent plantation literature is virtually dedicated to the exploration of fantasies of interracial sexuality. This above all else is the center of the narrative structure. One of the authors, Morris Hershman, believes that this theme provides the major popular appeal in the formula. He writes, "Why is the Old South so popular? Probably because it offers a chance for novels of sex and sadism and gives the reader a feeling he's reading it like it was. . . . It's indicative, too, that the covers show one good looking person of each sex in different color, which indicates that the material isn't intended for the audience that devoured *Roll, Jordan, Roll* [Eugene Genovese's controversial Marxist interpretation of American slavery which

¹⁸Clement Eaton, *The Freedom-of-Thought Struggle in the Old South* (2nd ed.; New York: Harper & Row, Publishers, Inc., 1964); Carl N. Degler, *The Other South: Southern Dissenters in the Nineteenth Century* (New York: Harper & Row, Publishers, Inc., 1974).

¹⁹A somewhat "vague" mistress is described in Lavender, *Chinaberry*, p. 30; one of the finest examples of the drunken wife is found in Peter Gentry [Frank Schaefer & Kerry Newcomb], *Rafe* (Greenwich, Conn.: Fawcett Books, 1976), especially pp. 51-55.

²⁰Ann Firor Scott, *The Southern Lady: From Pedestal to Politics, 1830-1930* (Chicago: University of Chicago Press, 1970), pp. 31-37. Nor do any of the white women in the novels live up to the "farmwife ideal" recently discussed by D. Harland Hagler in "The Ideal Woman in the Antebellum South: Lady or Farmwife?" *Journal of Southern History*, 46 (Aug. 1980), 405-418. The final quotation in this paragraph is from Lavender, *Chinaberry*, p. 30.

²¹Lucy Sabre's story is related in a series of three novels, all by Raymond Giles, and all published in Greenwich, Conn., by Fawcett Books: *Sabrehill* (1974), *Slaves of Sabrehill* (1975) and *Rebels of Sabrehill* (1976).

aroused wide interest and discussion among the academic community].” Norman Daniels, who has written extensively in the genre, agrees. “The popularity of the plantation novels,” he writes, “is due to two causes. Sex and violence. We use whatever becomes a part of the novel, but white male and black female seem the most prevalent. Though the opposite is also used to some extent.”²²

The most typical pattern of action in the novels involves the planter’s wife and the plantation “stud,” an exotic “full-blooded African” whose only duty is the impregnation of the “breeding wenches.” For one reason or another, the planter rejects his wife as a sexual partner. As she grows increasingly frustrated, she begins to seek sexual gratification outside her marriage. Inevitably she turns to the plantation stud. They begin an affair, but the black man is understandably worried. The punishment for sleeping with a white woman is likely to be violent and terrifying death, or at least castration. Sooner or later the planter discovers that he is a cuckold, and he punishes both offenders. In one novel, the slave is boiled alive and the wife is poisoned. In another book the black man is barbecued alive and the planter’s wife is later fed his flesh; when she discovers what she has been eating, she faints and falls into the flaming barbecue pit beside her roasted lover. Numerous other male slaves who engage in miscegenation are castrated, lynched, burned alive, or even buried alive.²³

One should note that interracial sexuality is punished only when the act involves a black man and a white woman. All of the white male characters have “wenching privileges,” a practice which in some novels is considered “good business.” Male house guests are usually treated to a “bed wench,” and when the planter’s son reaches age fourteen or so he is assigned a young female slave to “warm his bed.” Since most of the planters consider slaves to be their most important cash crop, any offspring from these random couplings increase the planter’s wealth. Moreover, the point is constantly made that light mulatto slaves are more valuable than slaves with darker complexions.²⁴

In their portrayal of these interracial relationships the novelists rely heavily upon traditional white folk beliefs and fears associated with black sexuality. For example, all of the black men have enormous genitals. Further, they are always more capable than white men in sexual matters. A frequent pattern in the novels is the description of sexually frustrated white women. Their husbands have never been able to bring them to sexual climax, but black men always satisfy them. As one novelist describes the pattern, “In her eight years married life, Arabella had not had one experience with her husband which could match the hearty, torrid performance from a shiny black.”²⁵

²²Letter from Morris Hershman to Christopher Geist, March 5, 1978. The book Hershman refers to is Eugene D. Genovese, *Roll, Jordan, Roll: The World the Slaves Made* (New York: Vintage Books, 1974). Letter from Norman Daniels to Christopher Geist, May 15, 1978. There was, of course, some sex in plantation fiction prior to *Mandingo*. According to Bargainnier, “Plantation Icon,” p. 275, Frank Yerby is the first major plantation novelist to invade “the previously sacrosanct bedrooms.” But his sex almost always involved two whites. The only exceptions are a few masters who seduce young female slaves. And some of these characters feel remorse for their actions. See Frank Yerby, *Fairoaks* (New York: Dell Publishing Co., 1957), p. 70.

²³The synopsis above appears often. However, its fullest development is probably in Onstott, *Mandingo*, pp. 613-624 (the boiled slave), and in Richard Tresillian, *The Bondmaster* (New York: Warner Books, 1977), pp. 425-440 (the barbecued slave). Other similar incidents, along with castrations and mutilations of various sorts, are simply too numerous to cite. However, representative incidents may be found in Lionel Webb [Morris Hershman], *The Blackbird* (New York: Berkley Publishing Corp., 1974), pp. 9-11, where a black man is lynched because he *might* have gone to bed with a white woman, and in Giles, *Rebels of Sabrehill*, pp. 199-200, where a group of whites discusses what to do with a slave who is guilty of miscegenation: castrate him, hang him, flay him, or burn him.

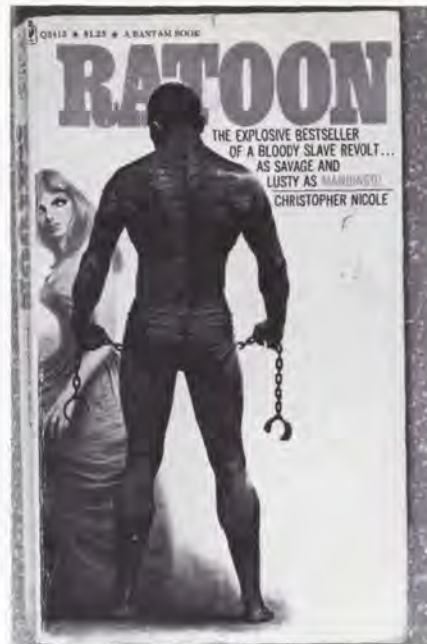
²⁴This “moral laxity of the master class” is not new to plantation fiction. As Gaines points out, the theme of the female slave who is sexually abused by her master was used often by abolitionists. See *Southern Plantation*, 221-223. Still, even the abolitionists could not match the gleeful debauchery which is described by the modern novelists.

²⁵For typical incidents see Ashley Carter [Harry Whittington], *Master of Blackoaks* (Greenwich, Conn.: Fawcett Books, 1976), p. 302, and Lavender, *Chinaberry*, p. 133. The quote is from Rupert Gilchrist, *Dragonard* (New York: Bantam Books, 1975), p. 142.

Nor are the black men in these novels able to control their sexuality. Slave revolts, which are all too frequent in plantation fiction, lead to macabre scenes in which slaves rape every white woman in sight. One of the novels, *Eulalie* by Julie Ellis, could easily be mistaken for antebellum pro-slavery propaganda. The rebellious slaves castrate their master and then force him to watch the rape of his wife. One of the slaves drools, "Black bettuh than white" as he penetrates the woman. In another novel a slave becomes "wildly aroused" whenever he looks at a white woman.²⁶

The black females in this formula do not fare much better. They are portrayed as bestial beings whose libidinous desires are almost insatiable. Like the male slaves, the bondswomen are depicted as always willing and eager for sexual intercourse. The white characters therefore view them as the perfect subjects for purely genital intercourse; sex for procreation is rather rare and is to be reserved for the white woman. The fictional planters, having placed white women on the pedestal, feel no guilt whatsoever with this arrangement. These characters seem to believe that both groups of women are well served. The men need not trouble the "pure and virginal" white woman with sex, and at the same time they allow the black woman the sexual release her supposedly wanton nature requires. Women, whatever their color, are negatively stereotyped in recent plantation literature.²⁷

To some extent the portrayal of interracial sexuality in the novels parallels information historians have gathered on the subject. Anne Firor Scott has shown that the double standard on miscegenation as outlined in the plantation formula was recognized by antebellum women.²⁸ It is not at all difficult to discover evidence related to the vigorous opposition to sexual



The themes of violence and interracial sexuality are powerfully suggested in this illustration; note the reference to *Mandingo*, the most famous novel in the formula. (*Ratoon* copyright 1962 by Christopher Nicole.)

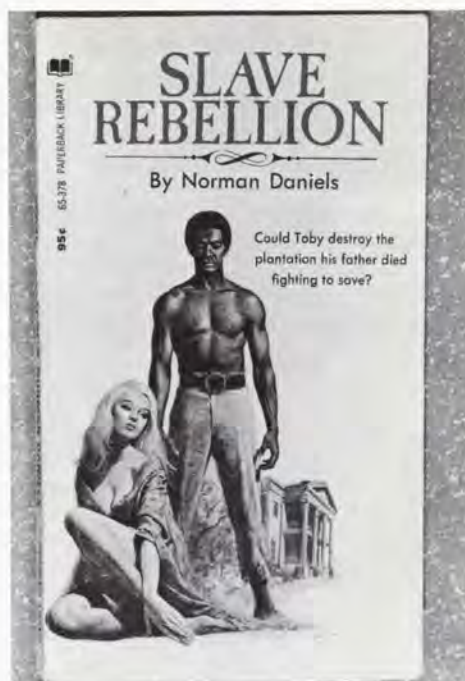
acts involving black men and white women, though, as Eugene Genovese has suggested, the severe punishments — castration, lynching, or worse — were far more common in the postbellum years. Additionally, careful comparison of the incidents cited by Genovese in *Roll, Jordan, Roll* and by James Hugo Johnston in *Race Relations in Virginia and Miscegenation in the South, 1776-1860* provides numerous examples of sexual encounters which closely resemble those developed in plantation fiction.²⁹ Even with this rather tenuous relationship to

²⁶The scene from Ellis' *Eulalie*, pp. 230-232, also resembles a rape scene in Thomas Dixon, Jr., *The Clansman* (New York: Grosset & Dunlap, 1905), pp. 303-304; for the "wildly aroused" slave, see Carter, *Master of Blackoaks*, p. 12. The massive slave uprising, often meeting with improbable success, is also found in Gentry, *Rafe*, Giles, *Rebels of Sabrehill*, Normal Daniels, *Slave Rebellion* (New York: Paperback Library, 1970), and in numerous other novels. None of the authors seems familiar with Herbert Aptheker's *American Negro Slave Revolts* (New York: Columbia University Press, 1943).

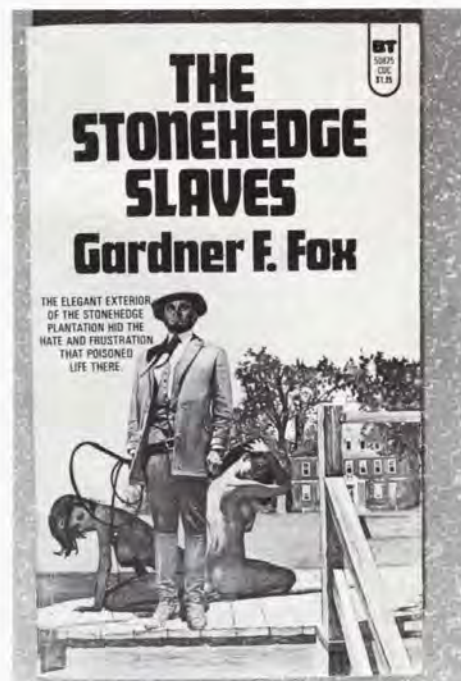
²⁷The development and history of the white sexual stereotype of the black woman is outlined in the early chapters of Beth Day, *Sexual Life Between Blacks and Whites: The Roots of Racism* (New York: Thomas Y. Crowell Company, 1972).

²⁸Scott, *Southern Lady*, pp. 52-53.

²⁹Genovese, *Roll, Jordan, Roll*, pp. 411-431; James Hugo Johnston, *Race Relations in Virginia and Miscegenation in the South* (Amherst, Mass.: University of Massachusetts Press, 1970). See also Day, *Sexual Life*, and Joseph R. Washington, Jr., *Marriage in Black and White* (Boston: Beacon Press, 1970), pp. 33-68.



Much cover art in the plantation formula suggests the powerlessness of the white woman vis-à-vis the brute strength of the black male; the mansion in the background is typical of those commonly portrayed in the texts. (*Slave Rebellion* copyright 1970 by Norman Daniels.)



Plantation literature is dominated by brutal white masters. They not only brutalize the slaves with beatings and other physical punishments, but also demand that the blacks surrender the control of their sexuality to the master's desires and whims. (*The Stonehedge Slaves* copyright 1969 by Tower Publications.)

history, however, the novelists have gone too far. To them, and presumably to their readers, the antebellum South was a land of endless debauchery wherein sex, not cotton, was king.

I recently asked several plantation novelists to describe their research efforts, and was surprised to discover that many of them expend considerable time and energy studying the antebellum South and slavery. Nevertheless, their novels are often as inaccurate as those by novelists who attempt no research. One author, when asked why there are no free blacks, urbanites, artisans or small farmers in his novels, replied, "A balanced picture [of the Old South] isn't wanted. I've got to point out that the approach is conditioned by what the editor wants and is willing to pay for. In my case, the research consists of reading several books."³⁰ Another author complained that

whenever he attempts to develop a more historically correct version of the antebellum South, his editors reject his work and demand "more lust in the dust."³¹

While some of the authors are thoroughly familiar with the recent historiography of slavery, many of them rely heavily upon a few important but sadly outdated sources. Worse, some of these sources can only be characterized as racist documents. Ulrich B. Phillips, for example, was the first of this century's great historians of slavery. While his research remains important in some respects, he characterized the American slaves as childlike, indolent, helpless, and, in some cases, even violently dangerous. Without the paternalistic protection and guidance of the white masters, he argued, the slaves would threaten both society and themselves. Such views are expressed frequently by white characters in plan-

³⁰Hershman to Geist, March 5, 1978.

³¹Letter from W.E. Dan Ross to Christopher Geist, March 10, 1978. Mr. Ross writes under a number of pseudonyms.

tation fiction, and several of the authors list Phillips as one of their sources.³²

Richard Tresillian, another plantation writer, boasts of his extensive research efforts. For one series of novels he even consulted "some original plantation records." He has his own collection of rare books, maps and newspapers, and he has cataloged hundreds of books in a file card system so that he can easily and rapidly access materials in various libraries. He travels, "delights in museums," and always begins his research with the "standard reference books of a particular period." Yet Tresillian's novels are as far off the mark as any plantation fiction I have encountered. But he does know the audience; his novels always have print runs in excess of 700,000 copies.³³

Success for popular novelists and their publishers rests not so much on historical scholarship as on the ability to weave an inviting and exciting story. All research is directed toward this goal. One author, who writes along with his partner as "Peter Gentry," relates, "We try to tell a good yarn. In the process, we research the time and try to get the feel of the era, try to get most of our facts straight." Yet the imperatives of spinning their good yarn sometimes get in the way of their history, and this same author concludes, "We twist facts to our own means."³⁴ Creators of plantation fiction are under no illusion that their re-creations of the past are valid as history.

It is far from clear, however, that the audience is able to grasp this point. These novels provide the only contact with the Southern past for millions of readers. To them, the novels ring true, especially when talented authors flesh out their narratives with an abundance of period details: cleverly written discussions of slave auc-

tions; minute descriptions of household utensils, furniture and clothing; pseudo-scientific and seemingly thorough analyses of the intricacies of slave breeding; or convincing diatribes on the difficulties of plantation economics. And the cumulative impact is even greater, for, as with all popular literary formulas, readers tend to return again and again to their favorite genres.³⁵

Some historians, citing the senseless brutality of the masters and the total helplessness of the mistreated slaves, might be tempted to place plantation fiction within what historian Jack Temple Kirby calls the neoabolitionist genre of popular historiography. Indeed, Kirby refers to the author of *Mandingo* as a "prurient abolitionist."³⁶ But to categorize plantation novels in this fashion assumes that the mass audience views this literature from the same perspective as the professional historian. It is quite possible that many readers derive an entirely different interpretation. In many respects, especially in their portrayal of blacks as sexual beasts who cannot control their libidinous desires, the plantation novelists have more affinity with the proslavery apologists and the propagandists of the Reconstruction era than with the abolitionists. The proslavery writers had perpetuated the sexual mythology of the "black rapist" in order to justify holding humans in bondage; the Reconstruction author used that same mythology to justify racial hatred, the Ku Klux Klan, and the lynch mob.³⁷

For the bigoted white reader, at least, these novels may well confirm the feeling that race relations were somehow "better" in the antebellum South. The plantation novels portray a world in which whites are in command and blacks know their place. There is no Civil Rights crusade, no affirmative action program, no equal op-

³²See Ulrich B. Phillips, *Life and Labor in the Old South* (Reprint 1963; Boston: Little, Brown and Company, 1929).

³³Letter from Richard Tresillian to Christopher Geist, May 24, 1978. Tresillian also supplied several pieces of promotional literature from his publisher, Warner Books.

³⁴Letter from Frank Schaefer to Christopher Geist, May 12, 1978.

³⁵This is one reason why so many of these novels are written as parts of continuing series. In order to maintain reader interest at a high level the publishers even go so far as to publish "sneak preview" chapters of future numbers at the end of some novels. See, for example, Marie de Jourlet, *Windhaven Plantation* (New York: Pinnacle Books, 1977).

³⁶Kirby, *Media-Made Dixie*, p. 119.

³⁷For a discussion of the racist writers of earlier eras, see James M. Mellard, "Racism, Formula and Popular Fiction," *Journal of Popular Culture*, 5 (Summer, 1971), 10-37, and George M. Fredrickson, *The Black Image in the White Mind: The Debate on Afro-American Character and Destiny, 1817-1914* (New York: Harper & Row, Publishers, Inc., 1971).

portunity under the law. And in many of the novels white readers are treated to scenes which seem to confirm the need for such limitations. Given the opportunity, black characters will murder, rape, and destroy plantation property. The bloody slave revolts in such novels as Peter Gentry's *Rafe*, Raymond Giles' *Rebels of Sabrehill*, and Eric Corder's *Slave* demonstrate the bestial and devious nature of blacks. Racist beliefs and fears are reinforced time and again in this fiction. This exploitation and possible exacerbation of white fears of blacks is the most important and insidious dimension of this popular historiography.³⁸

The past is often held up as a window through which to view the present and the future. If this is true, we can discover much about the popular culture of the present if we understand how that same popular culture treats the past. Perhaps the simple fact that so many Americans seem to be fascinated with the antebellum South — and have been ever since the 1880s — has even more significance to us than the era itself. Why, we must ask ourselves, do millions of Americans derive satisfaction from this simplified and vulgarized portrayal of antebellum slavery? Are they searching for fictional fantasies which, at least on one level, reflect their own racial prejudice or hatred? While I am certain that many readers select and enjoy plantation fiction rather innocently, I am just as certain that many others are reinforced in their bigotry.

One of the most heated debates in popular culture studies has always been whether the popular arts *reflect* or *shape* popular consciousness. Certainly there is room for both positions. Some products of popular culture do alter popular sen-

sibilities, while others remain merely reflective. Other popular materials mirror the views of some segments of the audience, alter the views of other segments, and have no lasting impact whatsoever on the remainder of the audience. But I think that these concerns sometimes tend to obscure the real issue. In the case of the plantation novel, it does not really matter whether the material is reflective or affective—either way plantation fiction does not speak well for the state of racial harmony in the United States.

We like to believe that as a culture we have made great strides toward enlightened relations and understanding among the races in recent years, and, to some extent, this is no doubt true. But the widespread and enduring popularity of the plantation novel with its potential for perpetuating negative black stereotypes, erroneous beliefs about black sexuality, and white mistrust and fear of blacks, must, at the very least, cause us to reconsider just how far we have advanced in the past twenty-five years. Ralph Ellison, one of America's most important black authors, once wrote,

Perhaps the most insidious and least understood form of segregation is that of the word. And by this I mean the word in all its complex formulations, from the proverb to the novel and stage play, the word with all its subtle power to suggest and foreshadow overt action while magically disguising the moral consequences of that action and providing it with symbolic and psychological justification. For if the word has the potency to revive and make us free, it has also the power to blind, imprison, and destroy.³⁹

The ultimate meaning of modern plantation fiction may well lie in the continuation of this traditional American tendency to segregate via the word.

³⁸I have commented at length on the possibility that the primary appeal of plantation fiction may be related to "sexual racism." See "Violence, Passion, and Sexual Racism: The Plantation Novel in the 1970s," *Southern Quarterly*, 18 (Winter, 1980), 60-72. The best study of the psychology of racism which is based on sexual fears and insecurities is Charles Herbert Stember, *Sexual Racism: The Emotional Barrier to an Integrated Society* (New York: Elsevier Scientific Publishing, 1976).

³⁹Ralph Ellison, "Twentieth-Century Fiction and the Black Mask of Humanity," in *Images of the Negro in American Literature*, ed. by Seymour L. Gross and John Edward Hardy (Chicago: University of Chicago Press, 1966), p. 115.

Benjamin H. Gorsky, M.D.

ARISTOTLE'S MISTAKE

Pain is not one of the senses. But just what it *is* is hard to say.

While it may be unkind to blame all of the confusion on Aristotle he certainly contributed in a major way: Aristotle listed pain among the senses, and the concept that pain is a sense lasted almost to the twentieth century. Today we realize that pain perception does not result from a simple straightforward neurophysiological response to a particular stimulus.

As scientific investigation of the nervous system progressed in the nineteenth century, anatomists described various nerve endings which they observed in tissues throughout the body, and physiologists ascribed specific functions to these various special endings. However, even after the particular nerve structure apparently responsible for the perception of pain was known, there was still a great deal to be examined. Investigators traced "pain" fibers in sensory nerves to the point where they connected with cells within the spinal cord, but early scientists were not able to determine where these cells sent information.

Eventually a "pain pathway" in the spinal cord was described by scientists employing their understanding of a particular property of nerve cells: although cells may send out long projections called *axons*, these axons will not survive if the central part of the nerve cell is destroyed. Scientists extirpated groups of cells in the particular location where "pain fibers" made connections within the spinal cords of experimental animals. Later, the animals were sacrificed and their spinal cords examined. The anatomists were able to see the path of the degenerating axons from these cells, and in this way they discovered the long pathway known as the *lateral spinothalamic tract* (so called because it is on the side of the spinal cord and runs to a structure in the brain known as the thalamus). Since pain was viewed as a sensation and this tract was responsible for the transmission of impulses to the brain, it was assumed that this pathway was *the* pathway by which pain information reached the brain.

Unfortunately this experimental data was carried into medical practice without sufficient critical evaluation. After the lateral spinothalamic tract was identified, physicians became intrigued with the possibility of surgically disrupting this tract in order to relieve a patient's pain. The operation, called cordotomy, is still performed today. However, while it is possible reliably to sever fibers within the tract, it is not possible to predict whether doing so will alleviate pain. At first, this divergence of observed from expected results led to the assumption that patients who did not respond appropriately to therapy must have been imagining or faking their pain. While the spinothalamic tract is the major pathway for the mediation of what today's scientists would call nociception, that is, the perception that harm is being done to some part of the body, it has become apparent that there are many other pathways within the spinal cord which can carry sensations which will ultimately be interpreted as pain. Furthermore, nociception is not quite the same as pain since we now know that it is possible to perceive pain in the absence of any noxious stimulus, and it is possible for nociceptive pathways to be stimulated without an individual perceiving pain.

Disruptions of spinal pathways therefore play a relatively minor role in therapy for pain patients; instead other methods are employed. For example, physicians *do* have a model for successfully treating patients who have acute pain. The physician elicits the story of pain from the patient, performs a physical examination and perhaps some laboratory tests, and thus reaches a diagnosis, a statement of the problem that is causing the pain. Treatment is focused on the causative problem with the expectation that pain will disappear when the source of pain ceases to exist. In some instances when it is known that treatment will necessarily require a protracted period of time, medications such as morphine may be used to provide temporary pain relief. So, for example, a physician can quickly alleviate

the pain of appendicitis by removing the inflamed appendix, or an orthopedic surgeon may alleviate the pain of a broken bone by setting the bone and supplying some medication during the interval when healing begins.

Unfortunately, this medical treatment model does not lead to uniform success when applied to patients suffering *chronic* pain. In some cases, chronic pain patients have an identifiable source of pain but there is no known therapy for their actual problem. In other instances, there may be no identifiable source for the pain, yet pain exists. In the latter situation there is no clear-cut therapeutic approach, so when physicians apply the acute pain model in dealing with these patients, they continue to search for remediable problems but often find none. Since practitioners become frustrated when they face an apparently insurmountable problem, they often shun such patients.

Shortly after World War II, Dr. John Bonica, an anesthesiologist in Seattle, Washington, founded the first pain clinic in this country; today the pain clinic concept is flourishing. The clinics endeavor to help chronic pain patients using special methods for these very challenging clinical problems. These techniques are based on theories from many disciplines, and even today practitioners recognize that there are an unfortunately large number of problems that are not solvable. Furthermore, the incomplete nature of scientific evidence makes treatment inefficient.

In the multidisciplinary pain clinic, patients are evaluated by experts from

several specialties, and many types of treatment are available. When there is an identifiable problem, pharmaceutical or surgical therapy may be recommended to treat the source of the pain. However, in most cases such problems are not found; so the pain must be treated as an independent entity. On rare occasions surgery may be performed to destroy a nerve or interrupt a pain pathway. In some instances the same result is achieved with the injection of substances which will destroy nerves so that an operation can be avoided. Some patients are treated with acupuncture or with hypnosis, while others may use devices which stimulate the nervous system and in some still incompletely understood manner turn off pain perception. For others a psychological approach may be most effective.

This last approach can be illustrated by the story of one of the patients seen in the University Hospitals Pain Clinic. A 70-year-old European woman was hospitalized with a recurrence of incapacitating back pain following two operations on her back which had been unsuccessful. In discussing this woman's pain with her and her husband, it became clear that the back pain had grown to an insurmountable problem around the time of her husband's retiring from work. In speaking with them, it became obvious that the husband had taken over a number of household responsibilities upon his retirement while his wife felt that she had no suitable role. Once a compromise was achieved so that household tasks were divided and both husband and wife felt that

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Portions of this article are excerpted from Dr. Gorsky's book Pain: Origin and Treatment, to be published by Medical Examination Publishing Company this year, and are used with the permission of the publisher.



they had responsibilities and leisure time which they could enjoy together, the back pain began to recede and eventually ceased to be a problem.

In the last twenty-five years, attention has turned from the physical data of the nineteenth century as psychological theories have contributed more to understanding some chronic pain patients. For example behaviorists, such as Dr. Wilbert Fordyce from the University of Washington Pain Clinic, who look at human activities in terms of what responses the environment provides for a particular action, have a special approach to the treatment of pain.

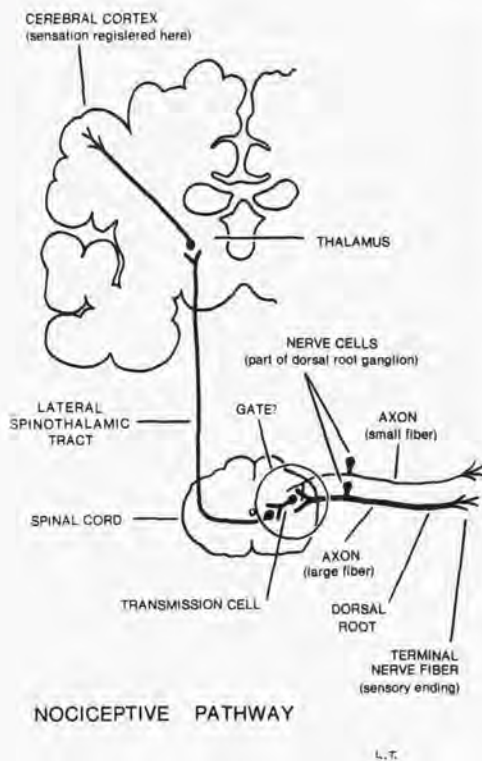
These theoreticians say that individuals do the things they do because they receive some reward from the environment for each activity. That is, people spend the most time doing things which are the most rewarding and the least time doing things that are the least rewarding. Furthermore, the behaviorist thinks that what an individual does in response to pain has been learned. Children are generally taught to seek help from an adult if they are injured or if something hurts. This is both adaptive and appropriate behavior; an injured or sick child will receive necessary medical attention and some psychological support for damaged self-esteem. This learned response, however, may become inappropriate when an adult exhibits only pain behaviors. That is, a patient who spends all available time seeking help from physicians and others, complaining, taking medications, limping, groaning, or otherwise exhibiting pain, has replaced all normal behavior with pain behavior. Such patients are often very difficult to treat. However, since the behaviorist views this patient's problem as a learned response, theory suggests that it should be possible for the patient to learn a new set of responses: such patients can be treated by means of *behavior modification*.

In the controlled environment within a hospital or rehabilitation facility, reinforcing responses are provided for non-pain behavior, while no reinforcement is given for pain behaviors. In this way, the patient is trained gradually to substitute more normal and functional activities for the previously existing pain behavior. Unfortunately the biggest problem in behavior therapy is the limited degree to which the environment can be controlled, even within the treatment setting, and the vir-

tual absence of control outside of the hospital. For some patients, it is impossible to find sufficient rewards to change behavior. For others behavior can be changed within the hospital; but when the patient returns to a normal environment and reinforcement for pain behavior resumes, the patient's behavior may revert. At present, behavior therapy is successful for some patients and a failure for others.

On occasion the environment presents a startling reward for diminished pain behavior and a miraculous cure can be effected. One recent patient who had been hospitalized for some time with incapacitating pain became involved in an adoption proceeding in an effort to introduce a child into an otherwise childless family. An attorney made it clear to the patient that it would likely be impossible to obtain an adoption while the patient was incapacitated and out of work. This provided sufficient motivation that the patient was able to begin a rigorous physical therapy program and was ultimately able to return to useful employment and household responsibilities. While traditional behavior modification had not been successful with this patient because an adequate reward had not been found, the real environment provided sufficient stimulus for the patient to change behavior in very basic ways.

The introduction of acupuncture from China to the western world again focused attention on organic methods for dealing with pain. While the mechanism by which acupuncture acts has yet to be satisfactorily explained, the overwhelming evidence that the phenomenon exists has stimulated much research. In 1965 in the journal *Science*, Drs. Melzack and Wall postulated a "gate theory" which may explain the action of acupuncture as well as many more common experiences with pain perception. The theory assumes that there are interactions between various pathways so that when one pathway is stimulated, that stimulation may affect the transmission of impulses in another pathway. In fact, since the proposal of the gate theory, many sites for the "gates" have been proposed. There may be gates which exist low in the spinal cord, while others may exist in higher centers in the brain. In their original formulation, Melzack and Wall described stimulation coming from some body part along two pathways. The first pathway, made up of relatively large nerve fibers which transmit



information relatively quickly, would be used for sensations other than pain. The other pathway, involving very small fibers which transmit information relatively slowly, is typical of fibers which do carry nociceptive information. The original gate theory proposed that when stimulation of the first pathway occurs, that stimulation will prevent transmission by the other pathways at the spinal cord level. We can imagine that the gate functions like a telephone system. The large fiber networks have push-button dialing while the small fiber system uses the old-fashioned dial. When stimulation occurs somewhere in the body, both systems begin to "dial" the central nervous system. Since the large fiber system will complete the dialing process first, their impulses get through. The small fiber system carrying pain information will get a "busy" signal; thus no pain will be perceived.

Melzack and Wall assumed that a specific group of cells known as T or transmission cells exist in the spinal cord and that typically these T cells are stimulated by nociceptive fibers. They in turn send information to higher central nervous system

structures. However, there is also negative input on the T cells which prevents their functioning when large fiber pathways are being stimulated. Melzack and Wall's theory may be used to explain why rubbing a painful spot can soothe the pain, why the application of a poultice (a chemical irritant) may soothe deep pain, and why the stimulation of acupuncture or other electrical stimulation of the central nervous system may work.

One patient seen in the University Hospitals' Pain Clinic had arm pain which had been refractory to many modes of therapy. There was no identifiable source for this pain but the pain had been long standing and was incapacitating. This patient was provided with a small electronic device which sent controlled pulses of electricity to electrodes which were applied to the skin on the upper arm. When the patient adjusted the device so that a constant though not unpleasant tingling sensation was felt in the arm, all pain was abolished. The patient found that he could use the device for several hours in the morning and remain pain-free for most of the day and then use the device for a few hours in the evening in order to be pain-free during the night.

Recent discoveries about the organic nature of the brain and thought processes have opened up new areas of investigation. The first hint that there might be an organic, pharmacologic approach to pain came with the identification of the structure of opiate molecules. When pharmacologists realized that all of these molecules had certain structural features in common, they theorized that there must be a receptor, a special place within the central nervous system, where these pain-relieving molecules act. Since it seemed inconceivable that animals and humans would have a receptor specifically fashioned to be stimulated by certain chemicals from the poppy plant, pharmacologists assumed that there must be an endogenous (naturally occurring) chemical which is supposed to act on these receptors and that the poppy derivatives merely simulate this action. A few years ago the endogenous chemical was discovered. We now know that a molecule called *endorphin* (for *endogenous morphine*) is elaborated within the central nervous system and that this molecule acts on receptors in order to alleviate pain. Unfortunately, we do not know how this mechanism normally works, what causes

endorphin to act, nor what role endorphin is supposed to play in normal body functioning. Furthermore, we know that endorphin is distributed widely through the body in many tissues which would seem to have nothing to do with pain perception; so endorphin may be a relatively general chemical transmitter substance which serves many functions. Thus studies which describe endorphin solely as a pain relieving mediator could lead to serious misinterpretations.

Nonetheless, it is intriguing to speculate that patients who suffer chronic pain may have a deficit in their endorphin system. These patients may not be able to manufacture sufficient endorphin, or the molecule that they do manufacture may be defective in some way. At present, we just do not know.

There are some other organic clues exclusive of endorphin. Medications for treating a variety of disorders act by interfering with transmitter substances in the nervous system. These substances are elaborated by one cell and stimulate another cell at appropriate times. Many drugs interfere with the manufacture of these substances or with their degradation, and in some way modify transmitter activity in order to relieve symptoms. Serotonin is a chemical which has been known for some time to exist in the nervous system, but to date no specific

role has been discovered for this molecule. Norepinephrine, on the other hand, is a molecule for which many activities have been elucidated. For example, some patients who suffer from serious depression seem to have a malfunction in a norepinephrine pathway in the brain. Many of the medications used to treat depression apparently act by altering the availability of norepinephrine for certain receptors. It has been known that these medications also exert an influence on serotonin and that these medications sometimes alleviate chronic pain. A new pharmaceutical agent is available which lacks the norepinephrine properties but seems to have serotonin properties similar to those of the antidepressant drugs. This new medication does not have any antidepressant effect but seems to alleviate pain in some patients. Therefore, serotonin may be an important molecule for some aspect of pain perception. At present, there are too few clues to make any more definitive statement.

In the future, we may see more use made of these new organic methods when there is sufficient data to make possible a rational approach to the treatment of pain patients. However, since it has taken from Aristototele to almost the twenty-first century for us to travel this far, it may be a relatively long time before the mystery is completely unraveled.



Klaus G. Roy

MOZART AT BEETHOVEN'S GRAVE

A Chronological-Historical Speculation

It might have been....When Beethoven died in his 57th year (it is often forgotten how comparatively young he was), Mozart had been dead for a little more than 36 years. Had he not left the physical world just short of his 36th birthday, he might have lived on to the proverbial three-score-and-ten, or even longer; his old friend Haydn, in fact, died at 77. At Beethoven's funeral in March of 1827, Mozart would have been only 71, not an unreasonable age by our twentieth-century expectations, though unusual in the medically undeveloped eighteenth.

What is the point of speculating on events that never took place? As Joseph Machlis has written, there is no conditional in history. Yet it may be worthwhile to consider how the history of music could have been changed by life-spans different from the actual ones.

There is, surely, little more that could or should have been expected from Mozart, when he died in his mid-thirties. What could one ask beyond the great operas, the more than 50 symphonies, over 30 concertos, and all-in-all an output of some thousand works in every conceivable

medium? The question simply is this: had he lived, what might his later music have been like?

George Bernard Shaw was only partially right when he wrote that Mozart "was not the founder of a dynasty. In art, the highest success is to be the last of your race, not the first. Anybody, almost, can make a beginning; the difficulty is to make an end—to do what cannot be bettered." There are, in Mozart's last symphonies and operas, harmonic excursions of extraordinary boldness, passages that were by the standard of the time not only "too highly spiced," as the Viennese called them, but "hyper-modern." Would Mozart, in his fifties or sixties, have written music of Berliozian daring and Wagnerian chromaticism, or would he have "merely" further refined the style and the language we now call "classical"? Would he have understood the revolutionary aspects of Beethoven's music after 1800, and have outdone them in his own way, or would he have become a "conservative" opposed to further experimentation?

Even in being "the last of one's race" there can reside a sense of the future. After that "which cannot be bettered" must come

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something else, as Beethoven instinctively knew. Mozart, who was "form incarnate," might have tried new and unprecedented designs. In the medium of the piano concerto, he had said virtually everything that could be said until Beethoven made it into a "contest of solo and orchestra." Might Mozart therefore have returned to the violin concerto—a medium he ignored for one reason or another after he was twenty? He might have dealt further with the oratorio, again a medium not explored since his early works. He was ready to write a series of songs to rival Schubert's. In 1831, at the age of 75, he could have heard a work of the previous year, Berlioz's *Symphonie Fantastique*: would he have been amazed, as were the French composer's contemporaries, or would he have long since been an ardent "romanticist" himself? "An artist is never ahead of his time," Edgard Varèse once said, "but most people are far behind theirs."

Now as for Schubert...again, we are in possession of a thousand works; dare one ask for more? What, for instance, would it have meant if that incredible genius had lived long enough beyond his 31 years to become recognized as a symphonist? Eleven years after his death, the "Great C major Symphony" was first performed — and promptly shelved as virtually unplayable. The "Unfinished" Symphony, misplaced and unknown, had to wait until 1865 — 43 years after it was written! — to be given its première; at that time, Schubert would have been only 68 years of age.

One could hardly have wished for more songs; 600 of them are surely enough. But symphonies...having "hit his stride" with Nos. 8 and 9, the B minor and the C major, Schubert would most probably have gone on to numerous further works in the orchestral medium. Perhaps we would have had from him a great piano concerto or two, some violin concertos, and at last a workable opera — given a decent libretto. With a full life-span, Schubert could have known Brahms, Wagner and Bruckner, and particularly the latter's symphonies — so deeply indebted to him — might have influenced him in turn. The great Austrian poet Grillparzer touched the truth when, in his funeral oration for Schubert, he spoke of "the rich treasure, but yet much fairer hopes."

We have noted Beethoven's comparatively early death, at 56. From him we would certainly have had a Tenth Symphony (sketches exist) and several more,

and perhaps most importantly another opera. There is no "Faust" opera quite worthy of Goethe's drama, though Busoni's *Dr. Faustus* comes close. Beethoven, who toyed with the idea, was the one nineteenth-century composer to do it justice, to take the subject yet one more step beyond Berlioz's remarkable treatment. The tone poem, which Beethoven had really originated in his great overtures (*Egmont*, *Coriolanus*, and *Leonore* Nos. 2 and 3), might have gained in him an exponent more consistently fine than Liszt. It is almost inconceivable what he might have accomplished in twenty more years of life, and how the history of music might have been further enriched. The question what kind of music Beethoven would have written had he not gone deaf in his thirties is another "if" of monumental proportions, subject for a separate study.



To reverse the proposition: if Haydn had died at 36, as did Mozart, his name would not take its place in musical history as that of a major master, but only as that of a composer of exceptional gifts and considerable accomplishment. His genius, indeed his real personality as a creative artist, only began to assert itself in full as he approached the age of 40. His early symphonies (some 50 of the total of 104-plus) were without question superb, and in some ways path-breaking; but the incomparable "Paris" and "London" symphonies, as well as the great oratorios and masses, were still far in the future. Of his "five creative periods," that of 1760 to 1769 (his thirties) was only the second; Karl Geiringer calls it "a phase of transition."

By his mid-thirties, Wagner had composed only *Rienzi*, *The Flying Dutchman*, and *Tannhauser*; masterpieces of their kind, to be sure, but not yet comparable in stature to *Tristan und Isolde*, *Die Meistersinger*, and the *Ring* cycle. Of Verdi's early operas, we hear only *Macbeth*, first performed when he was 33. At 36 he produced *Luisa Miller*, but not until he was 37 did he come forth with his first indisputable masterpiece, *Rigoletto*. From there, the road was open to the great works of his "middle period"; yet the last three and probably greatest of all his operas, *Aida*, *Otello*, and *Falstaff*, date from his late fifties, sixties, and seventies!

What kind of music would Strauss and Mahler have written without the nearly overwhelming influence of the later Wagner? What would have taken the place of the immensely important Wagnerian revolution in music, whose radiation spread deep into the twentieth century? What would operatic literature have been without the later Verdi, whose presence affected its course during the entire second half of the nineteenth century, until he died in 1901?

Would Vincenzo Bellini have become a rival to Verdi, had he not died in 1835 at the age of 34? Already the famous composer of *Il Pirata* (written at 26!), *La Sonnambula*, *Norma*, and *I Puritani*, he might have turned his astonishing gifts to quite a different form of operatic drama. One cannot say the same of Gaetano Donizetti, who by the time of his death at 50 had produced more than 70 operas, but who blazed no new trails.

Shocking and saddening are the chronologies of Arriaga and Pergolesi. Juan Crisostomo Arriaga, a prodigious talent, died in 1826, ten days before his 20th birthday. Giovanni Battista Pergolesi, an incipient master of the first rank, died in 1736 at the age of 26. Indeed, "but much fairer hopes...." However short the life-span of Mendelssohn, who died at 39, his creative life was more than a quarter of a century. A prodigy of nearly Mozartean quality, he was a recognized composer by his mid-teens, and his total output was enormous. Weber also died at 39, and so did Chopin. Among others of genius whose days were unmercifully cut short are Georges Bizet



Mozart died at the age of 35, but by that time he had pursued a professional career in music for over 30 years. Here is a portrait of the *Wunderkind* at the keyboard. (From the Mozart house in Salzburg.)

(36), Modeste Moussorgsky (42), Max Reger (43), Ernest Chausson (44), Peter Cornelius (49), and Kurt Weill (50). Whom have we forgotten? Would one wish to "trade" those incomplete and partially unfulfilled lives for that of another child prodigy, hailed as "a new Mozart," namely Camille Saint-Saens, whom history had utterly passed by when he died in 1921 at the age of 86?

The course of American music might have been considerably altered had not Charles Tomlinson Griffes died in 1920, at 35. His production was extensive, and there are some genuine masterpieces among them, such as *The Pleasure Dome of Kubla Khan*, the *Roman Sketches* including *The White Peacock*, the ineffably beautiful *Poem* for flute and orchestra, and the powerful *Piano Sonata*. Imagine if Griffes had lived another 30 years, until 1950! He might stand today beside Ives and Copland as a major figure in the music of this country. A great catastrophe for the music not only of America but of the entire world was the death of George Gershwin, short of his 39th birthday. Only two years older than Copland, Gershwin would be 82 as this essay appears, and a universally honored elder statesman of music.



Gustav Mahler died in Vienna in 1911, shortly before his 51st birthday. Alban Berg, born 25 years after Mahler, died in Vienna in 1935 — also in his 51st year. In many ways, Berg was Mahler's greatest disciple, the one musician who continued and intensified his mentor's romanticism, neuroticism, and deep despair about the human condition, while carrying aspects of his musical language into new regions. While Mahler foresaw the cataclysm of the early twentieth century and expressed it in his work, Berg lived through it and symbolized it in his. Mahler died shortly before World War I, Berg shortly before World War II. Both *knew*.

Certainly we can consider Mahler's life-work complete as it stands. Nine symphonies, *Das Lied von der Erde*, and the magnificent torso of the uncompleted Tenth Symphony—an imposing, fully rounded body of work. What more could there have been? Mahler was deeply interested in the efforts of his disciples Schoenberg, Berg and Webern; while he did not always follow

them in their excursions and departures, he supported them and believed in them. In his own later music, especially the Ninth and Tenth Symphonies (as well as parts of the Sixth), he stretched the limits of nineteenth-century harmony to their breaking point. Had he lived, would he have adopted or at least utilized in some ways the twelve-tone method worked out by Schoenberg? He was already on the borderline of atonality, of music without key-centers, though he never crossed it. At 60, 65, or 70, would he have? Had he died at 75, in 1935, what kind of a "modern composer" would he have been? Would that prince among opera conductors eventually have written one of his own? Would he have turned to chamber music at last?

Berg at his death was no more written-out than Mahler had been. We now know that a third act of the opera *Lulu* was indeed completed. The great Violin Concerto of his last year — would it have been succeeded by symphonies, chamber music, a piano concerto, another opera or two? Had Berg lived to be 75, he would have died in 1960 — long enough to *lead* a school of composers, not only to influence them, and perhaps to become quite a different composer from the one we know. If he had remained on the scene that long, as did Schoenberg (who died at 76), perhaps the current "return to romanticism" would not have been a return — since romanticism in its new form would never have departed.



Four years younger than Mahler, his colleague Richard Strauss outlived him by 38 years. In his last decades, writes Karl Geiringer, Strauss was "virtually a monument to his own great past." If death had taken Strauss just short of 51, like Mahler, we would still have the master essentially complete: all the tone poems except the affecting *Metamorphosen* of the mid-1940's, and the best operas including *Salome*, *Elektra*, *Rosenkavalier*, and *Ariadne*. We would of course miss *Die Frau ohne Schatten* among the later nine, as well as *Arabella* and *Capriccio*; and it would be hard to do without the *Four Last Songs* of 1948. But if Strauss had died in 1900, at 36 like Mozart, though we would still know him as the incomparable master of every one of the great tone poems, from *Don Juan* to *Ein Heldenleben*, we would simply not have known what he could accomplish in



Verdi lived to the age of 88 and wrote some of his most original and profound works at the end of his life. This photograph was taken in 1900, one year before his death.

music for the stage. The ardent modernist in time became a conservative; the rebel — in his own words — lived long enough to be a classic. It is believed, and justifiably, that Strauss had done all his best work by the time he was 50. He could afford to repeat himself, in a style that can be termed "past mastery."



Though there is no conditional in history, the chronicle of music is not a set of facts engraved in stone. Like any history, it is what men make of it. One may still argue about Napoleon's place in the scheme of things; why not about Beethoven's? Who influenced whom, who learned from whom, how long did an era really last (and when did it really begin), why is so-and-so more important than so-and-so, is such-and-such a work overrated or underrated?...the list goes on. After all, did not the "rediscovery" of J.S. Bach nearly 100 years after his death drastically change the musical pantheon?

But, you may say, at least the fact that someone died on a certain date and therefore wrote no more (the term *Opus Posthumous* notwithstanding)...now, that is a fact! And one may reply, only to a degree. For first of all we continue to discover lost or hitherto unknown pieces by the masters; secondly, an autograph may show up and make a published version look quite foolish; thirdly, every great interpreter re-writes

musical history to some extent, in his own way; and, last but not least, we can now re-evaluate the contribution of composers many centuries dead, such as the masters of the Middle Ages and Renaissance, and thus "bring them to life again" in dramatic fashion. How revolutionary to our understanding of the history of music has been the long-playing record, and with it a deep and leisurely look at marvels hardly suspected before!

Thus when we consider "what might have been," we may regard it as no more fanciful an exercise than discovering, to our delighted surprise, that a name in the dictionary, such as Josquin des Prez, wrote magnificently listenable music 200 years before Bach, and that a thirteenth-century dance by a composer whose name we do not even know is filled with lively syncopation rivaling jazz. Vivaldi would faint on the spot if you could show him his current listing in the Schwann catalogue. Such a degree of immortality was not even

imagined by those who wrote music because they could do no other.

Immortality? In the light of the earth's existence, a thousand years is the twinkling of an eye. But to us, it represents a sizeable portion of what we consider our civilization. A composer whose work has lasted a few hundred years is indeed sufficiently immortal, and one does not require new and dubious pieces from his spirit through the well-meaning (and quite inexplicable) ministrations of "media" such as Rosemary Brown. Were the transmitted music better, did it take up where the masters left off, one would listen with greater interest; but for the ghosts of Beethoven and Schubert to contribute "new" music that retrogresses to their earliest styles adds little to our awareness. The "what might have been" rests in our imaginations, and it makes all the more treasurable what actually exists and forms our immense and inexhaustible literature of music.

APPENDIX

The achievements of composers who died young are of course facts whose existence is not altered by the possibilities of what they might have done in later years. The daring "dissonant counterpoint" in Beethoven's last sonatas and quartets does not in any way outdate or make old-fashioned the composer's earlier works. Yet it is also true that, for example, the late symphonies of Bruckner are much more interesting from a formal standpoint than the earlier ones. In fact it most often happens that the longer the life granted to a great master, the more distant explorations he will attempt, the more remarkable discoveries he will make. As an appendix to this essay, and particularly for the interest of those readers who like to concern themselves with more technical matters, we present a few examples of those explorations and discoveries, as well as one that shows us a master composer at the student stage which it was soon necessary for him to leave behind.

Haydn

Chromaticism, the free utilization in melody and harmony of the half-tones available among the twelve different tones of the Western system, is not necessarily an indication of an advanced style, but it can be. We find it in the music of Bach (see, for example, the *Chromatic Fantasy*), the later symphonies of Mozart, and Wagner (with the *Tristan* prelude as the most famous and controversial). The largely diatonic method of Haydn's music by no means makes his works consistently simple; but when, in his later years, he began to experiment with harmonic possibilities, he occasionally arrived at conclusions and solutions astonishing not only for his own time but for ours.

Wishing to represent "chaos" at the beginning of his oratorio *The Creation* (completed at the age of 66), he faced a challenging problem. To write "chaotic" music was certainly not the solution; but since music — to him and virtually all composers — was the *ordering* of sound materials, there arose a contradiction in terms. Haydn's answer was to write the most harmonically advanced music he could imagine. His modulations, virtually "Tristanesque" in their boldness, suggested the strangeness of the primal world, its fluctuating, undefined shapes. To shape the shapeless, to be logical in the representation of infinite freedom, that was a puzzle the mastering of which inspired him to one of his greatest compositions.

Donald Francis Tovey devotes five pages to his discussion of that Introduction alone. "The chaos Haydn intends to represent," he writes, "is no mere state of disorder and confusion." Tovey is convinced that the composer was aware of the nebular hypothesis of Kant and Laplace, and points out that he discussed astronomy as well as music when visiting Herschel in England. His "ambiguity and boldness show that he is fully aware of the paradox of any thinkable notion of Chaos." Comparing this music with the *Tristan* prelude, Tovey says that — unlike Wagner's — his effects are "undeveloped into systematic features. In other words, they are admirably chaotic; they are not nonsensical, for their resolution is quite orthodox, though they occur as shocks for which their antecedents did not prepare us.... Only a supreme artist could maintain such a style as that of Haydn's representation of Chaos."

"Wise critics," he says elsewhere, and most pertinently to the premise of this entire essay, "do not prophesy what Mozart could have done if he had lived. But it is evident that, as far as his and Haydn's methods differ, Haydn's are the more ready to produce a representation of Chaos that should give the listener pleasure by arousing the expectation and delaying the emergence of Cosmos."

No amount of analysis can contradict Tovey's infinitely wise observation that "the universe will always remain a mystery rather than a mechanism." And to quote from those 59 amazing measures a mere eight does not do justice to the entire piece; the musically competent reader is urged to look at and play through the complete Introduction.

The image displays two staves of musical notation. The top staff begins with a treble clef and a key signature of two flats (B-flat and E-flat). It features a complex, dissonant chordal texture. Instruments indicated include Fag. (Fagotto) and Viol. II (Violino II). The bottom staff starts at measure 21, marked with a box containing the number 21. It continues the dissonant texture, with instruments Fl. (Flauto) and Ob. (Oboe) indicated. The notation includes various rhythmic values, accidentals, and dynamic markings such as *pp* (pianissimo) and *f* (forte).

Verdi

While the younger Haydn was certainly capable of producing daring and unusual works in the harmonic and rhythmic areas of music, the younger Verdi excelled primarily as a musical dramatist, less interested in subtleties of harmony and rhythm. Melodically, of course, he was inspired from the first, and as a communicator of human emotion he was a force of nature. But it was not until his last three works for the stage, *Aïda*, *Otello*, and *Falstaff*, that the example of Wagner and his own growth as an artist intensified his musical language to previously unequalled individuality and finesse. One doubts that the younger composer would have been ready to venture forth with a lurching harmonic progression such as the following, in Iago's drinking song from *Otello*:

be - va, be - va, be -

FF

ben legato

va, be - va, be - va,

strisciando la voce

ppp *cres.*

be - va con me.

The great love duet of Otello and Desdemona begins with harmonies of Wagnerian pathos, and the hero's first phrase moves above harmonies of unusual richness and daring of progression:

con espressione

morendo

p

OTELLO *POCO PIÙ* $\text{♩} = 72$

p

Già nel-la not-te den - sa 's'e - stingue ogni cla - mor,

POCO PIÙ $\text{♩} = 72$

pp *o legatissimo*

già il mio cor fre-me - bon - do s'am-mansa in quest'am-plex - so e si rin-

-sen - sa.

Stravinsky

Like Wagner, Stravinsky was not a child prodigy. In fact, his apprenticeship was a long one, lasting into his later twenties. Not until *The Firebird* of 1909-10 (and even that a work deeply indebted to Rimsky-Korsakov and Debussy) did his originality assert itself. His Opp. 3 and 4, *Scherzo fantastique* and *Fireworks*, both of 1908, give us glimpses of the master to come; but the First Symphony, Op. 1 of 1905-07, hardly does. He was, in educational parlance, a "late bloomer." In the early symphony, little more is attempted than a large-scale essay in academic correctness, with rare flashes of talent in a piece of music that virtually nobody would recognize today as Stravinsky's. Yet in later years, he did not disavow the piece, but occasionally conducted it, and even recorded it. In his autobiography of 1935, he explained that his studies with Rimsky-Korsakov, who "supervised" the writing of the work and to whom it is dedicated, gave him "a solid foundation of incalculable value on which I was later to establish and develop my craftsmanship. No matter what the subject may be, there is only one course for the beginner: he must at first accept a discipline from without, but only as a means of obtaining freedom for, and strengthening himself in, his personal method of expression."

It is in that light that we should see and hear themes and harmonies like those of the beginnings of the first and last movements, tunes which owe their essential nature to the tradition of Tchaikovsky, Glazounov, and at times even Wagner. The "real"

Stravinsky, if only in an incipient form, appears in moments of the scherzo, the best of the four movements. It is there that we find hints of the trenchant motives, infinitely inventive rhythms, driving *ostinati* and crystalline scoring that mark the work of the mature master. But in the excerpts below, all is retrospective, conventional, safe and sound.

I. Allegro moderato. **Symphonie № 1.** И. СТРАВИНСКИЙ.
IGOR STRAWINSKY.

2 Oboel.
I. II.
3 Clarinetti in B
III.
2 Fagotti..

(Strings)

III. (poi picc.)
3 Flauti.
I. II.

Fl. picc. 1

IV. FINALE.
Allegro molto.

ff p

Stravinsky examples reproduced
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Mahler

We said above that in his last symphonies Mahler stretched the limits of nineteenth-century harmony to their breaking point, and wondered whether the twelve-tone method of Schoenberg (then still a decade in the future) would have held some interest for him. It is evident that when chromaticism is pushed to its uttermost boundaries, a degree of atonality (or, better, non-tonality) results. Yet while Mahler's harmonies are extremely fluid, they never cross the line into a kind of harmony that cannot be analyzed according to traditional methods. Even in his most daring moment of the 10th Symphony (1910-11), the shattering effect of the chord formation is not diminished by the fact that we can describe the device. Mahler rarely shocks us harmonically; his "effects" derive more from juxtaposition, incongruity, details of scoring, tone color. But here, in the two chords that "outbid" each other for violence in the first movement of the 10th (and are repeated in the finale) it is the dissonance obtained by the overlay of intervals which assaults the hearer (as of course it means to do):



What we have here may be described as follows (and different musicians are likely to come to somewhat different conclusions): a chord of the 11th is built up, along the traditional nineteenth-century practice of superimposed intervals of the third. The chord itself would be quite unexceptional, were it not that it comes into immediate conflict with the note A already stated. Thus a structure called a 13th comes into being, and dissonant relationships move into action. In the subsequent chord, the balance of notes shifts; some doublings are eliminated, and three new notes are added, again in thirds: the triad C, E flat, and G. This new nine-note chord could be called a 19th, but it might also be seen as a kind of poly-chord, with two structures superimposed. If three more notes were brought into play, B flat, E, and F sharp, we would have a complete twelve-tone chord. The note A persists, as a kind of pivot, and insists on its rightness after the din has been cut off.

The young British conductor Andrew Massey, who was very helpful to this writer in the investigation of the present example, has pointed out that the interval of the fifth as a foundation provides the structure with a kind of "false stability," and that the change in scoring and balance of notes is of considerable importance in the actual sonorous effect of the second chord. But he perceptively adds that since the two chords do not really move within a harmonic context or progression — that is, they come from nowhere and go nowhere — they remain isolated chord formations rather than becoming purposeful harmonies.

What Mahler does here, therefore, does not at all lead directly into atonal music (to say nothing of twelve-tone or serial methods). Rather, the chords are extensions and intensifications of common practice, and were soon to become frequently used in the works of composers between 1910 and 1940, as part of a new "common language." Mahler's influence on Schoenberg and Berg probably lay much more in his searching musical symbolism for the human condition than in his harmonic practice, in his frankness of hyper-expressive emotion rather than in new technical formulations. But it does show that Mahler — at that ultimate point in his musical as well as physical life — was willing and ready to offer us sound formations that are not only dissonant (in the sense of high harmonic tension) but discordant, and from which yet more complex sound structures could be developed.

One should recall that some of Mahler's most potent effects of "dissonance" are not so much harmonic but emotional in nature, such as the quite consonant (but through contrast and texture absolutely cataclysmic) A flat minor chord earlier in the first movement of the 10th, or the chilling A minor chord at the very close of the 6th — an unexpected *fortissimo* following a decline into virtual inaudibility. The latter echoes the same device at the end of his youthful cantata, *Das Klagende Lied*, and thus represents continuity rather than departure. The dissonant chords in the 10th symphony, however, are things he would not have done (and did not do) in his music up to that time, however intense the emotional expression for which he always aimed. This is why we may wonder whether "Mahler at Berg's Grave" in 1935, at age 75, might not have become just as much of a "modern master" as did his disciple.



AUTHOR'S NOTE: Recently encountered has been an article in the Cultural Life section of *The German Tribune* (excerpts from German newspapers, translated into English), of April 20, 1963. Entitled "If Mozart Had Lived Longer," the anonymous contribution to *Der Tagesspiegel*, Berlin, April 4, 1963, deals in somewhat more detail with the imaginary and probably upsetting encounter Mozart would have experienced with the work of Beethoven. Schubert's "Unfinished" Symphony, says the author, "would have moved him deeply, but also given him an uneasy feeling....He would have rejected with horror and despice [*sic*] the initially mentioned Symphony Phantastique by Berlioz...after all, Mozart demanded that music should never exaggerate the expression of passion to the point of revulsion..." One may hope that the present essay is nowhere as certain of its assumptions as the excerpts here quoted.

Robert J. Andrews

THE RISKY BUSINESS OF TUNNELLING

Legal and Geological Headaches of a Tunnel Attorney

It takes a special kind of person to run a business that routinely entails enormous risks. Such a business is tunnel construction, where, in a single project, millions of dollars, the lives and safety of many workers, and the reputation of a company may be at stake. No amount of skill, experience, or caution can absolutely insure success. As an attorney for several tunnelling contractors, I have had the opportunity to observe these risks, which arise largely from two great unknowns: the composition of the rock or earth in which the tunnels are to be dug, and the composition of the gray matter in judges' heads. At times the latter has seemed to me to have the greater density. American and especially Canadian laws were seldom written with tunnel construction in mind, and what may be just and rational when applied to a shopping mall can be unjust and disastrous when applied to a tunnel. Although litigation does not inevitably accompany tunnel building, it does so often enough that I have heard a tunnel defined as "a subsurface generally cylindrical excavation with a soils engineer at one end and a lawyer at the other."

Besides unknown subsurface conditions and legal tangles, still another source of risk is the pressure to use new and experimental equipment and techniques in order to improve performance and stay ahead of competition. In my work I have seen more than my share of all three of these risks, as the case histories below will illustrate. Yet, in my dealings with various tunnellers, I have come to admire the steely nerves and philosophical sang-froid that seem to characterize the most successful practitioners of this business.

Among my clients has been a Cleveland area firm that is one of the most respected in the world, S & M Constructors of Solon, Ohio, owned and managed by Joseph and Victor Scaravilli of Cleveland, and Angelo and Anthony Marra of Indianapolis. To mention only one of their successes — in 1977, on a project in Charleston, S.C., Mole Construction of Beachwood, Ohio, an affiliate of S & M, set a new world's tunnelling record (1,660 linear feet [506 meters] sustained advance during seven consecutive days). It is, by the way, not coincidental that the Scaravillis and Marras are of Italian descent, like many other leaders in



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the industry. Historically some of the greatest tunnels have been built in the Italian Alps, and it is to be expected that such a specialized skill should be carried on as a family tradition.

When most people think of tunnels, they think of the passages blasted through mountains for railroads and highways. While these are the most visible and often the most spectacular variety, the majority of tunnels are built for use as sewers, drainage systems, and conduits for water, oil and chemicals. The size of such tunnels varies from a minimum of about 4 1/2 feet in diameter to more than 30 feet, as in the great Chicago Metropolitan Sewer District projects, or even larger in some vehicular tunnels.

Man has built tunnels for thousands of years. As more or less horizontal passageways, tunnels have been excavated through mountains or underground, especially for the conduction of water, since the beginnings of history. The earliest passages, mined with primitive picks, chisels and shovels, followed a grade (relation to absolute horizontal) dictated by the gravitational flow of water. Line (relation to predetermined direction) was a more difficult matter. Thus, though early tunnels are remarkably uniform in grade, they deviate more from strict economy of line than do those excavated today with the aid of laser targeting devices. Through the use of increasingly sophisticated equipment and materials, tunnelling has become a unique combination of advanced technology with an inevitable and exasperating ignorance of the subsurface conditions prior to excavation.

The modern tunnel-maker begins by sinking a vertical shaft down to the level where the actual tunnel begins. Through this shaft men and equipment enter the tunnel, and the excavation detritus, or "muck" as it is more expressively called, is hauled up out of it. As the vertical shaft is dug (usually with a crane and "clam bucket" scoop), it is lined with steel plates; after the tunnel is completed, the shaft is lined with concrete and capped off as a manhole for subsequent maintenance or repair. A similar exit shaft is dug where the tunnel will end.

Once the shaft is completed, a modern tunnel begins with the "turning of the eye," that is, the mining out by hand of the initial horizontal section, so that the Tunnel Boring Machine, or TBM, can be installed. This machine, the most important piece of

equipment in the operation, works like a huge earthworm, pressing its cutting face against the new soil or rock and passing the muck it digs back through the already excavated section. Some TBM's have been built over thirty feet in diameter; the hydraulically powered cutting wheels develop torques of over one million foot-pounds; and the hydraulic thrust jacks, which brace against the already constructed lining of the tunnel, press the cutting wheels forward with a thrust of up to three million pounds, at five thousand p.s.i. (pounds per square inch). Some are equipped with flood doors which seal off the heading (leading face of the tunnel) if water is unexpectedly struck. A single TBM may cost 3 million dollars or more. Each machine must be constructed for a particular subsurface condition: one designed for rock cannot be used for soft clay, and vice versa.

As the TBM advances, trailing gear must follow. A conveyor system carries the muck from the cutting wheels and dumps it into muck cars for transport back to the shaft. The muck cars with their electric locomotive are in themselves a little railroad system constructed within the tunnel behind the ever-advancing heading. Power lines and a ventilating system also must advance with the machine.

Simultaneously with the progress of the TBM, the tunnel must be lined. After each forward thrust stage of the TBM, a primary liner is erected consisting of a steel rib covered with wood lagging, much like the hoop and staves of a gigantic barrel. This primary liner follows immediately behind the advancing TBM and serves as the backstop off which the propulsion jacks of the TBM thrust to drive the TBM forward during the mining stage of the cycle.

When the contractor "holes out," that is, breaks into the already constructed exit shaft, the mining part of the operation has been completed: the tunnel has been excavated and has a primary lining. Normally a secondary liner is then installed, consisting either of pipe placed by a pipe-carrier device on the tunnel railroad, or of a monolithically poured concrete liner, 6 inches to a foot or more thick, cast in place inside the primary liner. This is the final interior surface of the tunnel, through which the water, sewage, drainage, or vehicles will ultimately pass. With the final cleanup, the shafts are topped off and completed as manholes. If everything has gone smoothly, the tunnel is ready to be placed

in service, and the contractor has a tidy profit of 25 to 30 per cent to reward him for his investment and risks. But more often than not, litigation becomes part of the unavoidable cleanup operations as a last stage in the project.

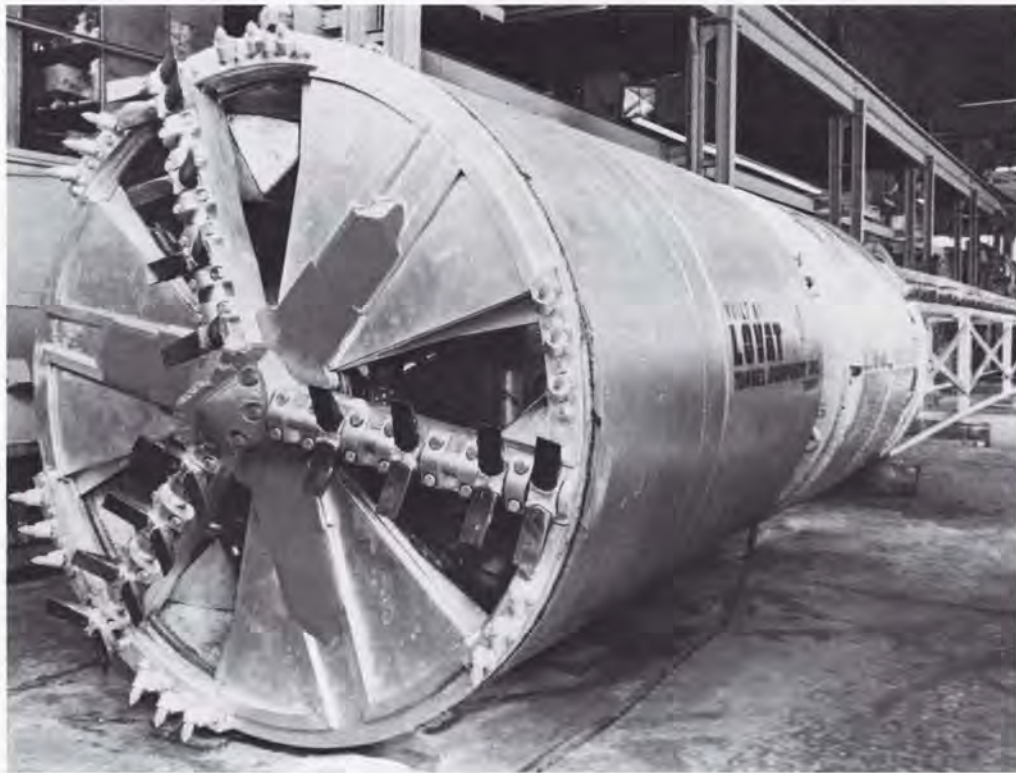
Thunder Bay

That was certainly the case with the Neebing-McIntyre Sanitary Trunk Sewer Project undertaken by the City of Thunder Bay, Ontario, the northernmost port on Lake Superior, Canada's great freshwater grain depot, where 30°F below zero temperatures in winter are not unusual.

What was exceptional about this project was an advanced, experimental engineering design, in which the normal primary and secondary liner stages were to be combined. An innovative engineering firm had designed and aggressively marketed a single liner system using pre-cast concrete segments to be erected immediately behind

the advancing TBM, thereby eliminating the need for the conventional two-stage liners. The attraction of this design to the owner, the City of Thunder Bay, was substantial cost savings; the attraction to the design engineering firm was favorable publicity in a competitive industry; the attraction to the contractor, my client who was low bidder on the project, was twofold: an increase in the reward/risk ante and a reputation for being in the vanguard of the tunnelling industry.

The project began auspiciously. The National Research Council of Canada was sufficiently impressed by the pioneer project to invest \$100,000 in a study monitoring the ground behavior as well as that of the experimental, segmented tunnel lining. From a promotional point of view, the project could not have been better conceived or executed. Word sped through the industry, spurred on by expert public relations, including an expensive film commissioned jointly by the design engineering firm, the manufacturer of the TBM (who



A medium-sized TBM for soft earth, with panels that close when the machine strikes water.

was himself awarded a patent for his contributions to the project), the manufacturer of the pre-cast concrete liner system, and the contractor. All participants wanted to publicize their involvement in the experiment and reap the rewards of the hard work they had expended, the monies they had invested, and the risks they had taken. Then, on Easter morning, 1977, one-and-a-half years into the project and only 150 feet from "holing out," the tunnel collapsed.

Miraculously, no one was hurt. Easter was the only day during the entire project that the tunnel was not being monitored or worked on; no workers were in the tunnel when it caved in.

What had gone wrong? Nearly four years after the fact, that determination will be made by the Supreme Court of Ontario, Trial Division.

For almost six months after the collapse, the four parties in the case—the City of Thunder Bay, the design engineer, the manufacturer of the segments, and the contractor—maneuvered for position. The con-

tractor first sued the design engineer, alleging that the design was inherently defective, and protected himself by also suing the City of Thunder Bay for the monies still owing on the contract, and the manufacturer of the segments for failing to supply goods which complied with the project's plans and specifications.

In response, the engineer denied that his design was defective and alleged that the contractor had been responsible for the collapse because of faulty workmanship on his part, or substandard materials, or both. The City of Thunder Bay alleged that the contractor had breached its contract with the City by failing to complete the tunnel and claimed damages for the cost of having others repair the damaged tunnel. Finally, the manufacturer of the segments denied that it had supplied a defective segmented system, asserted that it had supplied precisely what had been specified in the contract documents, and prayed that the contractor's action be dismissed and that it be permitted to go hence with its costs.



Interior of tunnel under construction, showing barrel-like conventional primary lining consisting of wood lagging braced by steel hoops.

To an objective observer—as objective, that is, as I can be — what seems to have happened is that an untried system was overenthusiastically recommended to the City of Thunder Bay by its consultant, the engineer who authored the design, and consequently, the projected state of the art was extended beyond a reasonable margin of error.

The problem as it confronts my client the contractor, however, is that as a result of a quirk in Canadian law he has to bear the costs of that almost successful experiment — at least until the Court renders its decision. The contractor did not realize until too late that by Canadian law, in direct contradiction to the principle which prevails in the United States, the contractor is responsible for the final success of the project including defects in design and materials. In the United States the contractor is held to have satisfied his contractual obligations so long as he performs the work in accordance with the plans and specifications submitted to him by the Owner and on which he bases his bid. The contractor only guarantees his workmanship, not the adequacy of the design. As one old-time sewer contractor put it to me: “we just dig the ditch.” Not so in Canada. Most of the cases used as precedents are antediluvian and apply mainly to contractors who build 500 houses a year using conventional means, instead of one tunnel that takes several years using new technology. It seems unfair, but the Supreme Court of Ontario thus far has always said, in effect: if you don't think you can build the project, don't bid it.

The contractor in this case is compelled to hope that reason and justice will outweigh tradition. Meanwhile, being a tunneller and hence something of a fatalist, he turns to other jobs.

Columbus

Unlike the Thunder Bay project, the Columbus, Ohio, Milo-Grogan Outfall Area Storm Relief Sewer appeared to be a perfectly conventional soft-ground job. There was no technological innovation. Some shale was to be encountered, along with cobbles, boulders and sand, as well as some lengthy runs in relatively competent (self-sustaining) clays. This project should have been easy. The contractor was so confident of his ability to make rapid headway under

these conditions that his bid was one million dollars below the engineer's estimate: that was the gamble he felt he had to take to get the job.

But this project, too, had its peril, namely, the unknown composition of the subsurface *exactly* where the tunnel was to go. Now, preliminary to any underground construction, it is commonplace to make a geological (rock) or soils engineering (soft ground) survey of the subsurface conditions to determine the nature of the materials to be excavated. The results of these tests are used both by the design engineer as he specifies the types of materials and methods of construction to be used and the contractor as he estimates the manner and cost of construction.

The engineers on the Columbus Milo-Grogan project had the usual subsurface tests made and, as is customary, made the test data, called Subsurface Investigation Reports (SIRs), available to contractors who sought to submit bids on the project. Borings for the SIRs are drilled every 200 to 500 feet along the alignment of the tunnel, but at least 20 to 50 feet off of centerline, because of the danger of run-ins at the face during actual tunnel excavation. The contractor always must infer that the soil and rock conditions he will encounter as he excavates the tunnel will be more or less similar at the tunnel centerline to the conditions he is shown in the SIRs made available to him prior to his bid.

To this point no great peril is apparent. SIRs are drafted and made available to prospective contractors because only on the basis of the information contained in them can the contractor compile a meaningful bid. He must have some knowledge of what the ground conditions are before he can select his equipment, primarily his TBM. A TBM designed for rock will be ineffective in soft ground, disastrous in wet and running sands and silt; the TBM designed for soft ground, built to seal itself in the presence of water, will batter itself to disintegration in any prolonged effort to excavate rock. It is beyond question, therefore, and accepted as a first principle of the tunnelling industry, that SIRs are indispensable. Without them, the tunneller simply would not bid on any project; no tunnels, no significant underground construction of any kind would ever take place. As a matter of reality in the construction world, SIRs are made available to contractors with the knowledge on the part of everyone that they will serve as the basis for their estimating process.

Enter the peril.

At the same time that all parties — owners, architects, engineers and contractors — understand that the contractor has to rely on these reports, no one wants to take the responsibility for their accuracy. Since the borings are taken off centerline, there is some chance, given the undulations of rock strata beneath the surface, the impact of glaciers, particularly in this geographical area, and the general effects of long-range geologic forces, that the conditions encountered at centerline will vary from conditions found at the locations of the borings. No one wants to bear the burden of the chance, though everyone realizes the contractor has to calculate his bid on the assumption that what he finds at centerline will substantially resemble what was encountered at the boring locations.

Because of the owner's desire to avoid having to bear the burden of the increased costs should the contractor encounter conditions significantly different from those shown in the SIRs, the contractor usually finds himself confronted with contractual language generically (and contemptuously — by contractors) referred to as "the disclaimer." This language says approximately the following: "The SIRs are made available to prospective bidders only for such purposes as those bidders may want, *at their own risk*, to use them. The information contained in them is *not* warranted to be accurate. The SIRs are *not* part of the contract documents. The contractor agrees that, in the event he encounters actual conditions unlike those indicated to be found at the locations of the borings, *he will make no claim* for any costs resulting from the discrepancy."

Exact wording varies from state to state and from contract to contract in the public work sector. Some contracts contain language even more onerous and one-sided than that example quoted above. In one feature they are all alike: the contractor has no choice but to sign the contract with such language in it, or go without work. There is no real opportunity to negotiate modifications in the terms of such clauses and contracts because they are common to all non-federal publicly funded projects. Such clauses are no longer found in contracts in which the federal government is directly involved as an owner, because the Supreme Court of the United States decided in 1918 that such clauses fly in the face of reality, are patently unfair because of the absence of parity of bargaining power, and are generally so offensive to the sensibilities of the Court as a matter of fundamental justice, as to be void as against public policy. Few states, however, have followed the Supreme Court's lead. Consequently, the contractor is faced with Hobson's choice: live with such clauses or find another line of work. Thus, as it happened in this case, and as always happens, the contractor takes it, rather than leaving it.

As ill chance would have it, instead of the moderately soft shale, dry sands, boulders, cobbles, and competent clays that the Columbus SIRs led us to expect, we encountered extremely hard shale, water and, most disastrously, unusual geologic phenomena known as concretions, of ten times the hardness anticipated, which were not even mentioned in the SIRs. The consequence to the contractors of encountering these differing subsurface conditions was an increase in cost of approximately 1.5 million dollars.

One of the extremely hard concretions encountered in the Milo-Grogan Outfall Area Storm Relief Sewer project in Columbus.



Upon the contractor's submission of his claim for these increased costs on the basis of a changed condition, the City of Columbus denied the claim, alleging that it was barred by the disclaimer language discussed above. In court, at the trial level, we argued that these clauses are in themselves unfair; that they fly in the face of reality (everyone in the industry knows the SIRs are an absolute prerequisite to any contractor's bidding on any project); that they are void as against public policy.

Though this argument was reasonable, we did not have much hope of convincing the court. We did, however, have another line of argument that was not only reasonable but that had been used in similar cases with success. If it could be shown that the SIRs contained *misstatements as to factual data*, then the contractor should be entitled to compensation.

In the hope of finding such inaccuracies, the contractor invested in additional borings of his own, which were placed as close to the original borings as possible, without penetrating the zone of disturbance (a radius of approximately three feet from the original boring). The additional borings did show striking discrepancies. The engineering geologist expert witness was able to identify one recovered core sample as a concretion with a rating of 40,000 p.s.i. At the same elevation, three and a half feet away, the SIRs told us the original sample had tested out at approximately 3,500 p.s.i., less than one-tenth the hardness we actually encountered. That such variations could occur in nature, our expert testified, was "extremely improbable." Furthermore, the geological literature on which the SIRs were supposedly based mentioned concretions as a prominent and primary characteristic of the area.

We were also able to demonstrate that the SIRs contained further misrepresentations in their positive assertion that "no water was encountered in the area traversed by the alignment" and that shale would be encountered at specific elevations. These assertions, experience in the tunnel had shown, were inaccurate and directly increased the contractor's costs.

It is critical to appreciate that these inaccuracies, misstatements and misrepresenta-

tions in the SIR data itself have nothing to do with inferences drawn by the contractor which may or may not have been made at his own risk. This is an entirely different line of argument and is not related to the question of whether disclaimer clauses in general are unfair or overreaching. A fine, but clear, distinction. To this moment, I do not think that the trial judge understands it. The trial lasted three weeks; the judge rendered his decision orally, from the bench — without recess, after closing arguments. His decision took less than two minutes to deliver. The gist of his decision was that perhaps he was a simple man, but to him a contract was a contract. The case has been appealed.

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Such are the vicissitudes of the tunnel construction industry: if you are not being battered by insufficiently tested experimental designs in Canada where the law is at least half a century behindhand, then you are battering your TBM to disintegration against concretions which were known to exist, but whose likely presence was not disclosed to you, and the avenue of redress is barred by a judge who tells you that to him, a contract is a contract — and fails or refuses to consider just what the contract and the terms of that contract are.

What is the contractor to do? Here is a story I have heard told about a certain now-elderly, gruff, up-from-ranks tunnelling pioneer of my acquaintance. A tunnel was being driven in two headings from opposite directions through a mountain in Pennsylvania. The appointed date had passed when the two headings should have met; obviously they had got somehow off line and were passing each other. The youthful engineer on the project came breathless with panic, seeking advice from this patriarch of the tunnelling world as to what to do in the face of such a calamity. The old man fixed him with a look, and said softly, "Younga man, shoota youself." The true tunneller of course does not shoot himself. He is a realist and knows that impenetrable concretions and impenetrable laws are facts of life. He will ante up another TBM and get on with the business of digging the ditch.



Robert E. McDonough

SIX POEMS ON PARENTHOOD



Bob and Katy McDonough

Photo: Louis Milic

Robert McDonough lives in Cleveland Heights with his son Steven and his daughter Katy. Born in Brooklyn, New York, he was educated at Boston College and New York University, and now teaches composition and reading at Cuyahoga Community College. He is Secretary of the Poets' League of Greater Cleveland and has published poems in The California Quarterly, The Hiram Poetry Review, The Mississippi Valley Review, Shelly's, Everyman, and other little magazines.

Of his writing he says: "I write poetry to save the world of course. Why else? Admittedly the world is not noticeably less lost through my efforts thus far, but there is something — life? God? — everywhere trying to speak and it may come to me to be worth speaking through. And if not? Then it will still be everywhere trying to speak and finding others to speak through, and I will still have spent my life as well as possible."

Words for a Daughter

*"Bob, I think that when I'm
real old, I might say, 'I'm ready,'
and then you'll say, 'Let's go,'
and then we'll die."*

—Katy, age 3 1/2

Love and work: a good man,
children, a few friends;
a job that fits your hand
and lasts. A tough mind.

Take what you want and pay the price.
It's easier to leave
what you've had than what you've missed.
Die knowing

We were never meant to live in this world.
There is no other.

The woman on the bike is out in the weather

She sits the seat deftly
she is gliding along singing
her thighs glitter
she could be my lover

She labors against wind and rain
her hair sticks to her head her face
The bicycle is strange she cannot
remember how it got there

The bicycle slips in the snow
The wind is against her behind her
she rides on the sidewalk
it is hard to see She will never get lost

She rides with a deep sense of purpose
an uncertain goal The weather
is abstract she blazes in every detail
My daughter endure

The Idea of Bologna

My boy, this is cheap bologna
that disappears so fast,
"just one slice" at a time, filthy stuff
more grain than meat, and so greasy
it leaves a ring around the mouth.

Merkel's in memory is long and dark,
with a counter at the back
like an altar, bright porcelain and glass,
and a man in white and red garments
leaning over. My father's hand—
stubby fingers, clipped nails, rusty hair—
always delivered the bologna.
(I never knew why he brought me so far.
Was it my mother, trapped with three kids
on a rainy day, screaming,
"I can't stand it. Take that kid out of here
and get him some bologna"?)
Whatever the cause, I knew
(My father had told me
and sawdust on the floor confirmed him)
this was the place,
where we'd find the real thing,
this would be Bologna.

Son, one thing more.
If ever you get to Brooklyn,
don't look for Merkel's.
It was sold, and then closed
a few years later, when someone found
a horseshoe nail in some cold cuts.
But know this, too:
you still must find
the real bologna.

Storm on the River

Promised my son a Cuyahoga cruise:
bridges, mills, factories, etc.
I had it figured:
\$4.25 for tickets, plus beer and soda.
Father showing son pollution compared to
father taking son fishing:
a poem on the death of nature
cheap at the price.

Up a darkening river
contempt seemed too simple.
The steel mill—furnace, chimney,
thick twisting pipes—grew like a tree.
The lawn in front of the paint factory
was public relations.

The storm struck as we turned about.
Heavy, hanging rain did not blot the shore
but flattened it, joined us to it,
ship and shore contained by rain.
In the river's shelter we felt no threat,
just a slight roll,
admonitory nudge from a huge hand,
a reminder.

Visitation

The girl, perhaps six:
a flowered dress, patent-leather shoes
(November, make it November),
cloth coat with fur collar,
hat to match and — yes — a muff.

The mother wears her blue wool suit,
the pearl pin and earrings,
a little lipstick.
She looks perfect.

It is Sunday, November,
overcast, scutter of dry leaves.
The father watches football;
they go to the Museum,
see Japanese prints,
have lunch or tea. It is
a new world, the little girl
will never forget this day.
The snow will start
as the mother leaves her.

The woman wants this
written into the decree.

Playground

In a hush of car-and-child noise, the sky
 Roars, faintly, unmistakably. It's a day
 To see the world as it is, as if the rain
 This past week had washed all faults from my eyes.
 I do not stand between myself
 And anything.

From this broken bench
 I see my daughter, blond darling, smack
 Her friend in the face with sand. Two mothers jump
 To the case, scolding and understanding, but I
 Do not care, do not care, though her aim,
 As Alice says on her way to wipe off Joe,
 Was admirable.

I see Renée, thirteen
 And stoop-shouldered, the chinning bar beneath
 Her knees, her hands around her ankles, spinning
 Again and again until I feel my brain
 Pressing against the top of my skull; she stops
 Hangs from her knees, grabbing at her shirt, flips
 Off to her feet. Someone applauds and she blushes.

Alice returns; a woman and a wolfhound
 Jog by. "I'd like to bring our dog, but I'm
 Afraid she'd bite a kid. I'm glad we have
 Her though. My husband needs to learn to love
 And dogs are easier." How to answer?
 "I have a dog in the basement. My wife left him
 The last time she checked into the hospital.
 She wouldn't take him back." Alice tops me.
 "His mother always gives away her dogs
 Before she attempts suicide."

Joe
 And my Katy start to play tornado with
 Dead leaves. I get up to stop them, but think,
 Why? The children laugh, the leaves swirl, the wind
 Blows.

The kids subside to the swings, demand
 To be pushed. Renée pushes Joe. The husband
 And dog arrive; they stand to one side
 With Alice. We tell the kids, "We have to go
 Cook supper," and stay. We talk of winter,
 Being trapped in the house, hating the kids.
 The swings achieve an accidental unison,
 The children laugh, adults are oddly pleased.
 As we leave the streetlight comes on, fixing
 Everyone in its clear and steady glow.

A. William Reynolds

WHAT CAN WE DO ABOUT PRODUCTIVITY?

A Management View

To most Americans, the question of business and industrial productivity may seem somewhat remote and abstract. Yet this country's declining rate of productivity underlies most of the economic problems that we are struggling with today. It is well worth everyone's time to look at the problem and to consider what can be done about it. My particular approach is from the perspective of management, since that is where my experience lies and where I believe many of the solutions may be found.

It's a complex, difficult subject. A great deal has been written and spoken about it. Reams of statistics are available. Economists, business leaders, government and labor leaders, all offer conflicting ideas and approaches. It is hard to define productivity, hard to identify with some assurance the steps that can be taken to improve productivity levels. Because it's hard to define, productivity is hard to measure, and I would submit as a general principle that anything we cannot measure, we cannot control.

But on the other hand, I am convinced that we must try to overcome the complexity and difficulty because I am deeply

concerned that productivity is a critical problem in the U.S. On this proposition at least, there is a broad consensus.

It is clear that the rate of growth of productivity in the United States has been declining and continues to do so. During the 50's and 60's, the output per hour worked — the traditional statistical measure of productivity — fluctuated around an average annual increase of 3%. During the early 1970's, this rate dropped to 1.5%. In 1978, it was only .4%. For the full year '79, U.S. productivity declined about 2%. The decline continues in 1980, as productivity fell at a 3.1% annual rate in the second quarter.

The statistics do not yet indicate that the overall productivity in other countries is higher than in the U.S., but the trend is certainly in that direction. Over the past decade, productivity in the U.S. private sector improved only 27%, the same gain that Great Britain achieved. American businessmen are given to clucking over the decline of England and lamenting the waste caused by labor/management warfare in that country, but we share precisely the same rate of productivity gain — 27% in a decade.



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The rate is less than one-half the increase in Italy, with its government turmoil and terrorism, Communist local control, and nationalized industry. It was less than half the productivity improvement in France and West Germany, and it was less than one-quarter the productivity gain in Japan. Clearly, the past decade has been a disaster for the relative standing of U.S. business in the free world. Arthur Laffer, the provocative UCLA economist, has commented that the U.S. is the fastest under-developing country in the world.

With present trends, in a few years the levels of both Japanese and German productivity will exceed that of the U.S. overall, and with higher rates of productivity increase, they will pull away from us. It is already clear that in selected industries, our foreign competitors have a clear advantage. In such key industries as steel and automobiles, German or Japanese productivity already exceeds our own and we are not fully competitive in world markets.

To many people, productivity is a vague concept. But pay rates reflect productivity and almost everyone understands the amount in a paycheck. The average German production worker's wage is now 119% of that in the U.S. Ten years ago, in 1970, the German wage was only 56% of the American wage. A similar lag may be seen in managers' incomes. The average compensation for a general manager responsible for an organization doing \$50 million in annual sales is now the same in Japan as in the U.S.; the average in Germany is now 111% of the U.S. level. Of course, many factors affect these straight numerical wage and salary comparisons, but the trend is unmistakable. The rapid rise of compensation at all levels, in Germany and Japan as compared with the U.S., parallels those countries' gains in productivity. That's not surprising, but it does alter our perceptions about the U.S. standard of living.

The decline of our productivity relative to our foreign trading partners and competitors is draining the accumulated wealth of America. That is the inevitable outcome in an economically interdependent world. As we fall behind our competition in productivity, the value of our dollar, and therefore of our wealth, declines while other currencies rise. The result is that we are exporting the wealth that generations of Americans have built up in this country,

and the impact on the U.S. standard of living is direct and immediate.

For many generations, Americans have had a justifiable expectation that they would live a better life than their parents did. That expectation is disappearing, and rightly so, considering our falling productivity.

An extensive survey reported last year by the attitude research organization Yankelovich, Skelly & White, showed the national mood to be anxious and pessimistic. Americans in the major population bulge, now ages 19 to 34, feel remote from a rich, full life, because inflation and energy restraints are compromising their objectives in life. Most people are finding it difficult to pull back from earlier expectations and goals, and the result is frustration, stress and anger.

There is a solid statistical basis for this analysis. Real per capita disposable income in the U.S. has increased only 2% in the entire last decade. And with increasing transfer payments, it is clear that the situation is a good deal worse for the American middle class. That 2% per 10-year increase is far different from what Americans expect.

Paul Volcker, the Chairman of the Federal Reserve Board, has told us that we must accept a reduced standard of living in order to contain inflation. The Yankelovich survey and many others clearly indicate that the American public identifies inflation as the No. 1 public enemy. Yet for years a majority of the general public believed that declining productivity has only an indirect personal impact on them, or no personal impact at all. Not until the middle of 1980 did a majority of the public begin to show a realization that sagging productivity fuels inflation. That understanding is long overdue. A report by the U.S. Stock Exchange Office of Economic Research says that each 1% increase in productivity would decrease inflation by several percentage points — that's not just one or two, but several percentage points in inflation reduction.

But enough description of the problem. My topic is the causes of declining productivity and what management in particular can do about it. As I have mentioned, there are many different theories about the causes. I will briefly comment on some of these and then give my own view. To begin with, it is not the quality of our people — especially our young people — that

is at fault. My personal impression is that the young people entering the American work force are bright, well-educated, with strong ambition and a particular quest for relevance that is perfect for the business and industrial community. Today, about 32% of the young people will graduate from college. Thus there is a continuous entry into the work force of educated and motivated talent that can enrich our society and improve our productive efforts. I don't think the quality of American young people is the problem with American productivity.

I know that worker motivation and discipline have been widely discussed as factors in productivity. But in my view, worker motivation is largely a result of effective management and, therefore, is co-determinate with productivity rather than a root cause of it. In any case, my experience indicates that changes in worker motivation are slow to develop, difficult to accomplish, and fairly modest in impact.

I'll certainly acknowledge that technological innovation has a role in productivity growth, but it is important to put that role in perspective with other aids or impediments to improvement. In most U.S. industries the problem is not the technology itself, but an inability to implement the technology now available.

And finally, there's no doubt that government policy is important. Capital formation and investment have been the stated target of a generation of tax policy. Only recently have politicians begun to acknowledge the impact of these policies on productivity.

If you believe that our present legislature is serious about productivity, I would suggest that you watch which way the votes go on the Capital Cost Recovery Act. This bill would greatly shorten depreciation lives and would do more to stimulate investment to improve productivity than any federal action since the Second World War.

But I think there is a more direct way to improve productivity, and that is to improve the quality of American management. The actual performance of American management in many, if not most, instances is just too far short of what we realize is theoretically possible. In my view, we have gone a long way in developing sophisticated, high-performance systems that can produce all the facts and information we need to make good decisions and to know what the impact of those decisions on our

business and on our productivity will be. What we are lacking, I think, is wide application of those internal systems we have already conceived and developed.

Let me list some of the shortcomings that I frequently see in the way we manage our businesses:

- Managers do not understand in a sophisticated way the information systems of their business and they don't recognize the complex inter-workings of those systems within the operation. Top managers often don't know what facts control which decisions in the operation.
- Business systems don't produce the needed information in usable form. What information is produced is achieved inefficiently with duplication, overlap, and error.
- Many general managers have not addressed themselves to the routine operations of internal business systems and, therefore, routine day-to-day performance has deteriorated.

To be a little more specific:

- Managers are not sufficiently sensitive to the critical importance of accurate, timely sales forecasts in manufacturing detail. As a result, they don't anticipate well, are unresponsive to customer needs, and miss changes of strategic significance. Too often, sales forecasting is a kind of Delphic process when it could be statistical and precise.
- Managers have insufficient data to make the routine but *critical* decision of what to produce, when, and how many.
- Our systems give insufficient attention to reducing purchase and manufacturing lead times. As a result, our businesses lack flexibility and fail to achieve high levels of service to the customer.
- Some managers do not have a full appreciation of *non-financial* performance standards and, as a consequence, they let them slip and deteriorate.

A common symptom of all these shortcomings is that we make it difficult for our customers to buy and then plan their own businesses by knowing when we will deliver. Sales lost in this manner add up to a tremendous cost. At the time a customer decides to buy, we have already spent our

advertising, merchandising, and sales dollars — major efforts which have achieved their purpose. Our manufacturing overheads are fixed and committed. At the time of the purchase decision, the only incremental costs are the direct labor and material of the product. Yet, if we can't match the customer's requirements to the availability of the product at the right place at the right time, all of those committed costs are for naught.

Think what a revolution in our perception of costs it would be if we allocated all our overhead costs across the potential sales instead of the actual sales. It would certainly highlight the major costs of lost sales in many businesses—some of which don't even record and measure lost sales today.

My point is that high-performance business systems and high-quality business management can minimize lost sales and consequently make major improvement in customer service and the productivity of overhead expenditures. Since overhead costs in many businesses exceed direct costs, overhead productivity is an important element of the problem.

I have already mentioned worker motivation. Good worker motivation rarely exists in the absence of effective management leadership. And no evidence of effective management is so visible on the shop floor as the element of good production scheduling. Motivation and morale are closely dependent on feelings of self-worth. When poor scheduling misdirects, mistimes or wastes the workers' efforts, the workers' feelings of self-worth are depreciated. If they are not sensitive to the high value of their own time and effort, motivation to high productivity is just not possible. High performance business systems do exist today that provide good production scheduling in even the most complex operations. The job of management is to apply them and use them. Our old methods do get the product out the door, but that's just not enough in this era of intense international competition for productivity.

In most of our businesses, our management systems have evolved over a long period of time, frequently in an uncontrolled manner with each function adding modifications independent of the others. Systems are often undocumented and no one person is fully aware of their

use and inter-connection throughout the business. Starting from that point, making changes in business systems is a slow, tedious, cut-and-dry process. It's expensive, takes a long time, and requires a tremendous amount of management time and dedication.

We are finding that systems improvement demands the full-time attention of a fairly new breed of specialist — the Systems Analyst-Programmer. Experts in this specialty are difficult to find and the turnover rate is high. Only recently have some American schools begun to train them. My personal opinion is that five to ten years of varied experience in this new function may be the best route available today for a capable young person to move into general management.

Here are a few examples of what I mean by high performance business systems. I've drawn them from the part of TRW I manage, only because I'm most familiar with that. I cite them only as illustrative because in our organization we also have examples of the problem I have been emphasizing today. I'm sure similar examples may be found in other organizations.

First Example: For our overall organization, some 45 major manufacturing plants, our goal has been an excellent material management system working in every operating unit by the end of 1980. We define material management very broadly, involving virtually every logistical function from sales forecasting and purchase scheduling to finished goods inventory control. We're coming to the end of this five-year program and, frankly, progress has varied from unit to unit. However, starting from zero experience we now have about 45 well qualified, well-trained people who identify with the function, understand the goal, and appreciate the scope of the task. We are making progress.

Example two: Managers at one big division could not respond adequately to component production requirements because they didn't have a solid product-data base. Using a temporary task force, they developed a data base for the entire product line: product structure, manufacturing routings, standard costs and times. This data base, coupled with the ability to match production requirements against inventory, tells them what they have to do to

plan and schedule component production in an orderly, efficient manner.

Example three: Another division suffered from generally underdeveloped business systems—incomplete order entry, incomplete duplicative and inaccurate routings and bills of material, incomplete inventory accounting. After developing an integrated business information system, managers now plan and control manufacturing in a way that uses labor more efficiently and improves customer service with reduced inventories.

Example four: One big operation had ten manufacturing facilities, with separate processes and distribution facilities for each and — not surprisingly — loose control of finished inventory and product stocking levels and unreasonable variations in policy and performance with common customers. Managers restructured the ten facilities into four business areas and created an overall physical distribution organization responsible for demand forecasts, finished goods inventory control, order entry and processing, and warehouse operations, all under a single control so that they could develop common, high performance business systems to meet customer needs.

A Final Example: An operation with tens of thousands of different parts came up with a statistical sales forecasting technique to control a variety of product lines based on seasonal cycles and changing economic conditions. Using historical trends, they now project market needs by individual part numbers and get the proper lead time for suppliers to have the right items in their

distribution channels at the right time to meet the demands of the market place.

I don't want to give you the impression that I think everything is smooth and under control in the operations I manage. We still have a long way to go in some areas. Nevertheless, detailed analysis of all of these examples would support my principal point: that improved management systems can do a lot to restore sagging productivity. They provide the instruments by which we plan, control, schedule, measure, and price. The job of managers is first to understand the nature of productivity and their impact on it and, second, to take action by applying the tools that are available. I think we can raise our expectations of the sophisticated business systems that are already at our disposal.

For more than three decades, American managers have considered themselves the best in the world. We have justifiably said a great deal about the dominance of American technology and the miracle of American production. Now events of the past five or ten years are casting some doubt on that self-image. If we fail to react with spirit and ingenuity and hard work to the critical needs of restoring a healthy growth in productivity, we cannot long sustain our reputation for excellence. Without that reputation, management may lose its credibility with both labor and government. It has been my contention that American management largely determines American productivity. If we do not meet the challenge of improving our methods, not only management but America as a whole will suffer.



Edric A. Weld, Jr.

INFORMATION, PLEASE

Coordination of area projects requires better pooling and interpretation of facts and figures

Introduction: the need for shared information

Planning and decision-making to achieve community goals is highly decentralized in the Cleveland area. This was one of the major findings of a research project carried on at CSU's College of Urban Affairs this past summer by Hilary Wolpert, a student intern from the University of Chicago. Studying the activities and responsibilities of 108 Cleveland private and public agencies and hundreds of leaders of non-profit organizations, Wolpert concluded that there is no small dominant group controlling the destiny of the community, and that decisions often involve unusually large numbers of persons and institutions.

Major decisions, which require prior consensus on the part of many individuals and organizations, thus can be particularly difficult to achieve, both because local institutions often have overlapping responsibilities and because communication among different institutions, their boards of directors, and their respective staff members appears to be limited at best. Newsletters and fact sheets issued by the Governmental Research Institute, the Federation for Com-

munity Planning, and the Real Property Inventory have done much to reduce the information gap for particular groups of agencies. However, there is no source other than an occasional newspaper story which will distribute relevant information to the full range of individuals and agencies responsible for action in the Cleveland area.

The first need is for accurate information delineating the problems of the area. Equally important is the need for information about non-facts and non-problems: the world we face is difficult enough without the added burden of myths and misperceptions.

The Wolpert study

Ms. Hilary Wolpert, in her study mentioned above, came to some surprising conclusions about the manner in which public policy decisions are made by agencies in Cuyahoga County. One of her conclusions, summarized in Table 1, is that many agencies overlap both in type of responsibility (e.g., transportation, health, arts, etc.) and in main function (e.g., funding, planning, coordination, service, etc.). For example, of

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the 32 organizations concerned with health, 10 are concerned with health planning; these include not only those for whom planning is a primary responsibility, such as the Metropolitan Health Planning Corporation, but also other groups whose main function is perceived to be elsewhere, such as the County Mental Health and Retardation Board, the Greater Cleveland Hospital Association, and United Way Services.

This overlapping is compounded by the fact that many groups are interested in more than one type of responsibility. For instance, the Urban League concerns itself with economic development, education, employment, government organization and taxation, housing, equal opportunity, and social service; similar spans of interest are covered by such diverse groups as the Cleveland Interchurch Council, the Golden Age Centers Association, and the Cleveland and George Gund Foundations.

Examining the individuals in decision-making roles, Wolpert concludes that there is surprisingly little communication among organizations through people who serve more than one group. Of 422 people on the boards of ten major decision-making organizations, less than 18% were on more than one board, and only about 6% were on three or more boards. Thus there seems to be minimal centralization of decision-

making through overlapping membership of boards in this sort of organization.

Wolpert concludes that Cuyahoga County's decentralized network of planners has certain advantages: it allows for greater community input and greater community control of resources. It also has disadvantages: the lack of a strong central authority to take a comprehensive view and to implement coordinated action; the potential for duplication and unproductive rivalry; and the failure to share and use information effectively.

The last of these disadvantages can be remedied in part by a responsible agency for the dissemination of data. Actually in many problem areas there is no great shortage of information — the need is to get already-existing socio-economic and demographic information to local planners, decision-makers, and influential citizens in forms they can use. The recently established Data Dissemination Program of the College of Urban Affairs at Cleveland State University has undertaken this task; what follows is a sampling drawn from reports to be issued during the coming months — primarily studies that deal with the population (changing numbers, migration patterns, age groups, the labor force, levels of education, the suburbs versus the central city, etc.).

TABLE 1

MAIN FUNCTION OF AGENCY	ARTS	DEVELOPMENT	EDUCATION	EMPLOYMENT	ENVIRONMENT	EQUAL OPPORTUNITY	GOVERNMENT AND TAXATION	HEALTH	HOUSING	HUMAN RELATIONS	ADMINISTRATION OF JUSTICE	COMMUNITY SOCIAL SERVICE		TRANSPORTATION	TOTAL-TYPE OF AGENCY
												GENERAL	SPECIAL		
Agencies Which Fund	6	9	7	6	7	4	3	10	5	5	3	6	7	3	21
Agencies Which Plan	5	16	9	14	13	7	8	10	14	2	4	7	7	5	45
Agencies Which Coordinate	3	12	7	11	6	8	7	19	7	6	5	8	13	4	48
Agencies Which Serve	5	8	8	10	10	9	4	19	8	7	5	11	12	4	44
Agencies Which Inform	1	7	7	0	3	3	7	2	6	2	2	2	1	1	19
Agencies Which Lobby	0	1	1	3	2	4	8	3	3	2	1	0	1	1	18
Agencies Not Elsewhere Listed	0	1	1	1	1	1	0	1	0	0	1	1	0	0	8
Real Total, Area of Concern	11	30	22	31	19	27	22	32	29	12	14	25	24	3	301

TABLE 2
NET MIGRATION BY DECADE AND BY RACE
FOR CUYAHOGA COUNTY, 1920-1990

YEARS	TOTAL POPULATION	— NET MIGRATION —		TOTAL
		WHITE	NON-WHITE	
1920	943,495			
1930	1,201,455	+ 105,000	+ 38,000	+ 143,000
1940	1,217,250	- 48,000	+ 10,000	- 38,000
1950	1,389,532	- 10,000	+ 53,000	+ 43,000
1960	1,647,895	- 16,000	+ 57,000	+ 40,000
1970	1,384,000	-116,000	+ 33,000	- 83,000
1975	1,255,00	-147,000	- 9,000	-156,000
1980	1,189,000	-116,000	- 7,000	-123,000
1985	1,177,000	- 58,000	- 4,000	- 62,000
1990	1,172,000	- 58,000	- 3,000	- 61,000

NOTE: Components may not add to totals due to rounding.
SOURCE: Calculated from Regional Planning Commission Data.

Population changes in the Cleveland area

Though publication of preliminary 1980 population figures for the city of Cleveland and several suburbs has been held up by court action in response to a suit brought by the city of Detroit, we expect that when all preliminary 1980 counts are released they will show total population of the county at just under 1,500,000 persons.¹ In any case, there is no question that the 1980 census will show that population of both the city and the surrounding suburbs has fallen dramatically, that the county has lost the equivalent of one out of every eight persons during the last ten years, and that only one-third of this loss has been made up by gains in the surrounding areas of Geauga, Lake, and Medina Counties.

It is important to remember that the population changes that have been occurring in the Cleveland area are not unusual. Every large industrialized urban center in the north central part of the country has suffered a substantial decline in population in recent years. All are undergoing changes that are quite similar to

those that are affecting the Cleveland area. Only commercial and governmental centers like Columbus have been immune to this trend.

Household size

Despite the large population losses being experienced in the Cleveland area, there has been no change in the number of adults residing in Cuyahoga County, and there has probably been a substantial increase in the number of household units.² This is the result of a major change in living styles and of such factors as postponement of marriage, the growth of single parent households, and the increase in the number of widows and widowers which has accompanied the growth in the number of elderly people in the community. We predict that the 1980 census will show that household size in Cuyahoga County has fallen by an average of fifteen percent over the last ten years. Thus, most older communities with a fixed stock of housing units can expect to see their population drop by an equivalent percentage.

¹Based on an update of figures in E.A. Weld, Jr., *New Estimates of 1978 Population for the Cleveland Metropolitan Area*. Report on Demographics No. 5, CSU College of Urban Affairs, December 22, 1979.

²Weld, *The Decline in Population Per Household and Its Implication for the 1980 Census*. Report on Demographics No. 6, CSU College of Urban Affairs, July 24, 1980.

Migration patterns

Migration patterns — the numbers of people who move into or away from a place — are of course of basic importance in understanding social and economic changes in any area. As Table 2 indicates, Cuyahoga County has been losing white population through migration since 1930, and non-white population since roughly 1965. Between 1970 and 1980 the County has probably had a net loss due to migration of well over one-quarter of a million inhabitants. This is an enormous movement during just a ten-year period. It is also an indication of how fundamental are the demographic and social changes that are taking place in the Cleveland Metropolitan Area.

The most interesting thing is that this massive loss does *not* appear to be the result of any large-scale exodus of population from the Cleveland area. In fact, preliminary tabulations for 1970-1975 (Table 3) and for 1975-1978 indicate that the number of persons moving away each year from Cuyahoga County or from the city of Cleveland has been unusually small as a percentage of the area's population. Instead, our population loss stems from the fact that so few people are moving into Cleveland and the surrounding area. No other central county in Ohio appears to have attracted a smaller percentage of new entrants at least during the period of 1970-1978. (Note: for

TABLE 3

PRELIMINARY ESTIMATES OF GROSS
MIGRATION RATES
FOUR LARGEST SMSA's IN OHIO
1970-1975

	OUT	IN	NET	INS/ OUTS
STATE OF OHIO	8.4%	5.4%	- 3.1	.64
CENTRAL COUNTIES				
Franklin	21.4%	17.9%	- 3.5%	.84
Hamilton	15.9%	10.0%	- 5.9%	.63
Montgomery	22.2%	13.3%	- 8.9%	.60
Cuyahoga	14.8%	6.3%	- 8.5%	.43
CENTRAL CITIES				
Columbus	27.5%	19.7%	- 7.8%	.72
Cincinnati	26.3%	15.5%	-10.8%	.59
Dayton	34.2%	18.5%	-15.7%	.54
Cleveland	26.4%	9.5%	-16.9%	.36

SOURCE: Calculated from unpublished experimental tabulations provided by David L. Word of the U.S. Bureau of the Census.

TABLE 4
POPULATION AGE 0-19
CUYAHOGA COUNTY 1970-1990

	TOTAL	AGE 0-19	PERCENT SHARE
1970	1,721,300	625,953	36%
1975	1,603,900	542,900	34%
1980	1,507,100	430,000	29%
1985	1,477,500	381,400	26%
1990	1,444,600	349,800	24%
CHANGE 1970-1990			
NUMBER	-276,700	276,153	N.A.
PERCENT	-16%	-44%	

SOURCE: U.S. Bureau of the Census, *1970 Census of Population and Regional Planning Commission, Cuyahoga County, Population Projections, 1975-1990* (low projection).

purposes of comparison, every large metropolitan area is designated as an SMSA, or Standard Metropolitan Statistical Area. The Cleveland SMSA consists of Cuyahoga, Geauga, Lake and Medina counties. Cuyahoga County and the City of Cleveland are the "central county" and "central city" of the Cleveland SMSA.)

We do not know as yet who is moving. Historically, cities have always experienced relatively high mobility, with a flow of young people coming into the city seeking new opportunities partially offset by a counter flow of older persons moving out towards the suburbs. I predict that more complete data will show that this process is not operating effectively in the Cleveland area, that young people in particular have not been coming in as they did in other decades and as they do in other Metropolitan areas, and that our population

TABLE 5

PERSONS UNDER AND OVER AGE 40
AMONG ADULTS AGE 20-64
CUYAHOGA COUNTY 1970-1990

YEAR	TOTAL ADULTS 20-64	PERCENT ADULTS 20-40	PERCENT ADULTS 40-64
1970	926,459	46%	54%
1975	884,400	49%	51%
1980	893,600	56%	44%
1985	898,000	61%	39%
1990	888,000	62%	38%

SOURCE: U.S. Bureau of the Census and Regional Planning Commission (low projection).

TABLE 6
SCHOOL ENROLLMENT
14 LARGEST SCHOOL DISTRICTS IN CUYAHOGA COUNTY 1970 AND 1979

SCHOOL DISTRICT	1970	1979	CHANGE 1970-1979	
			NUMBER	PERCENT
EUCLID	11,157	6,502	- 4,655	-41.8%
MAPLE HEIGHTS	6,522	3,834	- 2,688	-41.3%
SOUTH EUCLID	8,994	5,494	- 3,500	-38.9%
CLEVELAND	149,108	92,162	-56,946	-38.2%
PARMA	25,812	17,130	- 8,682	-33.6%
BEREA	17,288	11,915	- 5,373	-31.1%
BEDFORD	7,760	5,408	- 2,352	-30.3%
MAYFIELD	6,058	4,268	- 1,790	-29.5%
CLEVELAND HTS.	12,596	9,328	- 3,268	-25.9%
LAKEWOOD	10,728	8,465	- 2,263	-21.1%
SHAKER HEIGHTS	7,481	6,041	- 1,440	-19.2%
NORTH OLMSTED	7,871	6,444	- 1,427	-19.1%
EAST CLEVELAND	7,925	8,424	+ 499	+ 5.9%
STRONGSVILLE	4,261	5,945	+ 1,684	+ 28.3%
TOTAL 14 DISTRICTS	283,561	191,360	-92,201	-32.5%
17 OTHER SUBURBAN DISTRICTS	51,781	39,721	-12,060	-23.3%
TOTAL 31 DISTRICTS IN CUYAHOGA COUNTY	335,342	231,081	-104,261	-31.1%

SOURCE: Governmental Research Institute: *Governmental Facts*, Number 375, May 16, 1980 and earlier issues, and State Department of Education. Figures refer to average daily membership, full pupil count on first week of October or authorized substitute period. Figures for Cleveland include Bratenahl.

is not being renewed. If this is true, it has most serious implications for the long-run health and vitality of our economy and society.

Age distribution

Just over twenty years ago women across America decided to have fewer children. In Cuyahoga County the birth rate dropped by more than half (from 25 to 12 per 1,000 population between 1955 and 1978). By 1990 this is expected to produce a 44 percent decline in the number of young people under age 20 residing in the county compared with 1970 (Table 4). By 1990 people in this age group will account for less than one-quarter of the population, compared with over one-third of the population in 1970.

At the same time, however, the adult population will be getting younger. Table 5 looks at the percentage of adults under age forty compared with those over forty. Despite the dramatic drop in the number of children and entrants into the labor force,

the average age of the labor force will decline rapidly during the current and coming decade. Young persons under forty will make up more than 60 percent of the active adult population and will be a dominant force in an adult society. This fact alone promises to change the whole tone of our society. It may also facilitate the evolution of the Cleveland area economy.³

Table 6 shows the consequences of this decline for school enrollments for the fourteen largest school districts in Cuyahoga County for 1970 to 1979. Although the Cleveland Board of Education may have had its troubles in recent years, note that enrollment losses in Cleveland are not the largest in the county. The Euclid schools, for example, lost 42 percent of their enrollment in nine years, and both Maple Heights and South Euclid exceed Cleveland in their declines in enrollment. These figures showing large decreases in the number of school-age children can also explain why older cities like these with no change

³See Weld, *The Population of Young Adults in Cuyahoga County, 1960-1990, Expected Changes and Implications*. Report on Demographics No. 3, CSU College of Urban Affairs, July 28, 1978.

in numbers of housing units have also experienced sharp declines in population.

Labor force

Ten years ago, there were almost three times as many young people aged fifteen to nineteen (the ages when young people tend to enter the labor force) as there were elderly people of retirement age. By 1990 there will be almost as many elderly as there are young people (Table 7).

One consequence of this change will be a dramatic decline in the number of persons available for entry level jobs. We project that within the next ten years young people will be earning much higher wages in proportion to the average worker than they do today. Given their scarcity, business firms will find it desirable to seek out young people and take great pains to maintain their allegiance to the firm, in order to insure the continued availability of a labor force.

Educational attainments

The educational attainments of the adult population in the Cleveland area rose substantially between 1970 and 1977 (Table 8),

reflecting the growth of Cuyahoga Community College, Lakeland Community College, and Cleveland State University. All of this increase, however, was due to the fact that a larger proportion of the adult population had graduated from high school in 1977 than in 1970. The table shows, surprisingly, that there has been little change in the extent to which high school graduates continue on to college or complete their college careers.

Compared with the other largest metropolitan areas in the country (as of 1977), the Cleveland area ranked 13th or 14th out of 15 in the proportion of the adult population which has graduated from high school or from college (Table 9). In the educational attainment of blacks the Cleveland area ranks 8th or 9th, somewhat above our rankings for the white population. Another table (not shown) which breaks 1977 educational attainments down by age group reveals that the Cleveland SMSA ranked 13th or below for every age group except for persons of age 65 and over. All this is consistent with statistics developed almost ten years ago

TABLE 7

POTENTIAL YOUNG ENTRANTS INTO
THE JOB MARKET AGE 15-19
RELATIVE TO RETIREES AGE 65-69
CUYAHOGA COUNTY, 1960-1990

YEAR	YOUTHS AGE 15-19	POTENTIAL RETIREES AGE 65-69	RATIO OF YOUTHS TO ELDERLY
1960	104,200	61,500	1.7%
1970	153,300	58,000	2.6%
1975	170,900	61,800	2.8%
1980	140,700	65,500	2.1%
1985	112,400	69,400	1.6%
1990	78,600	67,900	1.2%
CHANGE 1975-1990			
NUMBER	-92,300	+ 6,100	
PERCENT	-54%	+ 10%	

SOURCE: Regional Planning Commission, Low Projections; E.A. Weld, *The Population of Young Adults in Cuyahoga County, 1960-1990, Expected Changes and Implications*, 7/78.

TABLE 8

EDUCATIONAL ATTAINMENTS FOR
PERSONS AGE 25 AND OVER
CLEVELAND SMSA, 1970-1977

	1970	1977
PERCENT OF PERSONS AGE 25 AND OVER WHO HAVE COMPLETED		
Four Years of High School	54.6%	67.4%
1+ Years College	20.3%	25.0%
4+ Years College	10.9%	14.0%
PERCENT OF HIGH SCHOOL GRADUATES AGE 25 AND WHO HAVE COMPLETED		
1+ Years College	37.2%	37.0%
4+ Years College	19.9%	20.8%
PERCENT OF PERSONS AGE 25 AND OVER WITH SOME COLLEGE WHO HAVE COMPLETED		
4+ Years College	53.5%	56.3%

SOURCE: Bureau of the Census, *1970 Census of Population*, Vol. 1, Part 37, and *Educational Attainments in the United States, December 1977*.

TABLE 9
RANKING OF CLEVELAND SMSA AMONG 15 LARGE SMSA'S
IN EDUCATIONAL ATTAINMENTS BY SEX AND RACE, 1977

	BY SEX		BY RACE	
	MALE	FEMALE	WHITE	BLACK
MEDIAN YEARS OF SCHOOL COMPLETED	13	6	12	8
PERCENT OF PERSONS AGE 14 AND OVER:				
Completing 4 Years of High School	14	6	11	8
Completing 1 or More Years of College	12	14	14	9
Completing 4 or More Years of College	14	14	13	9
PERCENT OF HIGH SCHOOL GRADUATES:				
Completing 1 or More Years of College	11	14	14	9
Completing 4 or More Years of College	14	14	13	9
PERCENT OF COLLEGE STARTERS				
Completing 4 or More Years of College	13	6	9	9

SOURCE: U.S. Bureau of the Census, *Educational Attainments in the United States, December 1977*.

which showed that Ohio, despite its many fine colleges and universities, still provided higher education to a relatively small percentage of its population.⁴ Thus it would have taken an increase of 100,000 or more enrollments per year (equivalent to six or more universities the size of Cleveland State University) to bring the state's public and private enrollments up to the national per capita average.

The unusually low percentage of our young people who have had some experience with higher education may reflect the high level of opportunities and wages that have characterized the industrial sector in the Cleveland Metropolitan area. In effect, many of our young people may have decided that they would prefer to earn high wages now than pursue further education which might increase their skills in the future. Nevertheless, this finding on educational attainments constitutes the most serious warning sign yet uncovered in our demographic analysis. This finding has especially unfavorable implications for the long-run quality of the area's labor force and for our ability to compete in international markets in a high-technology industrial world.

Disparities between city and suburbs

A point that bears upon all studies of the Cleveland area is the enormous disparity between conditions in the city of Cleveland and in the surrounding suburbs. To an unusual extent citizens with high educational attainments, high status occupations, and high incomes have tended to live in the suburbs, leaving the central city with a predominance of households with low educational attainments, low status occupations, and low incomes. As a result, the central city is characterized by a disproportionate share of the problems of poverty, welfare, delinquency, and crime. This was documented some years ago by Richard Nathan, who published a report that showed Newark, N.J. and Cleveland, Ohio led the nation in the amount of social disparity between the central city and suburbs. The disparities between the city and the surrounding suburbs, such as those shown in Table 10, color all our thinking about the metropolitan area. More serious, the city's need to solve immediate problems of poverty and crime makes it difficult to focus attention and resources on the solution of long-run problems affecting the entire metropolitan area.

⁴Weld and J.F. Burke, Jr., *The Financing of Higher Education by the State of Ohio, 1955-1969*. Columbus: Ohio Association for Higher Education, April, 1971. Reprinted as Working Paper in Economics No. 16.

Cleveland area strengths: the example of R&D

There is a danger in all that I have said, that decision makers will focus on negative data and exclude from consideration the area's strengths and opportunities. This problem is made worse by the unusual disparities between Cleveland's central city and its suburbs. It is all too easy to measure city problems and omit any mention of suburban strengths or to let the special problems of the city overshadow the strengths of the region. For example, it is important to remember that the Cleveland metropolitan area still has the highest income of any SMSA in the state of Ohio. Total employment in the metropolitan area has been rising steadily. Except during the current recession, unemployment has consistently been below the levels of many other old industrialized cities and below the state-wide average. The standard of living of most workers continues to be unusually high for this part of the country.

For the longer term, the area's strength in research and development is especially important. A study now under way by Dr. Richard Knight shows that Cleveland is one of the leading centers of research and development in the United States. For example, the area has almost twice the scientists per capita as the national average.

TABLE 10

SOCIO-ECONOMIC DISPARITIES BETWEEN THE CITY OF CLEVELAND AND CUYAHOGA COUNTY SUBURBS

	PERCENT SHARE	
	CLEVE- LAND	SUB- URBS
Families with Reported Income of \$25,000 and Above	13%	87%
Families with Reported Income Below the Poverty Level	80%	20%
Children of Poverty Families	83%	17%
Managers, Administrators, and Proprietors	20%	80%
White Collar Workers	30%	70%
Blue Collar Workers	53%	47%
Persons Age 25 and Over		
Who Did Not Graduate from High School	57%	43%
With 4 or More Years of College	17%	83%

SOURCE: U.S. Bureau of the Census, *Census Tracts, 1970 PHC (1)-45*.

TABLE 11

LOCATIONS OF TEN LARGEST R&D PERFORMING FIRMS, BY SCSA,* 1977

RANK		NO. OF LABS		% CHANGE FROM 1965
		1965	1977	
1	CLEVELAND-AKRON-LORAIN	33	53	+ 61%
2	Houston-Galveston	33	53	+ 61%
3	San Francisco-Oakland San Jose	45	64	+ 42%
4	Los Angeles-Long Beach Anaheim	78	108	+ 38%
5	Detroit-Ann Arbor	40	52	+ 30%
6	Chicago-Gary	67	81	+ 21%
7	Philadelphia, Wilmington Trenton	62	72	+ 16%
8	Boston-Lawrence-Lowell	51	58	+ 14%
9	Pittsburgh	30	31	+ 3%
10	NY-Newark-Jersey	161	147	- 9%

SOURCE: E. Malecki, "Locational Trends in R&D by Large U.S. Corporations, 1965-1977," *Economic Geography*, October 1979.

* Standard Consolidated Statistical Area. For Cleveland this consists of Cuyahoga, Geauga, Lake, Lorain, Medina, Portage, and Summit Counties.

More important, the Greater Cleveland area ranked seventh in the nation in 1977 in terms of the number of R&D programs, and first in the nation in the percentage rate of growth of such units since 1965 (Table 12). Dr. Knight's research is expected to produce similar findings for other segments of the knowledge industry, in particular for activities which serve the needs of the growing number of internationally oriented business firms.

Governmental resources

At times, the problems which we face as a community seem to be overwhelming; yet we are not exactly helpless. We do have the financial resources to solve some of our problems if we could agree on what needs to be done.

The total 1977 expenditure in Cuyahoga County by all levels of government, federal, state and local, after eliminating double counting, came to \$4.6 billion, or almost \$3,000 per capita. Most of these funds, of course, are earmarked for particular programs including defense contracting,

social security, welfare, schools, and the like and cannot be made available to finance new government activities. Nevertheless, local governments do have some discretion in the expenditure of these monies and could make some shifts in spending in order to carry out new policies and priorities. If we could only mobilize one percent of this annual flow of public expenditures, now approaching \$6 billion per year, and supplement it with funds from the private sector, it should be possible to solve at least a few of our most pressing problems, once we have made up our minds that this was an important community objective.

But whatever the problem, the solution must proceed from two premises: that intelligent social planning requires facts, and that there needs to be some consensus concerning the basic nature both of the problems and of the opportunities we face. Starting from these premises, the Cleveland area can begin making its way to renewed prosperity in the coming decade.



P.J. Rogers

SIX AQUATINT ETCHINGS



A native of Rochester, New York, P.J. Rogers now lives in Akron, Ohio, where she maintains her studio-gallery. She attended Wells College in Aurora, New York, and the University of Buffalo, and she has studied with Victor Hammer, painter-printer from the Fine Arts Academy in Vienna; the painter Laslo Szabo of Buffalo; and the painter Robert Brackman of the Art Students' League in New York. She has exhibited in a number of juried shows around the country, including five May Shows at the Cleveland Museum of Art. She won the \$1,000 Graphic Award in the 1976 May Show. Her prints and paintings may be found in the Cleveland Museum of Art and other public and private collections, and her works are shown by several galleries including NovArt in Cleveland and Gage Gallery in Washington, D.C.

Aquatint is a method of etching capable of producing subtle gradations of tone between black and white. The first step in the process involves dusting selected areas of a copper plate with powdered resin, and then melting the resin with heat. Next the plate is immersed in an acid bath, which etches or "bites into" the spaces between the minute specks of fused resin. In this manner the exposed areas of the plate are pitted evenly but in varying depths. When ink is applied to the etched plate, different amounts of ink remain in the pitted areas, thereby printing different tones onto the paper. After the plate is etched and cleaned, ink is spread over the whole plate and pressed down into the bitten areas. The surface is then wiped with balls of tarlatan until the unetched areas are clean, and ink is left only in the etched portions. Finally, the inked plate is covered with dampened paper and run through an etching press, a heavy roller which pushes the paper against the plate so that it picks up the ink from the etched areas. The plate must be re-inked for each print. The inking and printing of each print takes one to two hours, and each plate takes one to three weeks to design and etch.

P.J. Rogers makes the following statement about her art:

I pursue the aquatint method of etching because it is a transparent medium that permits great contrasts. I seek transparency, meaning the stripping away of the superficial to understand the core.

I am intuitively drawn to botanical and architectural forms and to the feelings one has when observing plants and buildings. My art is intuitive, introspective and meditative. I wish to express feelings and emotions rather than to produce a faithful representation of the object (that is, rather than illusionistic or retinal art). I hope to express these feelings with order.

All matter receives its energy from the same cosmic forces (the explosion of stars). It is this common energy, the source of life in all matter, that I wish to express. I seek the common patterns.

Botanical forms have often been used in art for their surface attraction and decorative charm, but it is their energy and life cycle which interests me. In a brief span of time I can observe the whole life cycle, the cell growth, disintegration, and re-cycle. The aquatint process parallels this natural process. It is an eroding of copper surfaces to produce various grays and deepest blacks when the etched plate is printed onto the white paper. All is reflected back through the transparent grays and blacks.

In my cityscapes what is important is the collective energy present in the materials from which the city was built. I seek to express that they possess this energy in common with all matter.

I hope my work will convey fundamental feelings, relationships, and the essence of things. I believe in art as a mode of transcendence, a way to transform matter into some higher form, to approach an ideal. I wish to understand the past without nostalgia and to be able to learn and create for the future.



Pear Series
9" x 12"



Sand Castles
17" x 23"



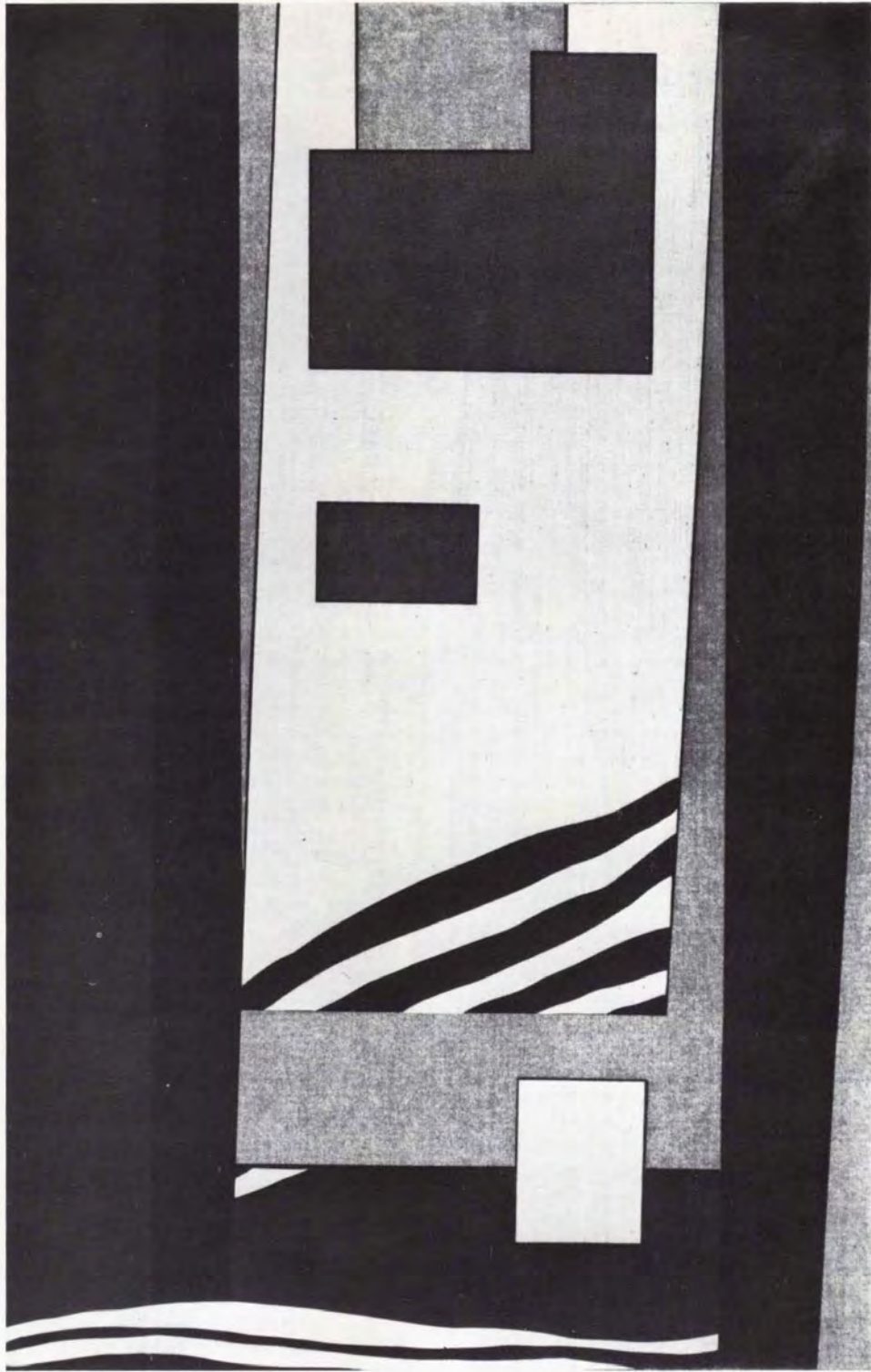
Mixed Flowers
18" x 26"



Bending
22" x 24"



Beyond Night
17" x 30"



City Illusion
15" x 24"

Thomas Q. Fulton, Jr.

ENSEMBLE THEATRE: GRASPING THE ROOTS

"Let some one explain to me why the violinist who plays in an orchestra on the tenth violin must daily perform hour-long exercises or lose his power to play? Why does the dancer work daily over every muscle in his body? Why do the painter, the sculptor, the writer practice their art each day and count that day lost when they do not work? And why may the dramatic artist do nothing, spend his day in coffee houses and hope for the gift of Apollo in the evening? Enough. Is this an art when its priests speak like amateurs? There is no art that does not demand virtuosity."

—Constantin Stanislavski,
My Life in Art

The theatre began in prehistoric rituals that prepared hunters and warriors emotionally for their dangerous tasks; it developed in religious ceremonies that gave participants a sense of being in harmony with their gods; and it culminated in dramas through which audiences have come to terms with the human condition. Thus the theatre has always served a primal human need to make sense of the universe through creation. Yet creation, communication of the deepest human feelings and insights—in short, art in the highest sense, the very element that gave birth to the theatre—is precisely what is lacking in the training, the direction, and the performance of modern professional theatre.

There are those who point their fingers at the playwrights and complain because no "great" play has been written since *Death of a Salesman*. Others blame the public for being tasteless and thus providing a market for tastelessness and watered-down classics. But the problem is really not the playwrights or the public. The problem rests in the ranks of directors, actors and teachers of theatre, those offspring of inadequate study, stunted imagination and cautious instinct, who never expect themselves or the theatre to pass on anything

worth knowing about life—those performers who believe theatre to be a craft-craft requiring nothing more than a sure, slick technique. The majority of actors who walk onstage today carry the trappings of tradition, but nothing of the seed that brings forth the art.

Art is an inner something: eternal, ultimate, hidden behind appearance, which only a finely-tuned artist can clothe with meaning. Yet there is a common belief that talent and intuition alone can be trusted to catapult a puny voice, a flabby body, a dry imagination, a wandering concentration into a controlled artistic performance on the stage. This is the kind of thinking that lets every actor off the hook with a simple "It just wasn't there," or "when I feel it, I'll have it." This is the same as saying: "I can't act the role because I can't act the role." An inspired performance which illuminates a hidden beauty in the play can only be the result of a lifetime of work and study. Hand the untrained actor a great script and he will disrupt an entire symphony of dramatic expertise with squeaking sour notes.

The potential in our plays is continually beyond the capacity of our actors, who have been brought up to believe that a love of the theatre is the only prerequisite to step on the stage. The profession as a whole has yet to realize that a play of substance cannot be adequately rehearsed in four weeks with a group of actors who have just met and have no common method with which to foster those delicate new lives they are laboring to create.

Stanislavski observed that the birth of a child requires nine months' creative labor, and the development of a dramatic character should require no less. There can be no short-cuts. Creation is creation, whether physical or imaginative. Unless this idea is put into practice, and artists are gathered together who understand it, we will continue to be treated to watered-down productions of great authors and piddling

inconsequential works of mass appeal. And new playwrights will be mutilated by inadequate though well intentioned companies. This theatre can have no impact on society and will do nothing for the advancement of our art.

Art and nature

What is most astonishing is that those things that on the surface appear to be so simple are underneath incredibly complex and intricate. We know this to be true in nature. Yet on the stage we are constantly being shown that there are a great many people who haven't the slightest inkling of how creation in art has, as its teacher, the laws of nature.

Annie Dillard, author of *Pilgrim at Tinker Creek*, tells of experimenters who "studied a single grass plant, Winter Rye. They let it grow in a green house for four months. Then they gingerly spirited away the soil—under microscopes, I imagine, — and counted and measured all the roots and root hairs. In four months, the plant had set forth 378 miles of roots . . . In a single cubic inch of soil, the length of the root hairs totaled 6000 miles."

We see only the misty surface of creation, the mere tip of a universal iceberg. Behind the face of creation churn eons and events so vast, so intricately interconnected, that often our only recourse is to stand, like Einstein, "in awe of the incomprehensible universe" and sigh. And our art, which is proverbially a reflection of life, is no mere

copy of the surface of things, but must follow the very blueprint of creation.

Look at the Winter Rye. This simple, inconsequential plant, something we could pick and chew, and think nothing of, grows over fifty miles of roots and root hairs per day. Now suppose you are a painter. You want to capture accurately a blade of Winter Rye on canvas. Is it possible you merely paint the wispy green that is visible? Yes, if you know nothing about grass and consider it inconsequential. You will paint a green stalk and nothing else. Your painting will deserve the same respect, and offer as much insight, as you gave the Winter Rye. Your time, energy and talent will have been wasted. But to paint a simple blade of grass and give it meaning, your job as an artist will be profoundly more difficult. You must give to the face of things the struggle to live, the power of life. Granted, we may still only see the visible green stalk, but in the varied colors of growth, the spring and weight of the base, the energetic bursting of the top seeds, the tightness of the curve in the stem—in these are born an impression of the thundering microscopic universes that give this plant life.

There are those actors, and they are in the majority, who are content with distorting a reflection of the mere face of things. Their inadequacies become most apparent when the answer to a particular scene isn't readily within their grasp. With a certain flourish, the scene is shortened by speeding up the tempo, or colored by using funny

A native of Chagrin Falls, Tom Fulton attended the Fine Arts Academy at Interlochen and received a BFA from Southern Methodist University. He was founder and Artistic Director of Center Repertory Theatre, where he directed Anna Christie, Vanities, The Late Christopher Bean (a radio play), Streamers, and A Christmas Carol. His work with the Centerep professional acting workshops led directly to the forming of the Phoenix Ensemble, where he has directed Chekhov's The Three Sisters (nominated this year for six Cleveland Critic Circle Awards including Best Director), Cyrano de Bergerac, Butterflies are Free, and two summers of one-act play festivals at Cain Park Summer Theatre. Fulton was Guest Artist at the U.S. Directing Colloquium where he worked as an actor with directors Joe Anthony, Adrian Hall, Marshall Mason, Zelda Fichandler, Michael Bogdanov, and others. He has also worked with Morris Carnovsky, Arthur Lessac, Alvina Krause, Joan Potter, and Jack Clay. He is Artistic Director of Cain Park Summer Theatre and has directed and acted in Cleveland at Chagrin Valley Little Theatre, Musicarnival, The Front Row, Centerep, The Community Stage, and Playhouse Square Association.



tricks, or musicalized by a variety of intonations, colloquialized by making up new words, or finally, if all else fails,—the scene is cut. The roots are being neglected. The theatre is full of cynics who scoff at the idea of exploring, through exercise, the intimate structure of character. "This has nothing to do with the theatre," they say; "it is mere self-indulgence." But it is the preparation that the art of acting cannot do without. While these actors are in the wings waiting to devour King Lear, or some other meaty hero, the laws of creation have not changed. The roots of the human psyche are growing a million miles a minute and bursting every millisecond into thought and impulses. With intonations, dramatic tricks, slick tempos, bright diction, old King Lear is given a blasting of ecstasy by a mad actor, who hasn't yet begun to comprehend what roots lie beneath the surface.

The state of things today

American theatre has no national standards. The only mass gathering place for talent is the Actor's Equity Association. In order to join this union, a performer needs no special education, no schooling, no experience. He needn't show signs of talent or intelligence or knowledge of the theatre. He merely needs to be cast. And of course, that is an assurance of nothing. The majority of our Equity companies are not regional theatres which maintain some acting standards; they are summer stock groups that slam together ten shows in ten weeks and require from an actor only that he know his lines, speak clearly and quickly, and perform with energy—a sort of community circus. We make a mockery of our profession. Equity exists to protect the actor from the producer, yet makes no provision to protect the theatre from the actor other than to fine him if he comes late to rehearsal. Of course, no one says most producers haven't brought this on themselves. Be that as it may, a member of Actor's Equity Association holds a membership card which, in essence, recommends him to a director as a professional. Yet what kind of professionals can purchase their credentials as easily as a hunting license or a six-pack of beer? This is not a condemnation of Actor's Equity Association. I believe as much as anyone that an actor should be paid a living wage. What I object to is the stamp of professionalism that is placed on an actor by the mere fact of his being a member of

AEA, especially when AEA itself has no standards for acceptance, as for instance does United Scenic Artists which requires new members to apply and pass a test equivalent to the Bar Exam.

As a result, what we have is a profession that is disastrously unemployed, and of the employed few, the number with adequate training is inconsequentially small. The members of the profession—even those who know better—have fostered a belief that anyone can be an actor, almost anyone can direct a play, and nobody, but nobody, unless he has no intention of working, should think of theatre and art in the same breath. It is impractical. Actors all over the country are forced to audition for plays they know nothing about or don't like. And when they do get a role, they are given two weeks, maybe three, to rehearse. In an effort to earn a living, a few lucky ones get a commercial where they lick their chops about a product they never use. And this is making a career in the theatre. Moreover, we are told again and again by Artistic Directors that theatre under ideal conditions cannot exist because of the financial burdens of the institution. Cut back rehearsal time, find plays with smaller casts. Unions demand more pay for actors, designers, technicians, directors. Managers, in order to balance the books, place more and more restrictions upon productions and announce new price increases for tickets for smaller plays less adequately rehearsed. Everyone watches each other throw the precepts of art into lower priorities until they are finally out the door (where many Board members prefer them). Nobody likes this, but these are the facts of life in the theatre. There is no common language except in theory, no order of discipline except for the weekly paycheck, very little concern for the play as a living breathing organism (only for its power of public relations), and no major group of talent



consistent in anything other than their unfamiliarity with each other.

This should be surprising. The theatre is an art which is a culmination of all arts: in no other art do so many varied talents come together to express one theme, create one moment. We need a theatre with a common language, a scientific discipline, and an artistic commitment. For without common training and a unified goal, artistic creation on the stage is either accidental or impossible.

Training: a place to begin

Our colleges are turning out thousands of B.F.A., B.A., M.F.A., and M.A. theatre graduates each year. And except for those schools which are members of the League of Professional Theatre Training Schools and a few others, most of these young students have been prepared for nothing but hack-work in summer stock. They hear this refrain all over the country: "I am making actors of you . . . The majority of you will have to go to work in the provinces. There you will have to prepare a role in two or three rehearsals. You must be ready for this. Therefore above everything else, practice. We will learn how to prepare a production in two weeks. When you finish school, you will have skill and a repertoire." That is a quotation from an actor and teacher named Yakolev from the Russian Alexandrinski Theatre, Petersburg—1909. Schools today are offering the same inadequate training. A theatre degree can be earned after as little as three years of study. And the study is not concentrated on the growth of the actor as an artist, but rather on the development of a "well rounded" understanding of theatre history and theory. Such an education can serve a useful function in that it clarifies the actor's place in the profession. But it is not true that a smattering of directing, movement, voice, diction, history and different acting theories are sufficient preparation for the professional theatre. Practically speaking, there should be at least four years of daily concentrated training, with acting workshops critically aimed at the actors' specific emotional and physical inadequacies three to five days a week. And what is primary to all of this, one method should be taught that is thoroughly understood by all faculty members. This will at least give the actor some solid direction in his life-long search for himself in his art.

Tyrone Guthrie, co-founder of the Stratford Shakespeare festival and the Guthrie Theater in Minneapolis, has this to say about academic training for actors:

The best actors I have known are hardly any of them well-educated or intellectual. They are intelligent, but not a bit scholarly. So we look for professional experience and do not inquire too deeply into an actor's education. I said this once to a student in a mid-west college. He was a worthy young fellow, full of eagerness and idealism. He was amazed and shocked.

"You mean They (meaning potential employers) won't be interested in what sort of a degree I get?"

"Most unlikely."

"Well!"

"I don't think the question will ever arise!"

"Then what *will* they be interested in?"

Feeling rather ashamed, I had to explain that "straight A's" were considerably less saleable than straight legs, a good chest and an audible voice.

The kind of "professional experience" Guthrie is looking for is not, however, the kind most actors get nowadays. The actor has become a secondary member of something that pretends to be art but is in fact only a mediocre craft. Most theatres, were they pressed, would admit that the actor is the center of activity. Yet most actors say to the director, "Tell me where to go, what to do: Should I cry here? Should I laugh? Show me what you want." And if the director counters, "What do *you* want," actor's lint falls from the brain and an intense boggling occurs.

Where is the center of activity in today's theatre? It is certainly neither in the actor nor in the play. Here, both are placed outside themselves to be manipulated from above. The entire creative process becomes one of tacking color, movement, and lights to something born dead. Our art suffers in an age of darkness when more life can be found in a simple reading of a play than in performance—when, in most theatres, we would have been happy if the lights had never come on.

The solution: Ensemble Theatre

My solution to the present doldrums of American theatre is the type of training and performing group called an "Ensemble," which can accomplish two vital but nowadays neglected things: first, focusing on the actor and training him so that he is an intelligent artist instead of a puppet; and second, providing sufficient

rehearsal time so that the individual actors, the director, the scenery and lighting designers, and all the other elements that go into a production have the chance to fuse into an organic, artistic whole.

I am convinced of the soundness of Stanislavski's view—the basis of "method" acting as practiced by the Actor's Studio in New York—that the actor must really feel his part imaginatively and develop its internal roots, rather than merely reproduce the surface appearances. This does not mean abandonment of control or indulgence in an emotional ego-trip. On the contrary, the actor who wishes to *become* a character, to *live* the part, must practice increased awareness and self-discipline.

In an ensemble, the actor is the center. Before there is a play, there must be a will. It is the actor's free will that gives birth to imagination. Far from denying personal initiative, the director's job is to help the actor by placing in his path some enticement, to spur his will into creating what is necessary for the world of the play. This requires that an actor be a creative, intelligent, philosophical, knowledgeable artist. It demands a total willing of self by the actor into the world of the play. The first thing a young actor must learn is that his job is not to sit and wait to be told what to do, but rather to actively search for ideas. An actor must know his craft well enough so that he may develop the confidence and courage to take his own steps.

Unfortunately, in a communal art like the theatre courage and confidence must be more than just a state of mind. Where a playwright may be able to make a bold choice in the privacy of his own room, an actor must take that chance in front of his colleagues. He hasn't four walls to experiment within. He has to bare his soul in front of people he may not know. To ask this of even the most accomplished artist in early rehearsals with an unfamiliar group is a major difficulty. The very moment an actor sets foot in his new rehearsal room he is set upon by a myriad of emotional complications which are often damaging to his fulfillment as an artist. Probably foremost in his mind is the desire to prove himself a worthy associate, which means he must be a willing worker ready to accept even the most absurd ideas that are thrown in his path. He has no footing. He has rather to assure the director of his competence, find a common point of understanding within the group, and piece together the many dif-

ferent acting methods being attempted by his fellow actors. The result is the same as throwing blotches of color onto a canvas and trying to sort a landscape out of the mess.

In an ensemble, here is what is asked of an actor: that he find an intimately personal expression of his role by giving inner feelings substance through physical action. "We bring to life," says Stanislavski, "what is hidden under the words; we put our own thoughts into the author's lines, and we establish our own relationships to other characters in the play, and the conditions of their lives; we filter through ourselves all materials that we receive from the author and the director; we work them over, supplementing them out of our own imagination. That material becomes part of us, spiritually, and even physically; our emotions are sincere, and as a final result we have truly productive activity—all of which is closely interwoven with the implications of the play. And that tremendous work you tell me is just trifles! No, indeed. That is creativeness and art."

And that is almost impossible under the present working conditions of the theatre. But in an ensemble, the actors are not newcomers to the cast; they are, rather, intimate co-workers who have trained together and, more important, struggled together through painful artistic awakenings. As a result, a common language has developed, a point of view is emerging, and an ideology is crystalizing. In essence, the cast is already a well tuned instrument of creativity, which needs only the slightest catalyst to throw itself into creation. Herbert Blau, acknowledged co-founder of the Actors Workshop in San Francisco and author of an angry, yet fascinating study of American theatre, *The Impossible Theatre*, wrote: "Every theatre that has ever struck the imaginations of men knows that the play is not the thing—but a continuum of plays conveying a significant view of human action in a particular time and passing on a heritage of perception." He echoes what Harold Clurman, who in 1931 founded the influential Group Theatre in New York once put so beautifully: "What is a true theatre? It is a body of craftsmen, actors, directors, designers, technicians, administrative staff united on a permanent basis to develop its own technique, to embody a common attitude to life that an audience more or less shares. Such theatres may be socially, politically, or religiously motivated, but

each of them must develop an identity, a style, a 'face,' a meaning of its own."

If we of the theatre are going to pass ourselves to our public as a place to come for vital human experiences, where everyone can be uplifted and walk away from the performance proud to be a thinking, living creature,—then every man and woman in the theatre has to do something about it. We cannot argue with what works. A theatre born as an ensemble, where something close to an intimate family is created, where training never ends and performances are continually improved until they are abandoned,—this works. It is far more difficult than simply sailing into New York and picking up a few new actors to fit your play. But we should confront ourselves with this: Stanislavski's Moscow Art Theatre, which brought Chekhov to the world when no other theatre could even comprehend his plays, was this kind of ensemble. So, for that matter, were the theatres of Shakespeare and Moliere. Today, Stanislavski's theories are a part of every serious drama school in America. The formation of the Group Theatre, directed by Harold Clurman and Lee Strasberg, is still the most important event in American theatre history in that it gave birth to some of the country's greatest actors and teachers of actors. These artists saw the value of the ensemble and gave the ideal a place to be born.



The Phoenix Ensemble Theatre

While this article is not intended as a vehicle for publicity, I wish to point out that the ideas I have been advocating are now being put into practice in the newly formed Phoenix Theatre Ensemble in Cleveland Heights. Whether or not the ideas will succeed is still to be seen. The actors are there, the talent is there. It has been our task to make an organization that thrives on training and personal growth throughout a commercial season. Here's how it works.

The Ensemble combines training workshops and a permanent company. Un-

der no circumstances is an actor accepted into the permanent company without having completed a full three years of training with the Ensemble. While members of the workshops are eligible for casting in productions, they are accepted only as apprentices. Being a member of the workshops does not guarantee acceptance into the Ensemble. Acceptance into the Ensemble is granted upon the following criteria:

1. Commitment to self-growth.
2. Commitment to the Phoenix Theatre Ensemble. (We ask that the actors learn what it means to "bury their star in the ensemble.")
3. Ability to meet time requirements of the Ensemble. The artists' commitment is to continuous workshop training as well as major productions.
4. Successful completion of the full three-year program.

These strict provisions for admission are for the protection of the artistic growth of the company. Nothing less would be fair or honest. In Stanislavski's words, "Only that which is acquired with difficulty is worth anything."

Rehearsals themselves constitute a continued schooling. Here for the first four or five weeks, the future audience is ignored and much more attention is given to things which the audience will never see. It is in this way we create the miles of roots for a single blade of characterization. This takes time. Each play is rehearsed according to the time demands of the script. Some take less time than others. No play opens without adequate rehearsal. Our repertory system allows this. If the play in rehearsal is not ready, we always have several others to back it up.

Each performance is not only a stepping stone to a clearer, more illuminating production, but a major part of the growth process. Every opportunity afforded us to work is important. Thus a performance to two viewers is no less worth our time than a performance to two hundred. Our aim is not to create a final product, but to keep reaching for something clearer and more perfect. This means each presentation of a play brings us to a certain point in our work that is a step towards completeness. Growth only occurs through change and it is this process of constant natural change that is the art of the theatre: how to grow and change without disrupting the delicate

world imagined and created by the ensemble.

This is why we demand a proper rehearsal: so that the play's world will offer new ideas and changes for growth, rather than buckle in the face of it. Without the ensemble, this is impossible. Anyone can imitate a director and do things that will produce something slick and pretty to cover up the emptiness. Stage movements can be repeated time and again, as can mouthed sounds and perfect inflections, provided the actor does not think for himself, provided the actor maintains a mechanical repetition of his required choreography. These are simple feats for simple minds.

In performances, an actor creates the same way he created in rehearsals. If he has studied well the laws of the world his character inhabits, he will instinctively know what rules and restrictions apply to his behavior, what laws of reason govern his intellect, what physical feats he can perform and, most important, the path of freedom this new understanding opens for him. What we ask of an actor is that he bring something new to every rehearsal and performance. When an entire play is worked out in this manner, every night provides a new creative challenge.

We view financial stability as a responsibility equal to the artistic responsibility of our actors. It is only through the group's efforts that the Ensemble will live. We expect very little financial aid for the next three years. This means sacrifice. It means above all else creating a situation where we can do our work with a minimum of financial binds. To give life to art does not require huge sums of money. It requires committed artists. In order to keep ourselves financially solvent, we have expanded our classes, providing a strong cash-flow base each month; we operate an educational touring program called the Community Stage, which offers employment to our members and adds an additional \$8,000 per year to the budget; and we have chosen the repertory system, which allows us to perform at various times during the season four or five different plays a week. This increases return business and ticket sales. In addition, all salaries are on a sliding scale. Except for a small number of fixed expenses such as rent, utilities, and insurance, the

theatre never pays out more than it brings in. Actors are paid after production expenses are met. Teachers are paid a percentage of what their students pay in tuition. Our salesmen are paid on a commission basis.

What about box office? Julius Novick in *Beyond Broadway* observes, "On the whole, the audience that comes to the resident theatres—when it comes—likes to see plays it has heard of; it likes to laugh, it is wary of anything too 'unusual.' A theatre has an obligation to survive; it can only survive by pleasing these people. Yet survival can be purchased at too high a price. The great and difficult secret of success in running a theatre is to devise a program that will challenge the audience without alienating it entirely." At Phoenix, our job, as I see it, is not to give the audience what they want (they can get that anywhere), but to surprise them with what they don't expect, educate them with what they don't know, and move them with continual strokes of emotional honesty. As for the critics . . . Herbert Blau reminds us, "The standard critique of the Group Theatre came from one reviewer, very well disposed of course, who wrote, 'It has been bound, rather than liberated by its idealism; and it has needed more than anything else, the counsel of a genial and skeptical mind.' Who is that mind? Clurman rightly suggests that 'genial and skeptical mind' is the devil's." Let that suffice.

It does not take money or influence, or a Board of Directors, or a social register to make a theatre. It takes artists who are ready to learn and to invest their lives. As Clurman so aptly put it: "We have only our industry to keep this idea alive. It requires that each and every one of us demand more and expect less than any actor in America." And Blau pounds it home: "If you can't start big, start small. If you can't start with money start without money. It has been done before. And to repeat what should never be lost sight of, no other artist outside the theatre would think it strange."

Create a theatre where artists can study and work continuously for years and there will be created a garden where talent can plant its roots and grow from raw potential to a thing of everlasting beauty.



George C. Chang

ELECTRIC UTILITY LOAD LEVELING FOR ENERGY CONSERVATION

More power for the future without more pollution or oil consumption

1. Introduction

The days of cheap energy are gone, and it is clear that the nation must seek not only alternative energy sources, but also new ways to use existing sources more efficiently. One promising method by which electric utilities can achieve significant savings in fuels is "load leveling," that is, the storage of energy during off-peak hours (nights and weekends) for use during hours of heavy use. This article will describe several types of energy storage plants that are safe, reliable, environmentally acceptable, and economically sound, and that can be constructed in this very decade. Widespread use of such plants around the country can result in oil savings of several hundred million barrels a year. And most of them are feasible in Northern Ohio.

Research and development of off-peak energy storage is already well under way (1, 2).^{*} What is needed now is the concerted effort and cooperation of the utilities, regulators, environmentalists, and consumers to put the technology to work.

2. Electric load leveling: needs and benefits

The power demand of any area varies with the season, day of the week, and time of day, and also according to the weather, industrial and commercial activities, the living habits of the residents, and, occasionally, major special events. Shown in Figure 1 is a representative electric power demand (load) curve, with typical variations at different times of the day and week. The peak demand must be adequately satisfied by the utility's generating equipment, or a blackout can result.

Normally electric utilities set up various combinations of generating plants with differing operating characteristics (and costs) to meet the varying demands for power. The base load (the normal level of continuous demand) is usually met by large coal or nuclear plants of the highest efficiency, which supply between 40 and 50 percent of a system's load for most of the year with the best economy possible.

^{*}Numbers in parentheses indicate references at the end of the article.

George C. Chang, born in a small village west of Shanghai, left China in 1949 and came to the United States, where he eventually received a Ph.D. in Engineering from the University of Illinois at Urbana, with specialties in mechanics, materials, and engineering systems. He has worked several years in industry in both New York and Seattle, Washington, where he was with Boeing Aircraft. For six years he taught and pursued research at the U.S. Naval Academy at Annapolis, and then he did energy research in what is now called the U.S. Department of Energy. He came to Cleveland State University in 1979 as Professor of Engineering and Associate Dean of Research in the Fenn College of Engineering. He is author or co-author of some 40 publications in his field.



The rather broad daily peak demand above the base load is usually met by running intermediate generating units for part of each day. These cycling units, which supply 30 to 40 percent of the total load, are the less efficient coal, oil, or gas plants, hydroelectric plants when available, and sometimes the simple-cycle gas turbines fired by precious oil or natural gas. These intermediate plants operate somewhere between 1500 and 4000 hours each year.

When brief peak demands appear, the utility turns on gas turbines, hydroelectric units, or the still older (and least efficient) fossil-fuel units. The power generated by these peaking units is significantly more expensive than the base power. Fortunately, this type of inefficient peaking operation does not last very long — usually a total of less than 1500 hours per year.

With a load-leveling system, electric energy generated during low demand periods by the most efficient base-load equipment can be stored for use to meet peaking or intermediate power demand, at a considerable saving of fuel and of money. The present installed capacity of gas turbines and diesels for electric power

generation in America is in the range of 50,000 MW (megawatts, or millions of watts). These machines burn up a significant portion of the huge amount of oil and gas that utilities use each year. Supplementing them with energy storage systems could save the equivalent of 200 million barrels of oil each year, that is, approximately one tenth of the oil used by all of the cars in the country in a year, or about \$35 worth of oil for each person in the U.S.A., at present prices (1, 3).

3. Energy storage systems technology for load leveling

As long as fifty years ago the concept of energy storage began to be widely accepted by the electric utilities. The first and until recently the only method put into practice by the utilities has been the conventional pumped hydroelectric storage (CPH). Other methods which are practical for large-scale application today include the underground pumped-hydroelectric storage (UPH), the compressed air energy storage (CAES), and the advanced CAES. All of these are discussed below.

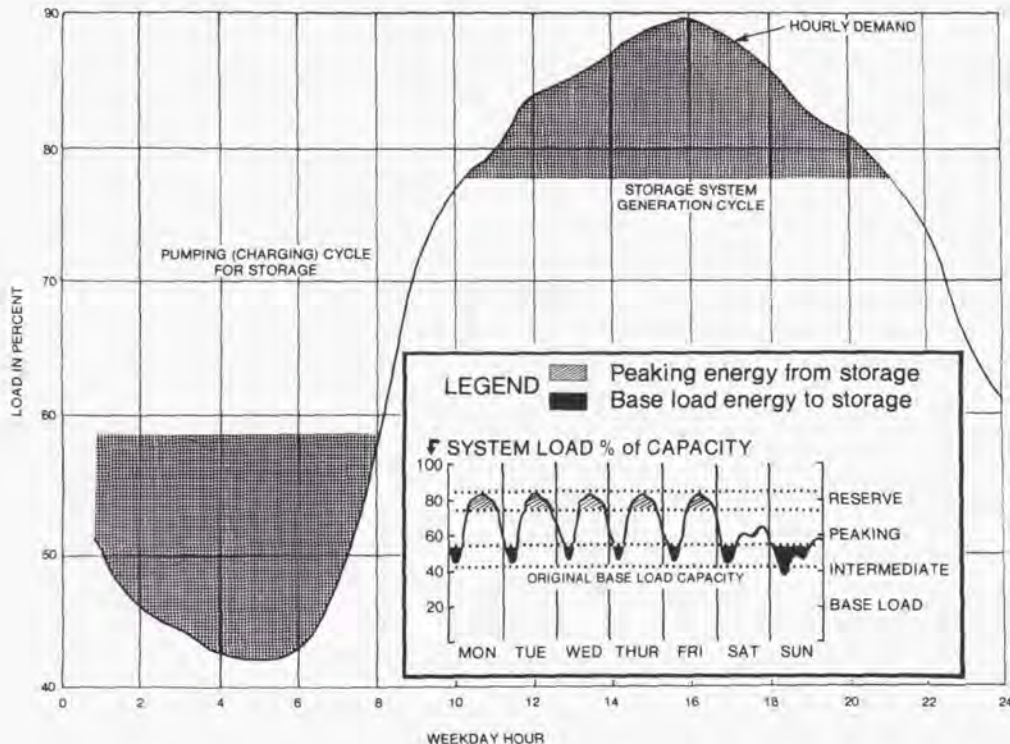


Figure 1: Daily and weekly electric power variations.

Other methods, such as the superconducting magnetic energy storage system, are still in early stages of development. Only a few small experimental models of this last-mentioned device have been built, the largest having a capacity of less than 100 KWh (kilowatt-hours). (A practical commercial size would be approximately 10,000,000 KWh.) Although progress is being made, a number of major technical and economic uncertainties remain unresolved (4, 5).

No discussion of energy storage is complete without mentioning the electrochemical batteries, particularly the secondary batteries which can be charged and recharged. Developmental programs with several new types of battery have been in progress since the early 1960s. These include the sodium-sulfur, the zinc-chloride, and others. Such new batteries possess the potential for lower initial cost and longer service life than today's lead-acid battery. Limited successes (and failures) have been recorded in recent years with basic modules capable of storing up to 100 KWh (6, 7). But progress is slow, and we will probably have to wait patiently for a practical new battery system to emerge. Most likely, the first ones will be suited to small utility storage systems, capable of storing up to 100,000 KWh, with an average peaking power of 20,000 KW.

Such a battery system would be suited for decentralized operations such as neighborhood substations or factory sites. But this is still in the future.

4. Conventional pumped hydroelectric storage (CPH)

The CPH system stores energy by using surplus electricity at periods of small demand to pump water into an elevated reservoir; then, at periods of peak demand, the water is allowed to flow back down to a lower reservoir, turning a turbine connected to a generator, and producing electric power.

The first practical CPH plant in the U.S. was built for Connecticut Light & Power Company in 1929. This facility, the Rocky River Plant, has a generation capacity of 7 MW, supplied by two reversible units of equal size. The nominal operating head (difference in elevation between the two reservoirs) is 230 feet.

In the last three decades some three dozen CPH plants have been constructed in the U.S., and provide over 10,000 MW (8). Although this is a sizeable amount of power, it is only one-fifth of that provided by gas turbines.

To date the world's largest CPH plant is the 2000 MW facility located on the eastern shore of Lake Michigan at Ludington. The



Figure 2: Pumped-hydro sites.

upper reservoir is a man-made lake nearly two miles long and 3/4 miles wide. Six reversible pump-turbines rated at 312 MW are installed there, operating under a maximum head of 360 feet. Maximum water flow rate is 30,000,000 gallons per minute. This huge plant was completed in 1973-4 at a cost of about \$300 million shared by the Consumers Power Company (51%) and Detroit Edison Company (49%). The maximum storage capacity is approximately 15,000 MWh. A number of articles have been written about its successes and environmental or societal problems (9, 10).

The major factor contributing to the slow growth of CPH plants is the siting difficulties. Attractive sites with adequate water resources are hard to locate, and the creation of large new reservoirs often meets with objections from environmentalists and other citizen groups. Potential for great expansion in the use of CPH, therefore, is somewhat limited. This is the underlying reason for greatly expanded research and development activities into alternate energy storage technologies. (For more details on CPH systems, see ref. 11.)

Figure 2 shows approximate distribution of major existing CPH plants in the country, along with potential sites for future expansions.

5. Underground pumped hydroelectric energy storage (UPH)

In a UPH system the upper reservoir is located at the ground level and the lower reservoir is located a few thousand feet below ground. Thus the major drawback of the CPH method, that of siting flexibility, is eliminated. A UPH plant can be located near transmission lines or load centers, and causes less disturbance to the environment.

In the last 10 years, several studies of the UPH concept have reported encouraging results (3, 12, 13, 14, 15). The conceptual design of a typical one-drop UPH facility is shown in Figure 3; a similar scheme with a small intermediate reservoir at half depth is not shown here but has received considerable attention, too (12).

A typical plant would have a capacity of 1000 to 3000 MW, an operating head of 3000 to 5000 feet, and an underground reservoir capable of 8 to 10 hours generation at full load. The reservoirs would each have a

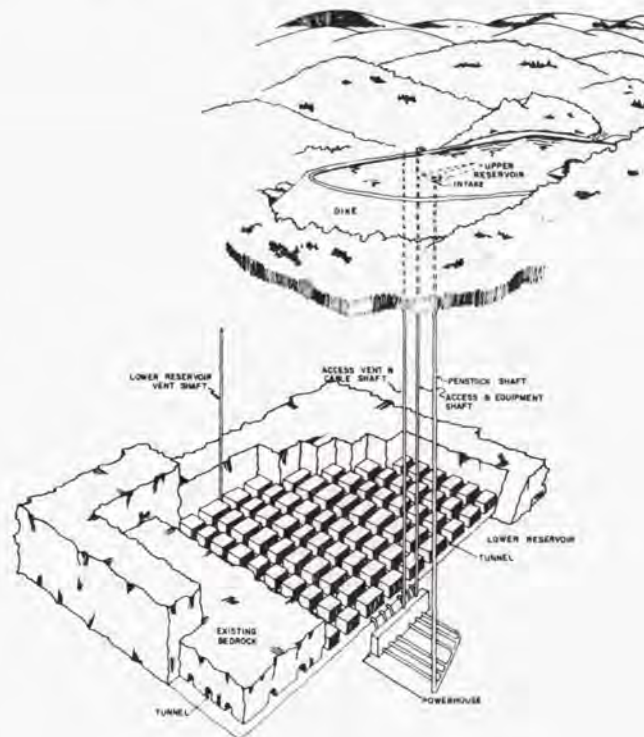


Figure 3: Typical one-drop UPH plant.

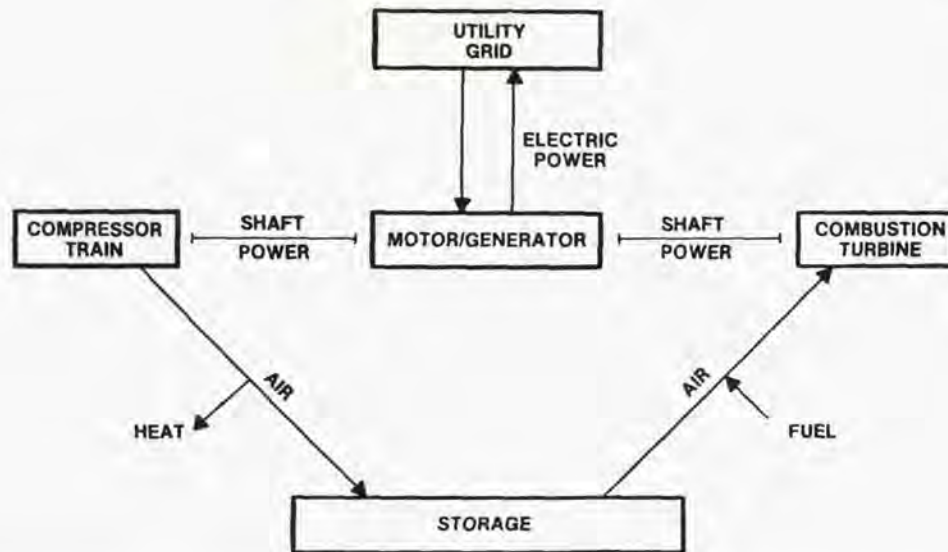


Figure 4: A basic CAES scheme.

volume of 4 million to 12 million cubic yards. These volume figures are of course considerably smaller than that of the Ludington facility (130 million cubic yards).

The unit cost of a large UPH plant is estimated to be in the range of \$500 per KW (3, 12, 14). This means such plants are nearly competitive with the above-ground conventional pumped hydro units, and their long service life makes them economically quite attractive. A review of the subsurface geology structure indicates the widespread existence of suitable sites for the UPH facility throughout the U.S., except in the extreme southern part of the South (3, 15).

Recently, multi-million dollar designs for two commercial-size UPH plants have been completed; one, at Sykesville, Md., for Potomac Electric Power Co., has an installed capacity of nearly 2000 MW for 20,000 MWh, and the other, in northwest Illinois, designed for Commonwealth Edison of Chicago, has a 3300 MW capacity, for 30,000 MWh.

6. Compressed air energy storage (CAES)

Another kind of underground energy storage system uses compressed air, which motor-driven compressors force into underground reservoirs during off-peak hours. When power is required, the stored air is piped to combustion chambers, where it is heated by burning gas or oil, and then expanded through turbines to generate electricity. Such an operation is schematically shown in Figure 4.

A large volume of compressed air can be stored in existing underground aquifers by a process similar to that used for natural gas in many parts of the U.S. Or it can be stored in excavated tunnels in hard rocks a few thousand feet below ground surface, or in salt caverns, the properties of which are well known because of studies connected with the mining of salt, the storage of nuclear waste, and the large-scale storage of crude oil in recent years (16). In a study conducted for the California State Energy Commission, it has been established that compressed air could also be economically stored in some depleted gas fields or oil wells (17), though additional engineering precautions must be taken to insure safety and to protect the environment. In general, flexibility of siting is a distinguishing advantage of the CAES technology. It is also environmentally attractive. Pollutants which may be carried out from the underground reservoir seem to be minimal; the CAES operation is on the whole relatively safe.

The most important advantage of the CAES plant is its ability to conserve premium fuel (gas or oil). For each KWh of electric energy generated, only a little over 4000 Btus of fuel is required, along with a little over 0.7 KWh of electricity, whereas the typical gas turbine requires approximately 12,000 Btus for each KWh generated. (A Btu is the quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit.)

The world's first CAES plant, built in Huntorf, Germany, for the NWK utility, has been in operation for nearly two years (18). It stores compressed air at 1000 psi in two salt-dome caverns with a capacity of 150,000 cubic meters. The plant is rated at 290 MW for two hours a day, using a charging energy of 58 MW for 8 hours a day.

Several American electric utilities are well on their way towards implementing the CAES scheme, including the Mid-South Services of New Orleans, Potomac Electric of Washington, D.C., Public Service Indiana of Indianapolis, and some rural electric cooperatives in the Midwest. Most of these projects are at the stage of site identification, exploration drilling, and evaluation of the economics, environmental effects, and safety considerations involved (19).

7. Advanced compressed air energy storage (ACAES)

During the last five years, while the relatively attractive CAES technology has been able to reduce oil/gas consumption to a

mere one-third of that required by ordinary gas turbines, the price of oil has been shooting up rapidly. Assuming that it will continue to rise in the next 10 to 20 years, it is logical to look for a compressed air energy storage system that completely eliminates the need for gas or oil.

One advanced system that does this involves the storage and subsequent reuse of the heat of compression. In existing CAES procedures this heat is rejected into the air as a waste. Economical storage of huge amounts of low-grade heat is a process being studied by several engineering groups (19, 20). A schematic representation of such an "adiabatic" ACAES system is shown in Figure 5.

But an economical method must be found to manage the huge thermal storage required in this scheme. One preliminary design calls for the use of ceramic (or iron) pebble beds for heat storage located above ground. The heat-storing pebbles are contained by a properly designed reinforced concrete structure. Some other thermal energy storage designs call for the use of a large underground structure filled with

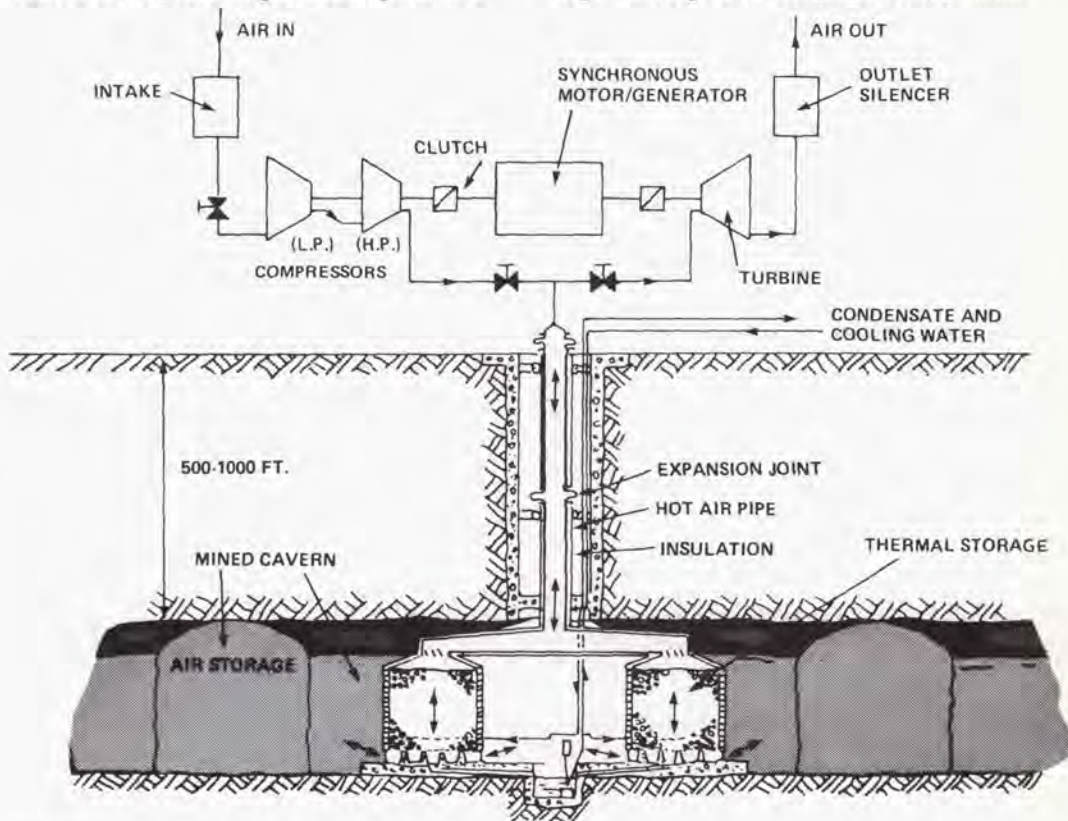


Figure 5: Advanced Compressed Air Energy Storage.

refractory pebbles, rocks, or bricks. Such a design may be inherently less expensive. But none of these concepts has been thoroughly investigated in laboratories on a reasonable scale. In view of this fact and of the current state of research in high-temperature (above 1400°F) thermal storage (21), it seems probable that large scale adiabatic CAES plants cannot be commercially built until the late 1980s.

Another ACAES system under study uses coal, either through a companion gasification plant or a fluidized bed combustor (FBC). Figure 6 shows the schematics of the latter.

In principle, the integration of the relatively clean-burning FBC with CAES appears most promising for replacing petroleum fuels. This method, however, does not work well with existing FBC technology, which is temperature-limited. The developing FBC technology using pressurization, however, appears very attractive (19, 22). A viable technology for the pressurized FBC will probably not be achieved until 1985. Large scale ACAES/FBC experiments can then be undertaken over a period of three or four years. This puts commercialization of such

an advanced system into the very late 1980s or early 1990s.

Perhaps solar energy represents the most advanced (if not the oldest) concept that can make CAES independent of reheating by fuel. This method would concentrate sun rays by thousands of mirrors and use the thermal energy so collected to reheat the stored compressed air on its way to the expansion turbine. Unfortunately, this design seems uneconomical, at least within the next five or ten years.

Thus a reasonable prediction would be that the advanced compressed air energy storage technology is about 10 years away from initial commercial use. In the meantime, electric load leveling can already be achieved through the proper use of the CPH, UPH, or CAES.

8. A rational approach to load leveling

Clearly, load leveling through energy storage can be beneficial for utilities and hence ultimately for their customers. Of course it must first be determined whether a given region actually can benefit from load leveling, and whether there is a sufficiently economical baseload capacity for charging energy storage with off-peak

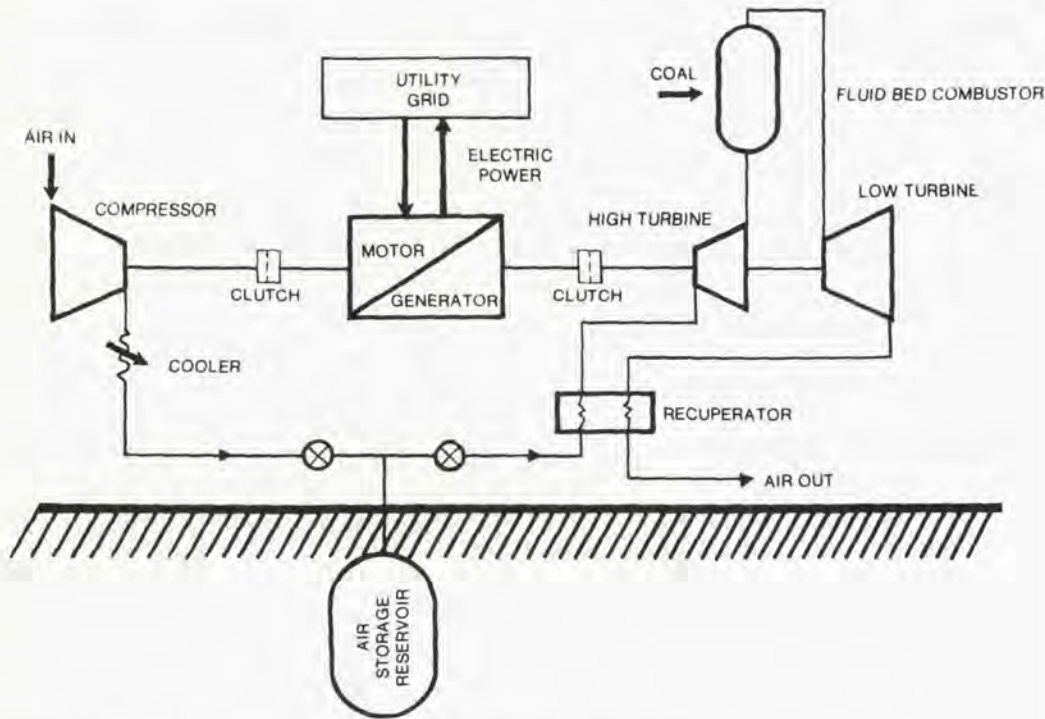


Figure 6: CAES integrated with coal-fired fluidized bed combustor.

energy. Then the right energy storage system for the location must be selected, and sufficient capital must be found for construction of the new systems.

Frequently, the need for load leveling can be established very quickly by examining the load curves and the generation mix of the utility in question. But attention must also be paid to the anticipated power growth rates, especially in areas where the economy or availability of fuels is uncertain.

There are more than a thousand electric utilities serving the fifty states, with a total generating capacity of nearly 600,000 MW. Some of the utilities are very large, such as TVA, Consolidated Edison (N.Y.), PSE & G (N.J.), Philadelphia Electric, and Commonwealth Edison (Ill.). Each of these a few years ago operated large numbers of fuel-guzzling gas turbines—well in excess of 1000 MW each. In light of the changing economic and energy picture, it would seem that national and individual interests can perhaps be best served by an orderly transition into an era when electric utilities will no longer use gas turbines except for reserves.

Most small utilities also operate diesel generators and gas turbines to provide peaking or intermediate power. It might be necessary for several neighboring utilities to operate energy storage systems collectively. Such a mode of load leveling can also be accomplished by working within the existing power pools. Public utility commissions can do much to help arrive at rational decisions, in cooperation with competent utility management teams and concerned customers.

The availability of economical charging power is crucial to the viability of an energy storage operation. A few years ago the California Energy Commission conducted a study to assess the technical and economic feasibility of introducing compressed air energy storage into southern California (17). While the feasibility was well established, including that of two plant designs, the project was halted because of the lack of economical off-peak power for charging. In such cases, pooling of resources by neighboring utilities may solve the problem.

A myriad of criteria must be considered in selecting the proper system and in establishing a financial basis for new energy storage plants. A realistic financial study will take into account the fact that much of

our energy supply (such as interstate natural gas and a significant portion of the domestic crude oil) is priced at artificial levels, a situation which may not last very long. Sound financial analysis, therefore, will anticipate future energy costs, and this will in all likelihood hasten the transition to alternative energy resources.

9. A suggested scheme for load leveling in Northern Ohio

This region could be well served by an underground pumped-hydro (UPH) energy storage plant. The need for load leveling in Northern Ohio is obvious. It is a highly industrialized region of some four million inhabitants, nearly two percent of the nation's total population. Since the potential for load leveling is about 1000 MW, the energy storage capacity is in the range of 8,000 to 10,000 MWh, with an average of 9,000 MWh.

The question of availability of economic charging power will most likely present no problem. Because this is a highly industrialized economy, off-peak power should be available during all seasons of the year. Moreover, most of the power in the region comes from coal-fired plants; coal is selling at less than \$2 per million Btus, whereas oil products for gas turbines cost about \$6 per million Btus. This means that economical off-peak power can be available.

Here are some other considerations. Total plant cost is estimated at \$550 million (\$550/KW), which is considerably lower than adding new steam or nuclear plants (12, 16). There would be a seven-year construction lead time. The UPH plant technology is nearly operational. It is reliable, low-risk, safe, and clean. The efficiency is the highest among technology options available within the next ten years. In addition, the project would create thousands of jobs and insure reasonably priced power for industries.

As described in Section 3, the typical UPH plant cycles water between a surface lake and an underground reservoir. Since Lake Erie is available, the only remaining task is, thus, the creation of an underground reservoir in a competent rock formation. Potentially suitable rock formations do exist near Lake Erie (3, 10, 23). The lower reservoir would consist of a series of large tunnels with a total volume of about 3 million cubic yards. It would be located at 1500 yards below the Lake Erie water level. The

plant would employ three 330 MW two-stage regulated reversible pump-turbines. The operation would probably be on a weekly cycle.

As an alternative to this proposal for a UPH system, serious consideration could be given to the immediate construction of a conventional pumped storage plant, like the successful Ludington plant but half as large. Such an Erie CPH plant could take advantage of the engineering and operating experience derived from Ludington.

A second alternative system would involve the underground storage of compressed air. An Erie CAES plant would consist of three or four modules rated at between 250 MW and 330 MW each. In Northern Ohio there is no lack of rock formations suitable for a hard-rock CAES reservoir. Thus, the proposed plant might resemble the recently designed plant for Potomac Electric Power Co. (16, 19). If suitable (man-made) caverns could be located in the salt formation nearby, this plant would bear features similar to those of the newly designed CAES plant for Mid-

South Services (19). It is also feasible to consider storing compressed air in underground aquifers or depleted gas fields. A good reference design for such a plant exists (17). These compressed air plants can be built now, but they are not as attractive as the pumped storage plants, since a small amount of oil or gas is still needed in their operation.

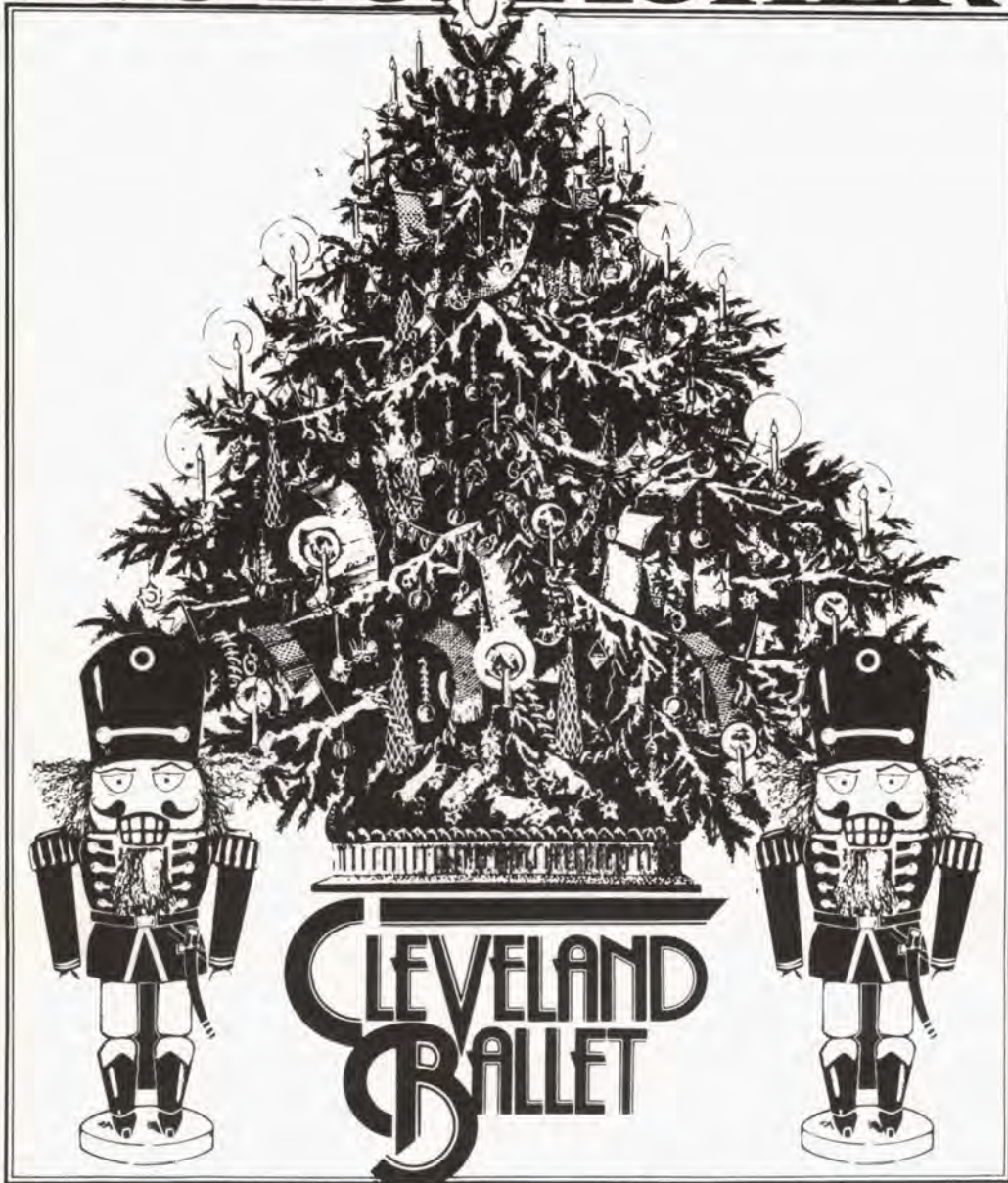
Whichever system is chosen, the time for the decision is now. With soaring oil prices and the deregulation of natural gas prices scheduled within a few years, it is the right time for responsible utility executives, public utility commissioners, energy officials, and concerned consumers to re-examine the continued widespread use of gas turbines in peaking or intermediate operations. The supply of natural gas and crude oil is limited. It took the earth a few million years to make these energy resources, and modern man has been wantonly consuming these wonderful gifts of nature at a rate that will exhaust them in a few more decades. We cannot afford to delay conservation measures any longer.

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