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Drawing

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Understanding Faces From the Inside Out

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COVER:
Woman Carrying a Child Down Stairs
by Rembrandt

The internal structure of a face provides a map for the layout of facial features—a map that forensic artists such as **Karen T. Taylor** use every day.

—

by Edith Zimmerman

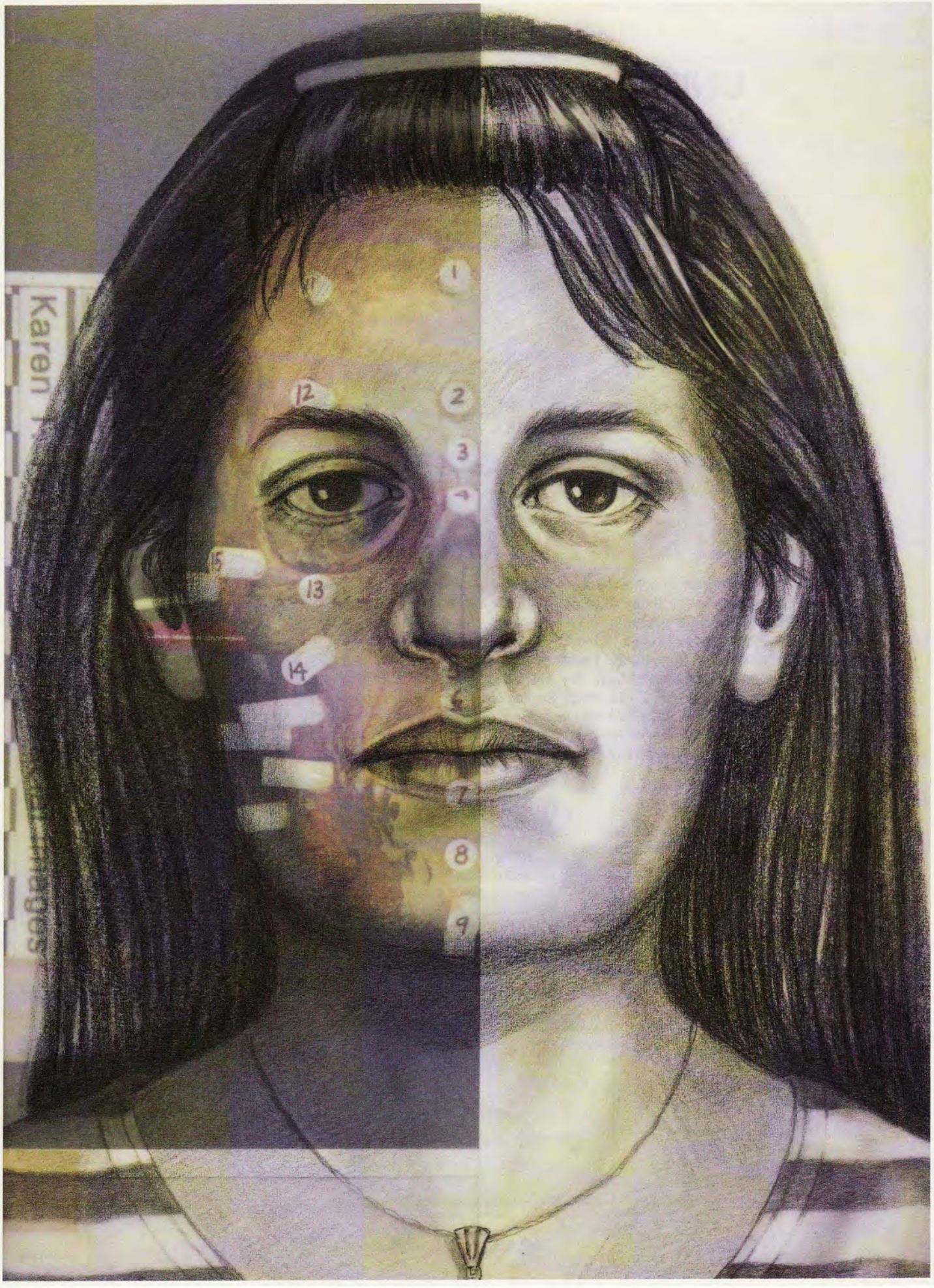
Understanding Faces From the Inside Out:

The Art of **Forensic Drawing**

TUNE IN to any popular crime show on television and chances are that before long you'll be presented with some form of forensic art. Karen T. Taylor, a forensic artist and longtime forensic art instructor, has been a key figure in the art's rising profile. Many of her forensic drawings have aired on *America's Most Wanted*, and *CSI:* based a character on Taylor, whose actual hands have appeared in several of the show's scenes. "It's a hot topic now with all the television shows," she says. "But it's routine to me, having worked in this field for so many years."

Indeed, despite its recent popularity and status as a "hot topic," forensic art has been around for well over a century as a method for human identification. Although today's techniques are more advanced than those practiced in the 1800s, the fundamentals remain the same: identify people whose faces are unavailable. Taylor groups the techniques of forensic art into two categories: work to identify the living and work to identify the dead. Within these two categories exist more specific forensic art disciplines: composite imagery, both growth and age progression, and two- and three-dimensional facial reconstruction. Each technique is best suited to certain identification situations and requires artistic skill in conjunction with psychological or scientific knowledge.

Two-dimensional facial reconstruction of a still-unidentified female.


Karen
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UNIDENTIFIED HOMICIDE VICTIM

Valley Center Area, San Diego County

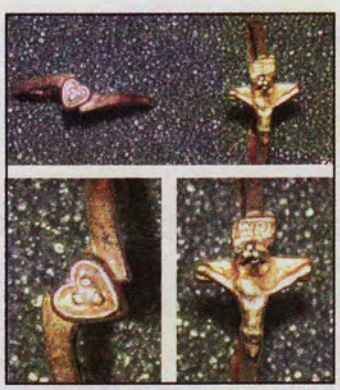
DO YOU KNOW WHO I AM?

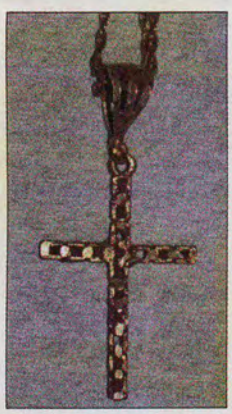
I have been missing for 5 to 10 years and am the victim of homicide. My body was buried near Valley Center, CA. A forensic artist believes I may have appeared very similar to this drawing when last you saw me. When I disappeared I was between 17 and 21 years old. I was about 5'02" and had a light build. I was wearing the jewelry pictured and dressed in the clothing shown. My shirt was made by "LAFFEL USA" and my pants were "CYCLONE" brand. My shoes were new black and pink "LA GEAR". I had new acrylic fingernails painted red. If you may know who I am, or have any information, please call the Sheriff's Homicide Detail with my name.

Right: Two Gold Rings — One a heart
One a Crucifix

Below: Gold Cross on gold chain

Below Right: LA GEAR hi-top shoes





"The single most important factor for capturing individuality and triggering recognition is facial proportion. You can refine the minutiae, but if you don't have the gestalt, you'll fail to achieve likeness."

LEFT
Composite drawing based on a victim's verbal description (left) and photo of subject identified (right).

ABOVE
Composite drawing of suspect accompanied by actual photograph of subject once apprehended.

OPPOSITE PAGE
Poster created by the San Diego County Sheriff's Department for a still-unidentified female.

For each technique, forensic artists must consider the face as a whole. "The single most important factor for capturing individuality and triggering recognition is facial proportion," says Taylor. "You can refine the minutiae, but if you don't have the *gestalt*, you'll fail to achieve likeness. It's the reason you recognize someone you know walking toward you on a busy street. It's the array of features and spatial layout of the face—not the individual eyelashes or freckles. For instance, you can draw the most beautiful eyes in the world, but if they're not correctly spaced, the likeness fails. That's as true in forensic art for triggering recognition as it is in fine-art portraits for capturing likeness."

As Taylor suggests, fine artists stand to learn valuable skills from the study of forensic art. "The difference is," says Taylor, "you learn things from the inside out."

Composite Imagery

Composite imagery, the technique of creating a drawn likeness based on the descriptions of witnesses and victims, is one of the most common and best-known forms of forensic art. On crime shows and in real life, the images are drawn based on information gleaned from witnesses during interviews. For composite drawing, Taylor emphasizes, the art of interviewing is equally as important as the art of drawing—only by asking the right questions and understanding the psychology of the witness can a forensic artist produce an accurate likeness.

The artist must understand how memory works. "Facial memory is generally divided into three major stages: acquisition stage, retention stage, and retrieval stage," explains Taylor. "Acquisition stage is when you see a face. Retention is the time your mind holds it in memory, and trauma can encode a face in a way that keeps it there for a lifetime. Retrieval stage is when forensic artists interview you to acquire that image from your mind."

Depending on the person describing the criminal and the nature of the crime, the forensic artist must tailor the interview to yield the most beneficial and least distressing retrieval. "I'm usually seeing someone on the worst day of his or her life—or soon thereafter," says Taylor. "It's not unusual, once the face begins to emerge from the paper and coalesce, that a victim becomes nauseated and leaves to vomit. It can be a dramatic process."

Beyond the obvious traumatic nature of composite drawing interviews—encouraging someone to remember details he or she may wish to forget—there are other challenges a forensic artist must anticipate. "All faces are not

"For many people there is a certain look, particularly in the eye area, that follows us throughout life. Whether you're drawing the progression by hand or doing it on the computer, you have to retain the look in the eye area. That's one of those things that is of interest to all artists—not just forensic artists."

An age-progression drawing of a fugitive, taking into consideration the effects of aging and lifestyle choices.

created equal," says Taylor. "Some are easier to describe and recognize than others. Studies suggest that distinctiveness—either attractive or not—makes faces more recognizable. People with memorable traits—distinctive noses, scars, prominent ears, unusual eyes—may be easier to capture on paper."

Taylor also reports that certain types of people often make better witnesses. "Some of my best witnesses have been teenagers and prostitutes. Teenagers are at an age where what people are wearing and how they look are really important. Prostitutes are in a profession where observing people is critical to their work and safety."

Each interview varies according to the witness. Many factors must be considered, such as whether the witness was an active, passive, or inactive victim; and the witness' age, perspective, and fluency of description; and potential hindrances, such as diminished eyesight or hearing and potential use of drugs and alcohol.

Building a rapport with the witness and creating a comfortable environment are also crucial. "I make a point in the beginning of the interview to dispel fears and anxieties and potential blockages. I say 'This is not a test.'" Taylor likens the experience of being asked to remember a person's appearance to trying to remember someone's name. "When you see someone and you don't remember his name, you think 'Oh no,' and you fake your way through it. Then later that night when you're brushing your teeth it comes to you. Things bubble to the surface when the mind is more relaxed. These are the psychological subtleties that forensic artists learn about."

Growth- and Age-Progression Images

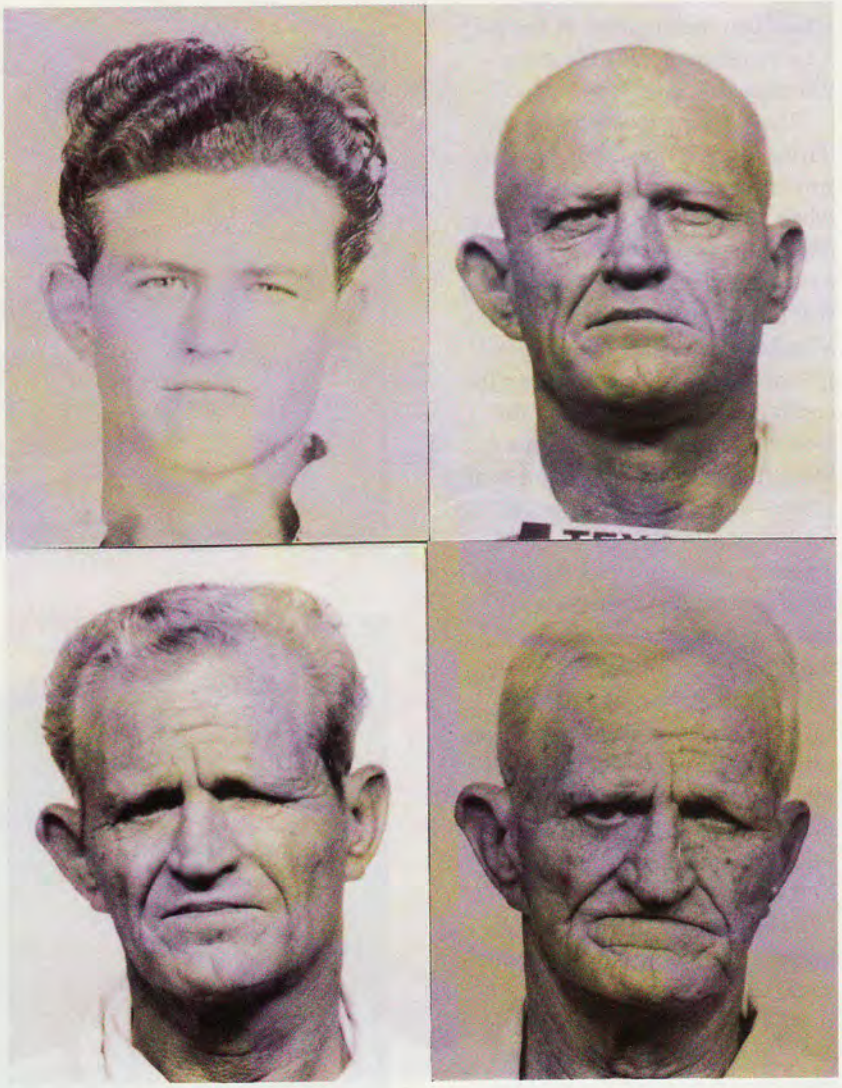
Growth- and age-progression images are drawings that depict a missing person—often a child or a fugitive—years after he or she was last seen, taking into consideration the effects of facial growth and aging. As in composite imagery, both anatomical knowledge and artistic ability are required. "For child-growth progressions, artists have to study craniofacial growth and learn a lot about teeth and how dentition changes as we mature. To predict aging in fugitive updates, artists also benefit from learning about the dermatological effects of time and sun, about heredity—what things tend to domi-

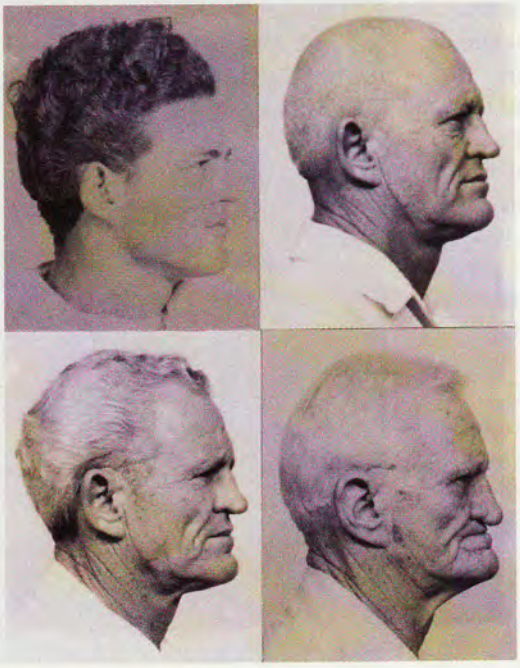
nate and come forth—and about lifestyle factors," says Taylor.

There are different sources that artists can refer to while creating growth- and age-progression images. There is genetic and quantifiable-growth information based on studies done of faces and skulls, and there is the information available by observing the facial features that run in a missing person's family. Successful images usually rely on a mixture of both types of information. Joe Mullins, a forensic-imaging specialist at the National Center for Missing & Exploited Children (NCMEC), says, "We like to have input from the biological family and use reference photos of the parents. The ideal situation would be to have photos of the missing child's parents at the age the child would be. Once we have all the available ingredients we manually manipulate the child's photo to come up with an image of how we believe this child would appear today."

Successful progression images can be created both by hand and on the computer. Mullins explains that at the NCMEC they use Adobe Photoshop CS2 to complete their images. "The fact that we are able to use technology to actually create these images is surprising to most people, but for now the process is more about technique than technology." The technique works. "We've been using this method since 1990, and in that time we've helped resolve more than 650 cases."

Taylor also acknowledges the advantages of technology in age-progression imagery. "It's the one category of forensic art where a computer method may be preferable, depending on the circumstances, because you can





ABOVE
Aging in the face of a Caucasian male, at age 21 (upper left), age 47 (upper right), age 50 (lower left), and age 68 (lower right).

LEFT
Lateral view of same Caucasian male.

retain that lifelong look in the eye area by using literally the same photographic eyes."

The "lifelong look" to which Taylor refers is one of the most important elements to consider when creating a progression image. "For many people there is a certain look, particularly in the eye area, that follows us throughout life. Whether you're drawing the progression by hand or doing it on the computer, you have to retain the look in the eye area. That's one of those things that is of interest to all artists—not just forensic artists." To further capture this lifelong look, Taylor recommends picking up on a facial expression present in the existing photograph and incorporating it into the progression drawing. "For instance, I have a photo of myself with a one-sided smirk from when I was 5 years old, and I still make that expression today." Mullins calls this "Unique Facial Identity" and explains that as long as the images they create at the NCMEC are consistent with that identity, they know they've produced an accurate image.

As faces grow, they expand downward and outward. As children, we appear to have big craniums and smaller lower faces. "By age three, the upper part of the cranium is already 70 percent mature, so the significant change takes place in the lower two thirds of the face," explains Mullins. As we mature, our jaw grows and extends downward to accommodate the permanent teeth that replace the lost baby teeth. The growth of the mandible creates a proportional shift of the midface features. On the adult, the eyes, nose, and mouth become centered in the middle of the face, whereas on the child the midface features are located lower and result in the big-headed look. "Kids go through a stage where they may have big ears or look like their teeth are too big for their face, but eventually it all levels out," says Taylor.

LEFT

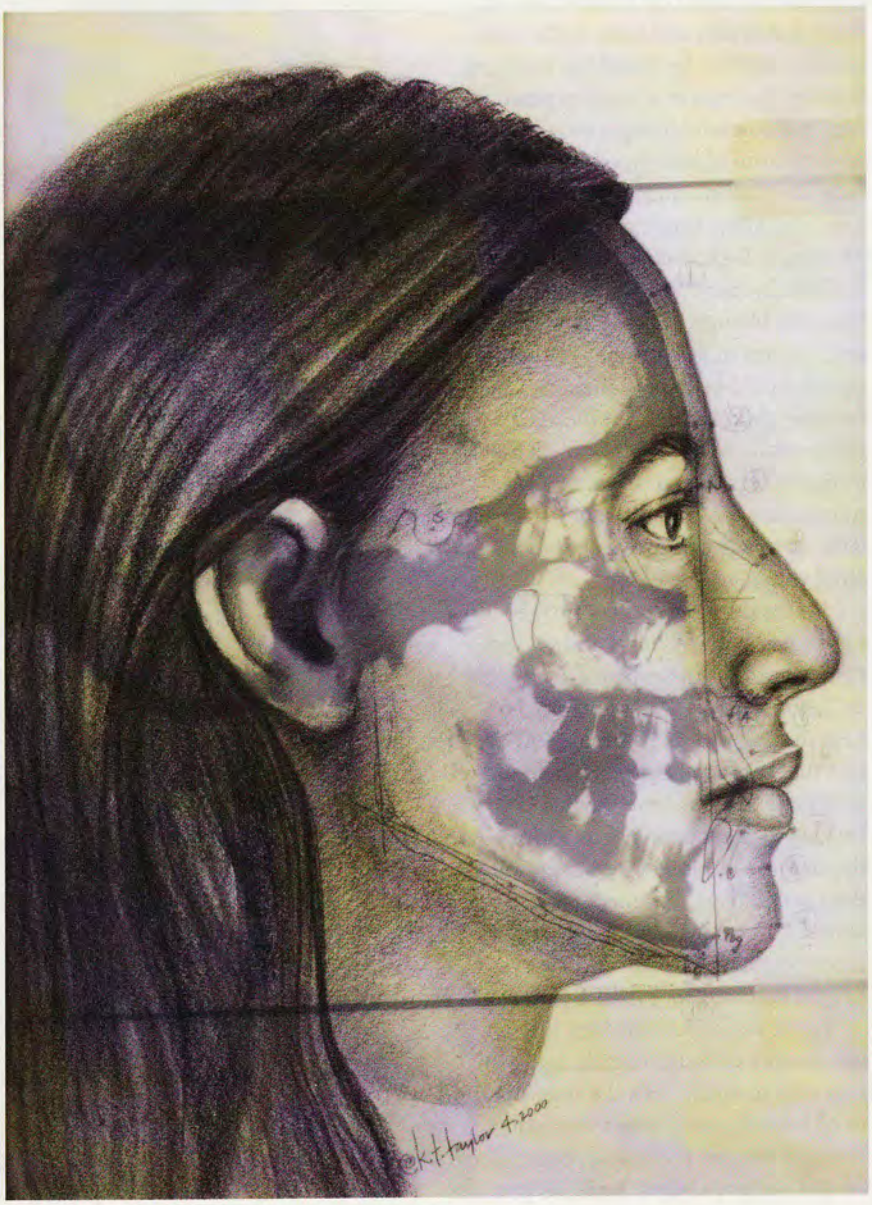
Radiograph of an American Indian female skull in a historical case as part of a research project.

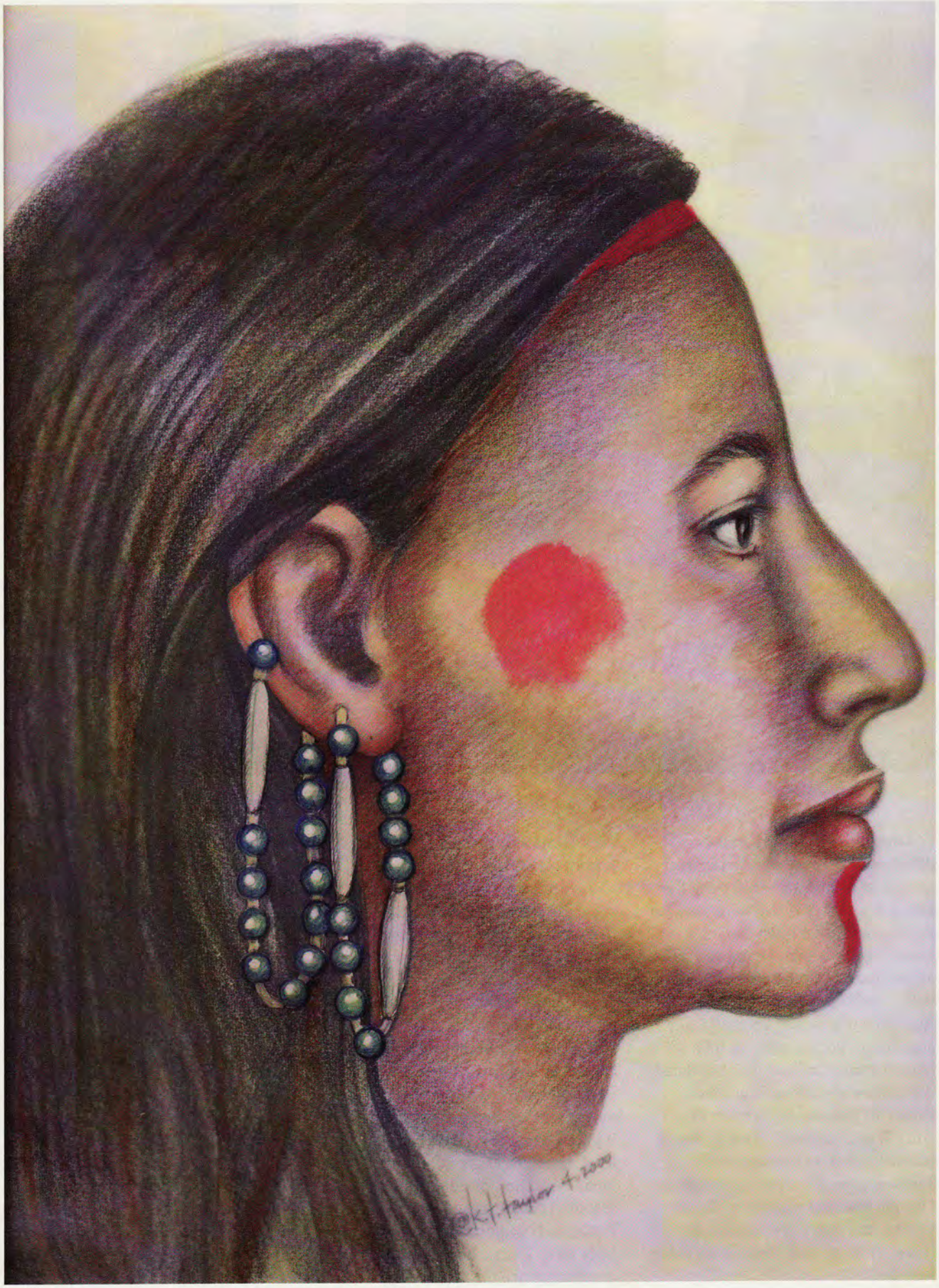
BELOW

Two-dimensional rendering of the American Indian female's face over her skull.

OPPOSITE PAGE

Two-dimensional rendering of the American Indian female with color. Color was added based on the tribal portrait paintings done by frontier artist George Catlin in the 1830s.

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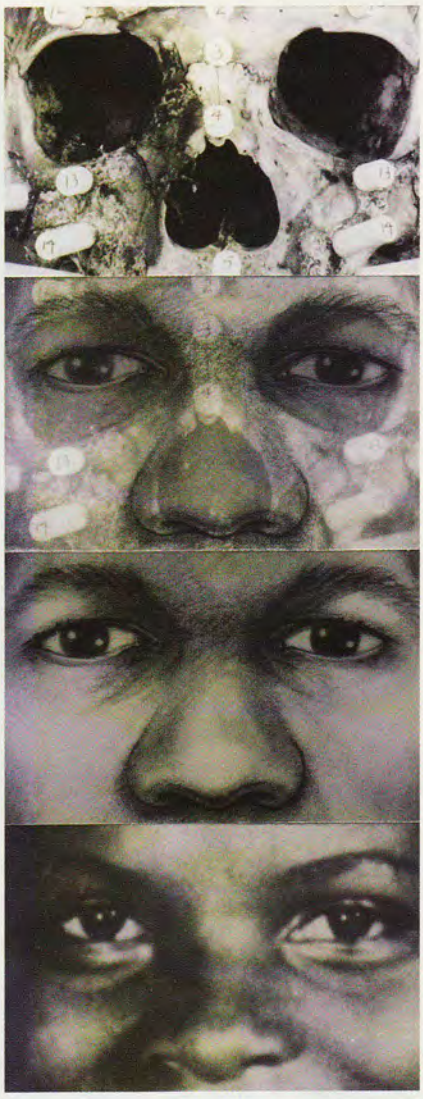


One of the most important differences between projecting the growth of a child and projecting the aging of an adult is that with an adult the forensic artist must consider various lifestyle factors that can affect appearance. "Heredity is a factor with both," explains Taylor, "but as we age, these lifestyle factors become really significant. For instance, is this person known to have weight-related difficulties or a thyroid condition? Does this person like to be in the sun? Is he a smoker? Does he watch his diet and does he exercise?" Taylor reports that, not surprisingly, "People who use sunscreen, don't smoke, and don't overindulge on booze or drugs look better than those who do."

Two-Dimensional Facial Reconstruction

Unidentified deceased persons are regularly presented to medical examiners and law-enforcement agencies with the hope that the bodies can be identified using forensic art. "There are so many reasons why it's important to identify unidentified victims," says Taylor. "Very important, of course, is family consideration. For every unidentified body, there is someone who loved that person and is looking for him or her. Then there are legal matters—estates that are tied up, business issues, or other problems that are created when people vanish. Particularly important, identifying the body often gives a homicide detective a starting place for his investigation."

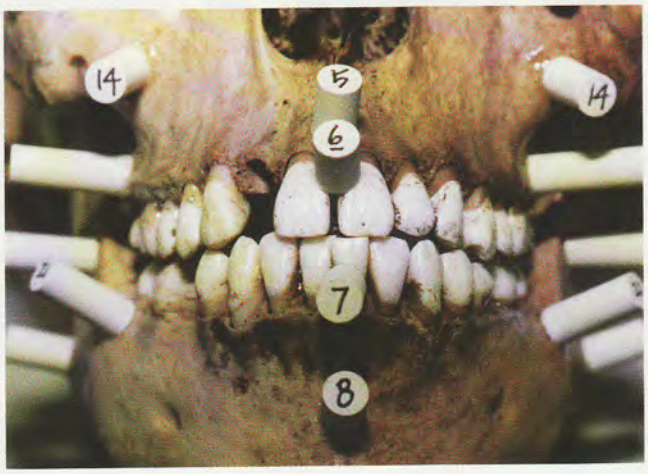
In order to identify nameless bodies, the forensic artist must interpret the information provided by the physical remains. When the remains are skeletal, forensic artists base their drawings on the dimensions and traits of the bones and the skull. "Facial reconstruction from the skull can be done either two-dimensionally, with a drawing, or three-dimensionally, with a sculptural approach," explains Taylor. "Both methods work well, but some cases lend themselves more to one method." Three-dimensional reconstruction—on which Taylor's friend and fellow instructor, Betty Pat. Gatliff, is the authority—has the advantage of providing a bust that can be viewed from various angles and can incorporate physical items that may

OPPOSITE PAGE, LEFT
Lateral reconstruction drawing of female from skull, showing tissue-depth markers.

OPPOSITE PAGE, RIGHT
Detail of the frontal eye-nose area of an identified homicide victim.

LEFT
Taylor handled a skull in one of her workshops.

BELOW
Close-up of teeth with tissue-depth markers.

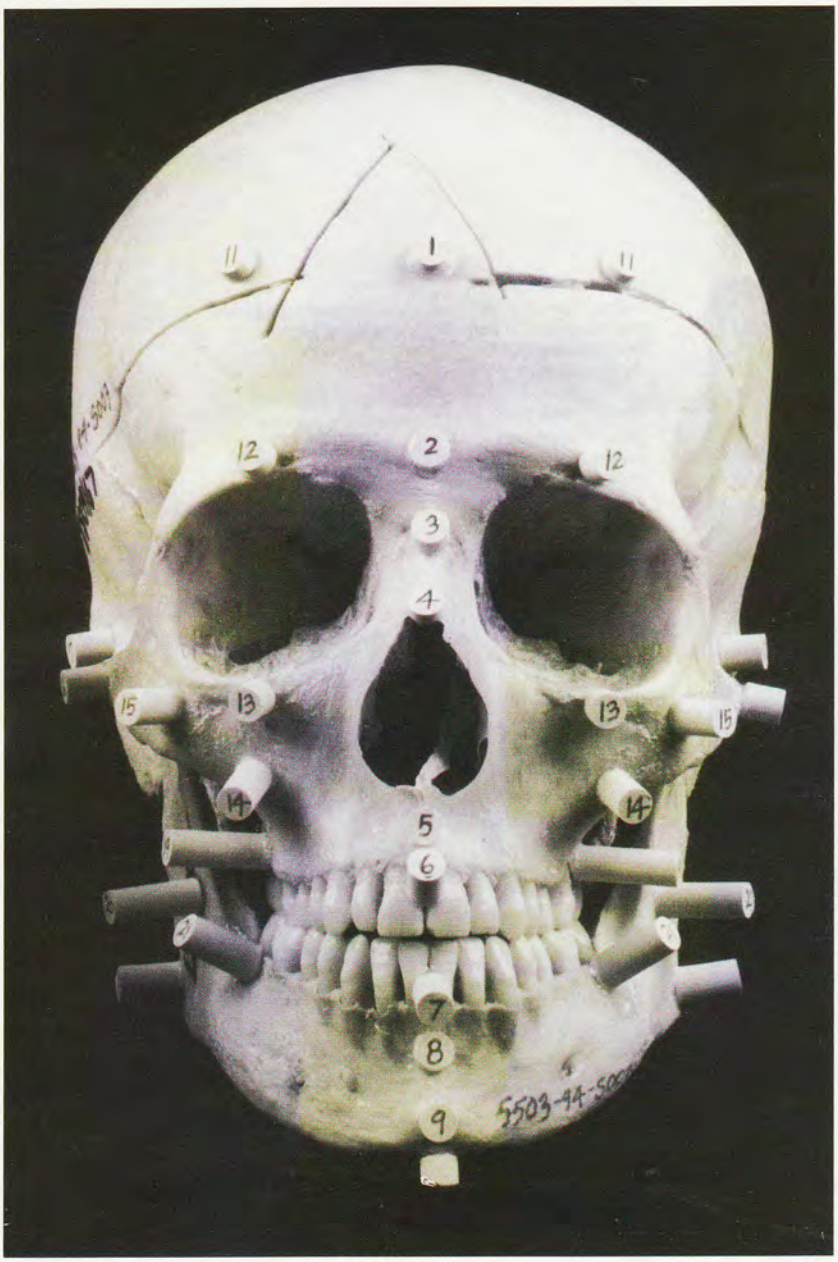


have been found with the body, such as glasses, jewelry, dentures, or clothing. On the other hand, fragile skulls may not hold the weight of clay for a sculptural reconstruction, and in such cases two-dimensional reconstructions may prove more useful. Taylor, who does both sculptures and drawings, is credited with developing the two-dimensional reconstruction method that is commonly used today.

"When dealing with unidentified bodies," Taylor explains, "the forensic artist relies on input from various scientific professionals, such as forensic pathologists, anthropologists, and dental specialists. These individuals assess ancestry, age, sex, stature, and other individualizing traits that can be deciphered from the variability of bones." With this knowledge, the forensic artist prepares to create a facial reconstruction.

The first part is anchored in science. The forensic artist begins by referring to the tissue-depth charts provided by forensic anthropologists who have determined, among other factors, the subject's sex and race. Tissue-depth charts—developed by anthropologists over the years—provide information about the average depth of facial tissue at various skull landmarks. If the unidentified person were determined to be a black female, for instance, Taylor would refer to the tissue-depth chart for black females. Using that information, she uses an adhesive to glue carefully measured rubber tissue-depth markers—roughly the thickness of pencil erasers—to specific anthropological landmarks on the skull. Once the tissue-depth markers have been applied, the skull is photographed frontally and laterally using a ruler. When the life-size photographs have been developed, the forensic artist sets up a drawing board with the photos and overlays them with sheer vellum tracing paper.

The artistic half of a two-dimensional facial reconstruction is essentially "connecting the dots" provided by the tissue-depth markers to develop the layout of the face. After the basic layout has been established, the artist must develop the individual features—the eyes, the nose, the mouth, and the ears—based on specific formulas for each. Some features the artist must intuit or leave intentionally vague. "I sometimes build deliber-

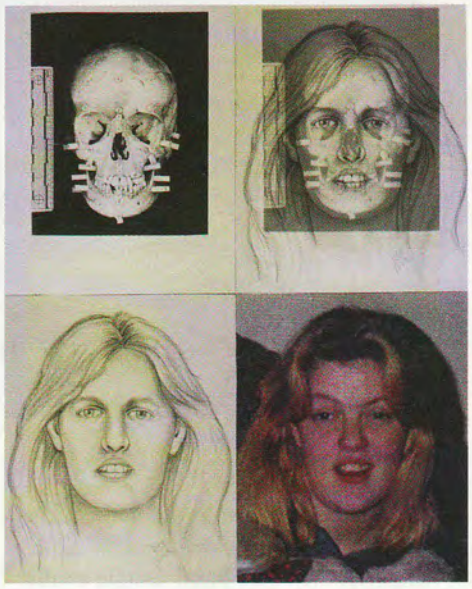


LEFT

Frontal view of tissue-depth markers glued to the skull of a white female.

BELOW

Skull (upper left); two-dimensional facial reconstruction with skull visible beneath (upper right); two-dimensional facial reconstruction (lower left); and subject identified (lower right).



ate ambiguities in areas where there is limited information, such as hair color, hair style, or eyebrows, so the viewer can interpret or extrapolate from the drawing," says Taylor. Once the drawing is complete, it is distributed by police in the news media with the hope that someone who knew the person might recognize him or her.

Workshops

For many years, Taylor has taught forensic-art workshops across the country. "I never intended to be a teacher, but every time I teach a workshop I'm amazed at how people respond." Taylor's workshops often fill months in advance, and her students range from forensic artists to portraitists, anaplastologists, special-effect technicians, crime-scene investigators, medical illustrators, and many others who want to learn about the face from the inside out.

Although many of Taylor's students will never go on to careers in forensic art, they cite the skills they acquired in her workshops as invaluable. Portrait artist and instructor Chris Saper has taken workshops with Taylor and says, "I felt that knowing more about the anatomy of the head would be of great benefit to me, not only as a commissioned portrait artist but also as a portrait instructor." What Saper learned about aging, cognitive triggers, anatomy of the skull, and facial musculature have translated directly to her portraiture—she spends more time observing her subjects and understanding the gestalt of their faces.

Naomi Glixman, a part-time forensic artist and EMT, says that Taylor's workshop changed her artistic outlook. "I see better; I'm more observant. I examine people's faces more closely. My drawing

"All faces are not created equal. Some are easier to describe and recognize than others. Studies suggest that distinctiveness—either attractive or not—makes faces more recognizable."

has gotten much better technically. I'm reconnected with my intuition."

Jay McClellan, an anaplastologist and volunteer forensic artist, describes the feeling of making a "hit" (when your artwork helps to solve a case) as similar to his experience in anaplastology. "The feeling is much like the reward I get from using my artistic techniques in medical prosthetics to improve people's lives. Karen is making an enormous contribution to society not only with her forensic artwork but also by sharing her knowledge with others. I am fortunate to be one of her alumni."

"The potential importance of high-quality forensic art cannot be underestimated," says Taylor. "It is the obligation of all those who do this work to constantly strive to improve their skills. One image can literally be responsible for the recovery of a precious stolen child, stopping a serial rapist or murderer, or providing comfort for the family who has lost a loved one to homicide.

"There are so many things that our faces reveal about us: they define our sense of identity, they reflect our ancestry and age, and they act as our emotional display system," Taylor concludes. The science of the face—indeed, of the human body—shows no sign of ceasing to fascinate us. ❖

About the Artist

Karen T. Taylor worked as a forensic artist for more than 18 years at the Texas Department of Public Safety, in Austin. She has taught forensic art for 20 years at the FBI Academy and other institutions, and once worked as a freelance portrait sculptor for Madame Tussauds Wax Museum, in London.

Taylor's knowledge of forensic art carries over into countless other fields. She's been contacted by plastic surgeons, face-transplant surgeons, psychologists, doll makers, television special-effects technicians, and many more. Her work has appeared on numerous major networks, including CBS, CNN, and The History Channel, among others. She has done various special projects, including finding the beauty ideal, restoring ancient mummies, and creating interactive crime-solving museum exhibitions for children. Taylor also sculpts in bronze and accepts both fine- and forensic-art commissions through her studio, Facial Images, in Austin. She is the author of *Forensic Art and Illustration* (CRC Press, Boca Raton, Florida) and the upcoming *Understanding the Human Face*. Taylor teaches a variety of workshops at the Scottsdale Artists' School, in Scottsdale, Arizona, and at the University of Oklahoma, in Norman. For more information about Taylor, fellow forensic artist Betty Pat. Gatliff, and their workshop schedules, visit www.karenttaylor.com.

Karen T. Taylor on the set of *CSI:*.