THE STAR WARS® ARCHIVES

Props, Costumes, Models and Artwork from Star Wars

Mark Cotta Vaz and Shinji Hata

Includes the Indiana Jones Archives

The Star Wars Archives

THE STAR WARS ARCHIVES

PROPS, COSTUMES, MODELS AND ARTWORK
FROM STAR WARS

BY MARK COTTA VAZ & SHINJI HATA

Virgin

To Olga With Love
M.C.V.

First published in Great Britain by
Virgin Books
an imprint of Virgin Publishing Ltd
332 Ladbroke Grove
London W10 5AH

First published in the USA by Chronicle Books as From Star Wars to Indiana Jones:
The Best of the Lucasfilm Archives

TM and © 1995 Lucasfilm Ltd. All Rights Reserved. Used under authorization.

The right of Mark Cotta Vaz and Shinji Hata to be identified as the authors of this work has been asserted by them in accordance with the Copyright Designs and Patents Act 1988.

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, resold hired out or otherwise circulated without the publisher's prior written consent in any form of binding or cover other than that in which it is published and without a similar condition including this condition being imposed upon the subsequent purchaser.

A catalogue record for this book is available from the British Library.

ISBN 1 85227 587 1

Printed and bound in Spain

Contents

FOREWORD **VI**

DAWN OF DREAMS **1**

I

"A LONG TIME AGO IN A GALAXY FAR, FAR AWAY..."

Star Wars (Lucasfilm/20th Century Fox) 1977 **7**

IN THE CLUTCHES OF DARTH VADER

The Empire Strikes Back (Lucasfilm/20th Century Fox) 1980 **35**

VICTORY OF THE FORCE

Return of the Jedi (Lucasfilm/20th Century Fox) 1983 **77**

II

FORTUNE AND GLORY

Raiders of the Lost Ark (Lucasfilm/Paramount) 1981 **123**

TREASURE OF SHIVA

Indiana Jones and the Temple of Doom (Lucasfilm/Paramount) 1984 **147**

THE FINAL QUEST

Indiana Jones and the Last Crusade (Lucasfilm/Paramount) 1989 **167**

FUTURE DREAMS **201**

CREDITS **205**

ACKNOWLEDGMENTS **208**

Foreword

THE ARCHIVES OF LUCASFILM came into being out of practical necessity. After eight years of producing the *Star Wars* trilogy, there was an accumulation of "stuff," which had been stored wherever storage could be found—a closet here, a warehouse there, cubbyholes at England's Elstree Studios, inaccessible corners of Industrial Light & Magic (ILM). It was all the physical things needed to make the movies and their extraordinary effects, ranging from simple pencil sketches to elaborate models of space vehicles and grotesque creature heads. No one referred to this "stuff" as artifacts, and no one thought about museums. The dilemma was storage.

That changed on a spring day in 1983, just before the release of *Return of the Jedi*. Someone had the idea to take a publicity shot of George Lucas amid a sea of models and miniatures used to make the trilogy. ILM then added a starfield with the ominous Death Star under construction hovering overhead. It wasn't until that day on the gigantic ILM soundstage that we had seen all of these pieces in one place. We were stunned by the volume of it. George turned to me and said, "You know, we need to save all this stuff. We need to start an archive. You're in charge of it."

Suddenly the focus shifted from storage to preservation, and we began to realize that the products of the enormously talented designers and craftspeople who helped make the films were objects of artistic, cultural, and historical significance. The phenomenal success of the films had made many of these objects into popular icons. We commenced the task of cataloging and photographing each item, still an ongoing process, with more than ten thousand pieces of artwork alone. An environmentally controlled Archive building was constructed at Skywalker Ranch and opened in November 1991, a giant two-story barn that houses both a film vault and an archive for models and other physical artifacts. Our goal is to preserve, protect, and document these pieces by the same standards used by museum curators.

The selection of art and artifacts displayed in this book represents a significant proportion of the archive in terms of models but only a fraction of the art work and costumes in our total collection. These items were selected for the first major exhibit of our archive, The George Lucas Exhibition, which toured several cities in Japan in 1993-94, organized and presented by Hata International of Tokyo. The selection covers primarily the *Star Wars* and Indiana Jones trilogies.

The Lucasfilm Archive contains the following elements:

MODELS These include mainly spaceships, miscellaneous vehicles, miniatures of sets, early prototypes, and robots, all designed for use in special effects sequences.

CREATURES These include hand puppets, articulated full-head masks to be worn by actors, full creatures in miniature scale used in stop-motion photography, and others. These are usually made of foam latex.

PROPS Props are most commonly hand-held items, and include weapons, clothing accessories, and other objects that often play a central role in a story, such as a sacred artifact that is the object of a quest.

COSTUMES Most of the costumes worn by the principal actors in Lucasfilm's productions have been preserved, as well as selected costumes worn by extras. These can range from traditional clothing and uniforms to the intricately constructed, full-body suits worn by Ewoks.

MATTE PAINTINGS Most often these paintings are done on glass, about three feet by six feet in size. They are designed to create the illusion of a large set or exterior location which would normally be too costly for actual filming. Clear spaces are left in matte paintings where live-action photography is composited with it. There are larger backdrop paintings also, either on board or canvas, used as complete scenic backgrounds for special effects photography.

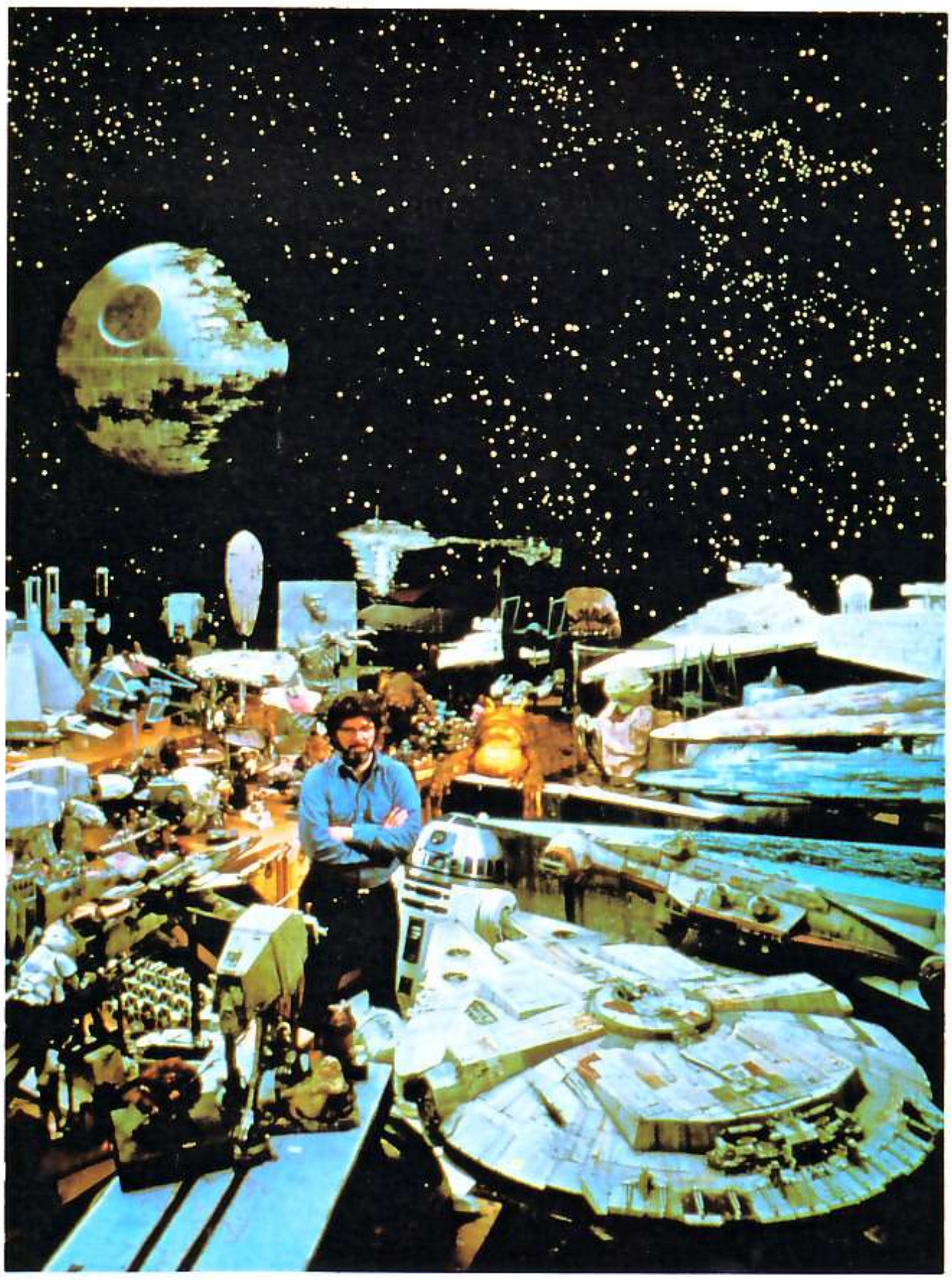
ART WORK Art is created at every stage of production, from beginning concept sketches and drawings to finished production paintings. Art includes storyboards for action and effects sequences, all costume and set designs, and full set blueprints. During postproduction, publicity art is also created, in poster designs and other special art used in the merchandising of licensed products.

Movie memorabilia has been around as long as the movies themselves, yet historically the film industry has had a sad record of not preserving its own artifacts. With the boom in the merchandising of characters and trademarks from

films in recent years, a new appreciation of the value of the originals, and an increasing trade in them, has also materialized. Moreover, with the technology of computer graphics rapidly taking over the special effects industry, the era of traditional model work and matte paintings is coming to an end. The artifacts from that era are fast becoming antiquities, part of the archaeology of the cinema. Museums devoted to the history of film are currently sprouting up in several cities, which gives hope that there will be more homes for film-related art in the future.

Lucasfilm has made a concerted effort to save its history. George Lucas has committed substantial resources to this preservation. We hope our example will inspire others to do so as well.

DEBORAH FINE
Director of Research and Archives
Lucasfilm Ltd.



George Lucas has produced some of the most popular movies in film history, among them the classic *Star Wars* and Indiana Jones trilogies. Thanks to Lucas's foresight, and the dedication of Lucasfilm archivists, the artifacts used in the making of his films have been preserved.

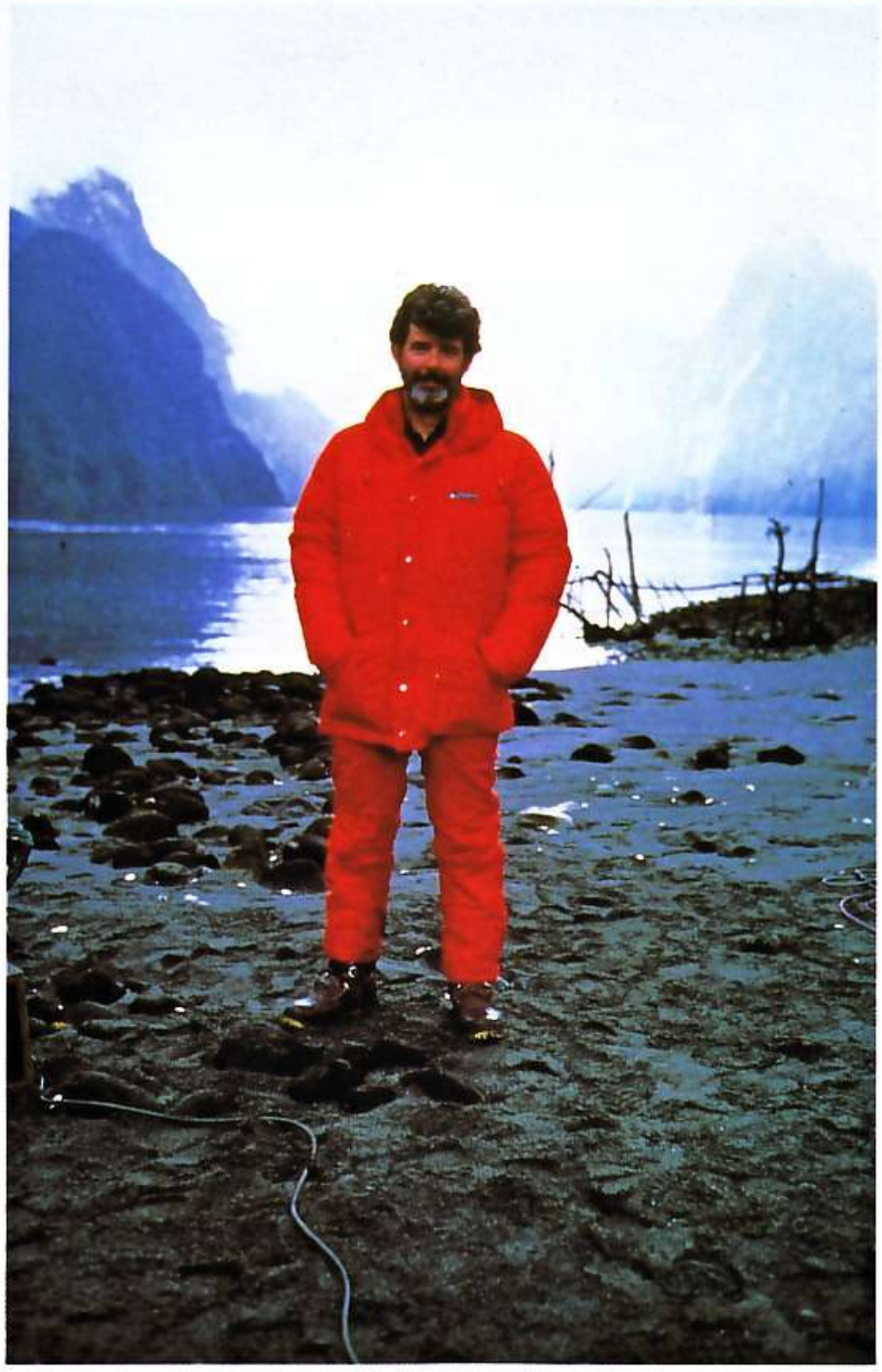
DAWN OF DREAMS

George Lucas's creation of the *Star Wars* universe and of Indiana Jones's world of adventure has made his name synonymous with movie magic. The popularity, and resulting financial success, of Lucasfilm is the stuff of movie legend. The *Star Wars* trilogy alone has collected more than $1.3 billion in worldwide box office revenue, with an additional $2.5 billion in merchandising sales.

But the Lucas impact goes deeper than the business of selling tickets. Beginning with *Star Wars*, a new kind of movie spectacle was created, one in which character and story were advanced with astounding visual effects. Lucas resurrected the dying art of motion picture effects, which had been withering away in the decades following the breakup of the old Hollywood studio effects departments, when he established Industrial Light & Magic (ILM) to create his *Star Wars* universe.

With the record grosses of *Star Wars*, Lucas began to realize his dream of Skywalker Ranch, a creative environment located in Marin County north of San Francisco, on thousands of acres of pastoral countryside where dairy cattle once grazed. In the nearby town of San Rafael, Lucas located his ILM department, which continues to advance the state of the art in motion picture effects.

The Lucas success goes to the heart of the American dream, a story rooted in his early life in the agricultural cradle of Northern California.



George Lucas

RITE OF PASSAGE

George Lucas was born in 1944 in Modesto, California, a small town set in the farmlands of the San Joaquin Valley. His father owned a small stationery store in Modesto and later, during George's teenage years, acquired a ranch outside town where he grew walnuts, peaches, and grapes. Lucas's mother tended to the home, raising him and his three sisters.

Lucas's boyhood was an idyll of simple pleasures during a time when children mounted their own neighborhood carnivals and pretend circuses, played in homemade forts and tree houses, and raced in their own soap box derbies. His interests also included comic books (from Walt Disney's *Uncle Scrooge* to *Superman*) and classic fantasy literature such as *Treasure Island* and *Robin Hood*. Other diversions included the two movie theaters in town, one of which Lucas recalls as an "A" list theater, the other a more "B" picture venue, where his boyhood imagination was sparked by *Flash Gordon* and other adventure serials. (Lucas's earliest movie memory was the adventure classic *King Solomon's Mines*.)

As a teenager, Lucas was a budding carpenter and a helping hand during harvest time on the family ranch, but he was an admittedly poor student in school. His consuming passion in those days was building, racing, and cruising hot-rod cars. His pride was a souped-up Fiat racer outfitted with a roll bar and special, four-inch-thick nylon seat belts.

One twilight, two days before his high school graduation, an eighteen-year-old Lucas was driving the flat country road that led back to the family ranch. As Lucas began to make the right turn into his driveway, a classmate, who had been driving behind him at eighty to ninety miles an hour with his headlights off, tried to gun past Lucas on the right, hitting the Fiat broadside. The crash sent Lucas's car turning over and over until it plowed into one of the family walnut trees. Ironically, the special seat belts broke, throwing Lucas free before the impact with the tree.

While his classmate was unhurt, Lucas lay on the dirt unconscious and without a pulse, his lungs collapsed and numerous bones crushed. For two days the hot-rodding teenager was in a coma, hovering in the tenuous space between the material world and eternity.

Lucas regained consciousness and during the coming weeks of convalescence contemplated the miracle of his escape: if his safety belt hadn't broken, he surely would have died when his car crashed into the tree. Fate had sent him to the brink of death and brought him back, an ordeal Lucas recalls as his personal "rite of passage."

Thereafter, Lucas began to broaden his horizons, entering Modesto Junior College and studying anthropology, mythology, and philosophy (subjects that would be reflected in his filmography to come). During junior college he also began experimenting with 8-mm and 16-mm cameras and stop-frame animation, which led to his ultimate passion for filmmaking.

The sixties were an era of experimentation for a new generation of filmmakers which, in addition to Lucas, includes Steven Spielberg, Brian DePalma, and Martin Scorsese. As Lucas began his filmmaking career, his path crossed that of Francis Ford Coppola, another leading light of the new wave of young moviemakers.

The Lucas family, 1950

THX 1138

A twenty-seven-year-old Coppola was directing film legend Fred Astaire in *Finian's Rainbow* when he met twenty-three-year-old Lucas. Coppola acted as mentor and guide during Lucas's introduction to the inner sanctum of big-studio moviemaking. In 1969 Lucas and Coppola, filled with idealism and wary of Hollywood ways, moved to San Francisco to create American Zoetrope Studios. Their major collaboration under the production umbrella of Zoetrope was *THX 1138*, a movie Lucas had conceived during his University of Southern California days.

The 1971 film, about a man mistakenly granted free will in a police state of the future, was a seminal effort for a number of budding talents, including Lucas as director, Coppola as executive producer, actor Robert Duvall, and composer Lalo Schifrin. The production itself was full of experimental, film-school energy, as Lucas was able to conjure up the futuristic world of *THX* on locations that included the subway tunnels of the Bay Area Rapid Transit system then under construction, the Frank Lloyd Wright-designed Marin County Civic Center, and the atomic energy facilities at the Lawrence Livermore Lab.

THX was released by Warner Brothers although the studio disliked the film, which met with dismal box office and a mixed critical response. Lucas gained some satisfaction six years later when, hard on the global phenomenon of *Star Wars*, the studio re-released the film.

THX was a turning point for both Lucas and Coppola. As business partners they were polar opposites: Coppola's hell-bent-for-leather management style did not mesh with Lucas's fiscally conservative approach. Lucas left the partnership to form Lucasfilm Ltd. while Coppola forged ahead with Zoetrope, beginning production on a film called *The Godfather*.

The film also provided a springboard for another Lucas project, a personal film based on his teenage years called *American Graffiti*. When *THX* was entered in the Director's Fortnight program at the Cannes Film Festival, Lucas, down to his last $2,000, decided to strap on his backpack and attend the fabled French Riviera festival. Lucas's arrival was hardly triumphant as he lacked a festival pass and had to sneak into the screening of his own film. He did, however, strike a $10,000 deal with a United Artists (UA) representative to develop his *American Graffiti* script.

THX 1138, poster, 62 x 99 cm.

George Lucas working with Francis Ford Coppola's crew on *The Rain People*

THX 1138, production photo

AMERICAN GRAFFITI

The preproduction period for *American Graffiti* was a time of trouble and testing for Lucas. In the weeks following the festival United Artists had rejected several drafts and his bank account quickly dwindled.

Lucas was tempted with an offer of $100,000 plus a profit percentage to direct a movie called *Lady Ice*, an assignment that would have required him to abandon *American Graffiti*. Lucas declined, disliking the idea of coming in as hired gun to direct someone else's project. It was another near miss with disaster for Lucas: the film bombed, leaving the filmmaker forever convinced that if he'd done the movie his career would have been finished.

Then fate began to smile on Lucas and *American Graffiti*. Coppola, with the weight of *The Godfather* success behind him, came on as producer and steered the project from UA to Universal. The writing team of Willard Huyck and Gloria Katz, Lucas's classmates from USC, helped coauthor the final script.

Although the film would be produced under the aegis of a big studio, it was another shoestring effort with a $700,000 budget and a twenty-eight-day shooting schedule. But Lucas turned adversity to advantage, filming in continuity his tale of one long, fateful summer night in the lives of his teenage characters. By the end of nearly a month of all-night shooting the cast had the naturally burned-out pallor called for in the script. Lucas often filmed when his cast was unawares, capturing action with an almost documentary-style realism. When the shooting wrapped, Lucas was able to indulge his love of editing to craft his final film.

As with *THX*, studio executives disliked the finished product and cut five minutes from the film. But unlike *THX*, Lucas had the last laugh at the domestic box office as the film generated more than $100 million.

American Graffiti, French poster, 118 x 158 cm.

George Lucas directing scene for *American Graffiti*

STAR WARS

Several studios passed on *Star Wars* before Alan Ladd, Jr., head of production at 20th Century Fox, decided to gamble on the film.

Lucas envisioned spaceships presented in realistic scale, flying through starfields at super speeds, as well as complex battles in space, designed with all the fighting realism he had witnessed in World War I and II aerial dogfight footage. However, the technology of space-age effects in the 1970s hadn't progressed too far beyond shooting models on wires. And Lucas only had a total budget of $9.5 million with which to conjure up his universe.

Lucas formed his own visual effects outfit, Industrial Light & Magic, which set up shop in an old warehouse in Van Nuys, California and began to create a new kind of movie magic. ILM's breakthrough technology was computerized motion control photography.

Lucas also contracted the services of key people along the way, such as George Mather, an old Hollywood hand who made sure that the lab processing ILM's daily production footage delivered the all-important dailies in a timely fashion, the equivalent, according to ILM veteran Lorne Peterson, of "making the trains run on time."

Design artists Ralph McQuarrie and Joe Johnston helped keep the *Star Wars* dream alive at the studio with their concept sketches and paintings of Darth Vader, the droids, and other key characters. "Early on we did five to ten *Star Wars* paintings for presentations around the conference tables at Fox, to convince the studio to do the film," Ralph McQuarrie observes. "Neither George or myself thought they'd be finals, we were just working on atmosphere and feeling. As it stood, the paintings were impressive to people at the time so we went ahead with those designs for the film."

The preproduction stage also included the work of the unsung Colin Cantwell, who produced the earliest prototypes for Luke Skywalker's landspeeder, the Imperial Star Destroyer, and the sandcrawler of the Jawas.

By 1991 an Archives building was constructed on the sprawling grounds of Skywalker Ranch to professionally store the thousands of Lucasfilm artifacts. Constructed as a barn-like building, the facility sits near a horse corral in a little valley below rolling hills. Once through the Archive doors the visitor enters an enchanting environment where the entire pantheon of Lucasfilm creatures, models, paintings, and props are on display in the open spaces and shelf-lined places of a temperature-controlled bay.

There R2-D2 sits in silent greeting near the life-size landspeeder once driven by Luke Skywalker across the sands of Tatooine, while the slab of an agonized Han Solo frozen in carbonite is set near the Ark of the Covenant. One can see the furry forms of the Ewoks of Endor, the ominous helmets of the Imperial stormtroopers, the torture rack used by Indiana's foe Mola Ram to lower his latest victim into lava pit fire, Indy's signature outfit (fedora, leather jacket, and whip), various lightsabers, model ships of every scale, alien creatures, even the Holy Grail.

One Lucasfilm employee likened an Archive visit to spending time in the ultimate grandmother's attic. If so, this is an attic stuffed with rare icons of popular culture, objects familiar to moviegoers worldwide—through movie magic these sleeping creatures have come to life, the model spaceships have assumed gargantuan scale and blasted through the universe at super speed, lightsabers have glowed with energy, the Ark of the Covenant has exploded with supernatural power.

This book is an exclusive tour, and celebration, of the treasures of Lucasfilm created during the making of the *Star Wars* and Indiana Jones trilogies. They represent the highest levels of the art of moviemaking, artifacts from films that have been thrilling the planet's moviegoers for generations. They are the stuff that movie dreams are made of.

Star Wars, early poster concept art

George Mather's *Star Wars* storyboard "bible"

I

“A LONG TIME AGO IN A GALAXY FAR, FAR AWAY...”

STAR WARS

(Lucasfilm/20th Century Fox) 1977

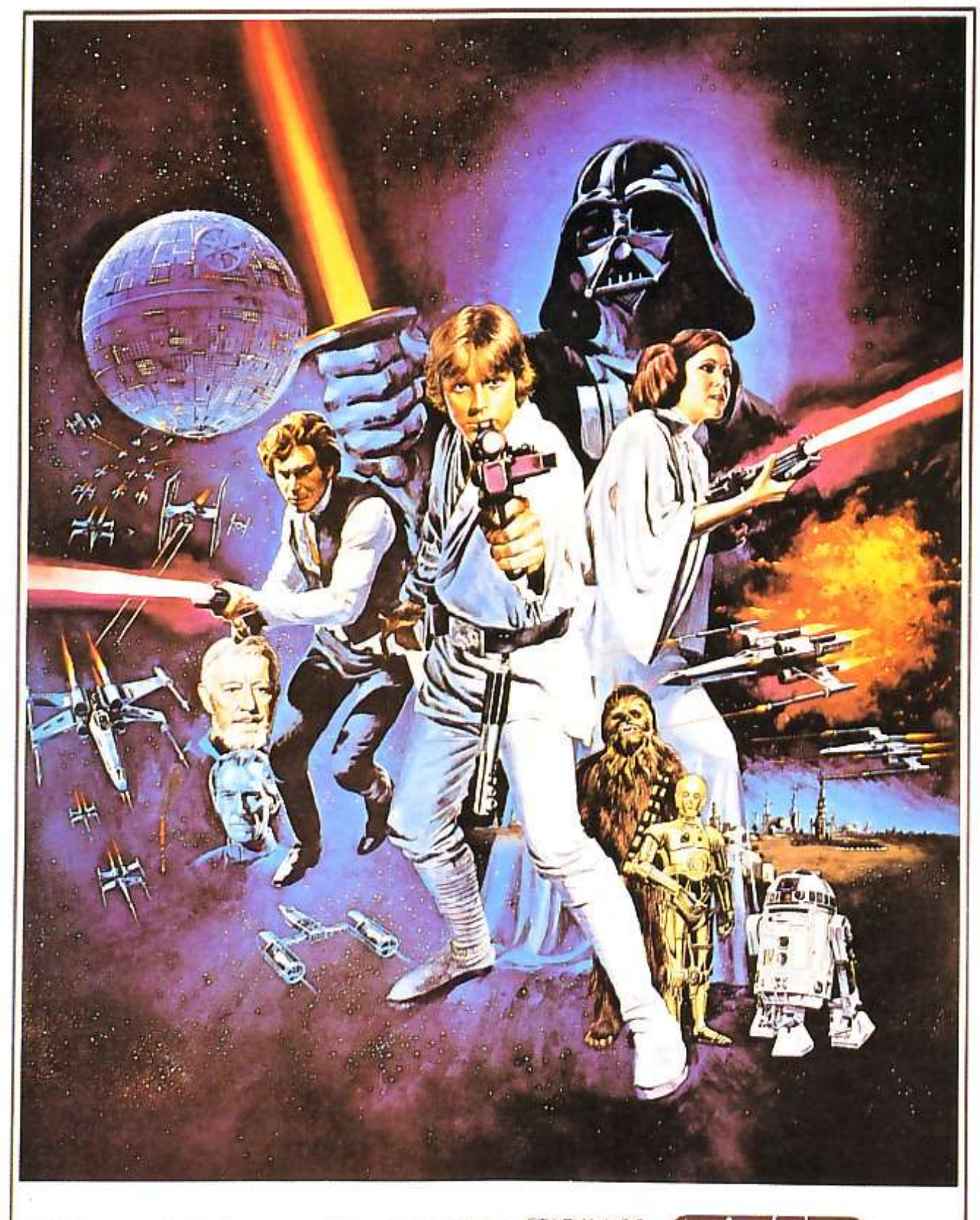
MYTHIC VISION

Lucas's goal for *Star Wars* was to create a new mythology for the space age. The epic story Lucas wrote (which he soon realized would require many movies to tell) reflected the new horizons the Modesto kid had been intellectually exploring for years, the myths, fables, and fairy tales of world cultures.

The western had been the last great myth, but with the wilderness long since settled, the power of frontier reflections had dimmed. Still, the classic themes of the western—the lure of wild places, the face-off between good and evil—endured. In the endless, starry universe Lucas would find a stage big enough for his mythic tale.

The story, set "a long time ago in a galaxy far, far away," went through many evolutions before settling on the now-familiar cast of characters: Darth Vader and the other evil leaders of the Empire who hold sway over the cosmos, freedom-fighting Princess Leia and the forces of the Rebellion, the young hero Luke Skywalker and his mystical teacher Obi-Wan Kenobi, the rogue adventurer Han Solo and his sidekick Chewbacca, and the lovable droids R2-D2 and C-3PO.

Darth Vader and Luke Skywalker's lightsaber battle, production painting, 18 x 41 cm.



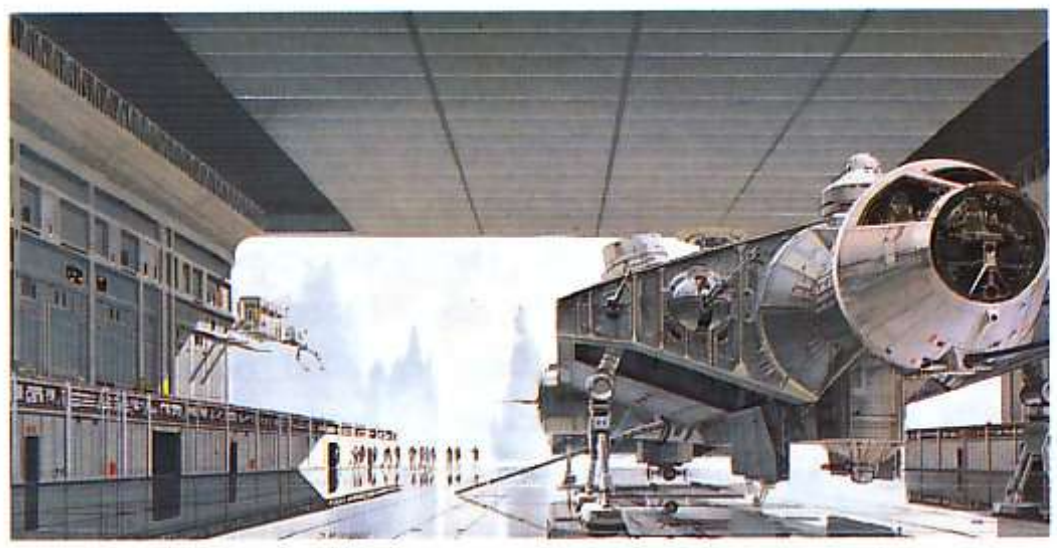
Star Wars, release poster, 61 x 91 cm.

SHIPS IN SPACE

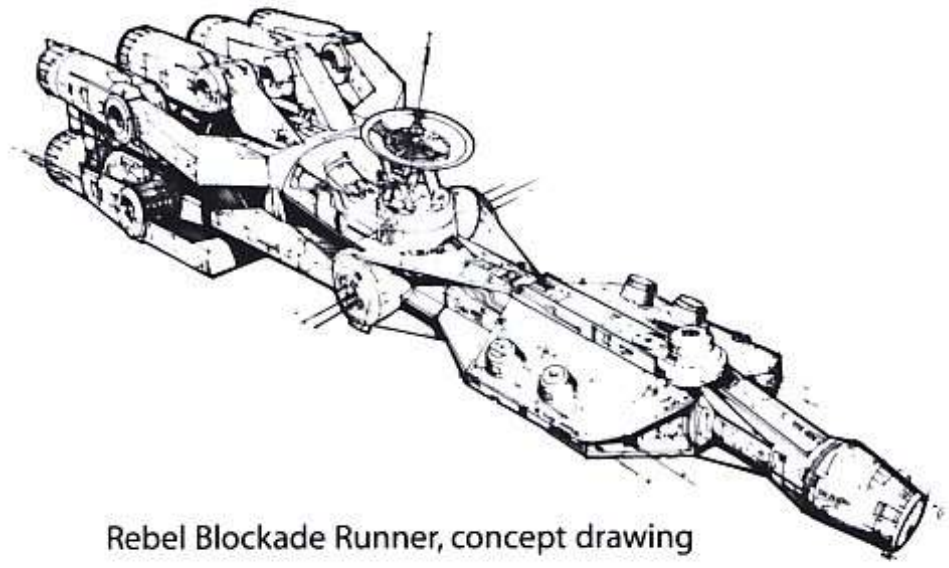
One technique Lucas uses in his cinematic storytelling is to open with a dramatic shot that will pull an audience into the thick of the action: in the first scene, a Rebel Blockade Runner carrying Princess Leia is pursued by Darth Vader's Star Destroyer, which descends from overhead. The opening was a revelation—audiences had never before seen space ships of such speed and scale on a movie screen. (In what would become a tradition of moviemaking in-jokes by Lucasfilm folks, a tiny *Star Wars* poster and a *Playboy* centerfold were hung on the cockpit wall of the model ships, out of camera eye.)

ILM model making is a meticulous process beginning with detailed blueprints and prototypes. Since the final model ships (which are each usually made in different sizes) had to withstand hours of handling, they were built with metal frames to provide support. The interiors included electronics and lighting, such as bundles of fiber optics for the Rebellion's X-wing and Y-wing fighters. To keep the models from melting due to stage lights and interior wiring, compressed air hoses and other systems were used to cool off the over-heated model interiors.

The Star Destroyer, envisioned as a monster ship a mile in length, was constructed as a three-foot model. To capture the huge scale of the ship required surface detailing as small



Rebel dock, production painting



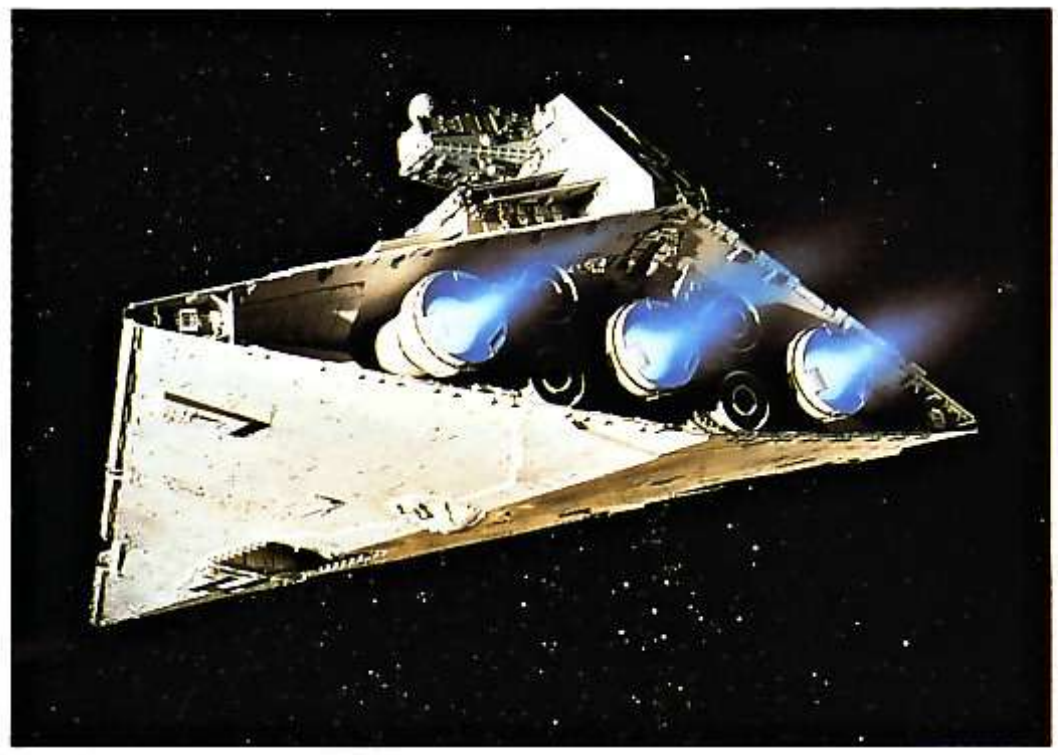
Rebel Blockade Runner, concept drawing

Rebel Blockade Runner, detail,
mini-poster art in model interior

Rebel Blockade Runner, model, 61 x 194 x 34 cm.

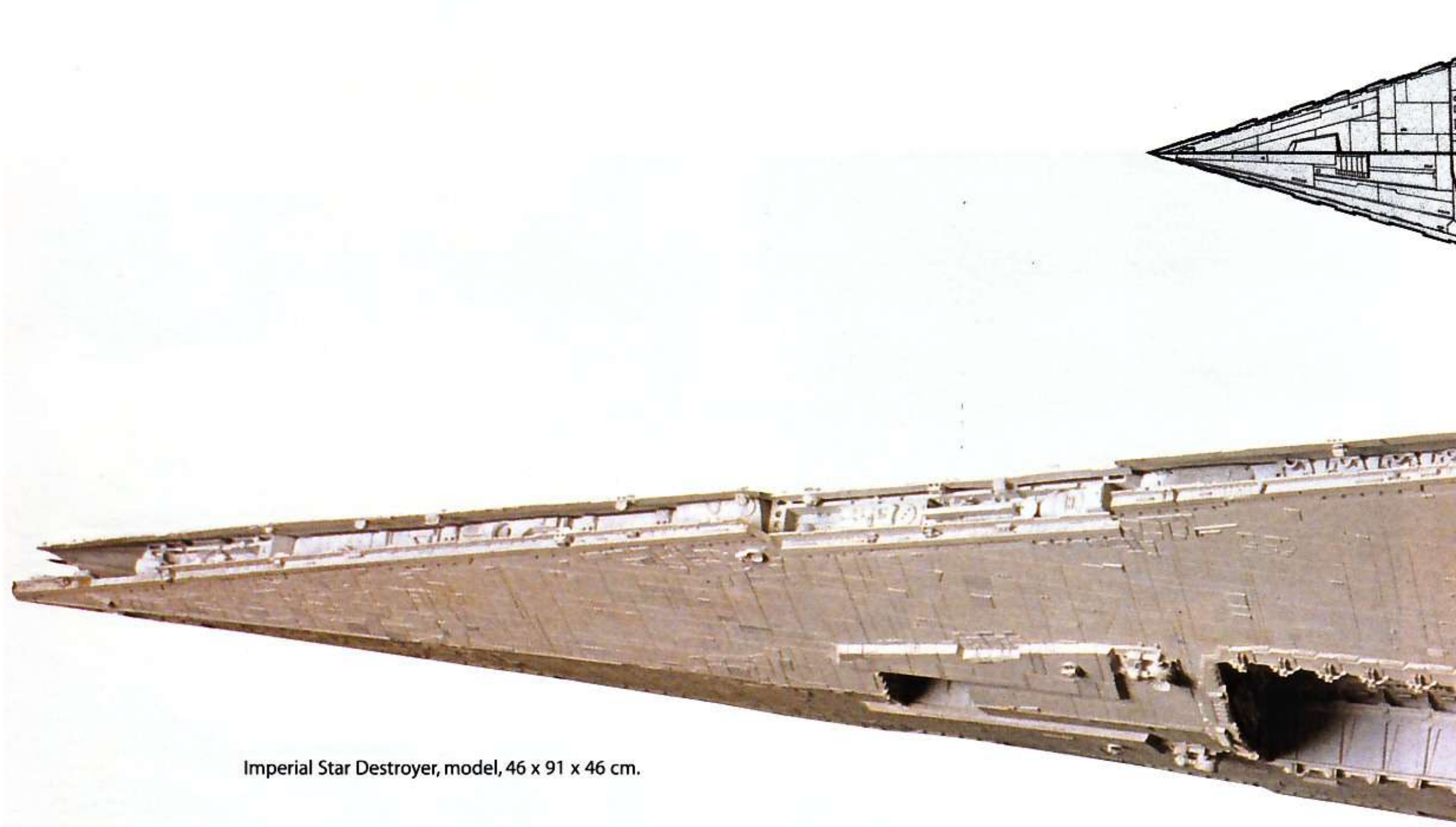
as a sixteenth of an inch thick. The model making often involved the use of what model maker Lorne Peterson calls "found objects." The three Star Destroyer thrusters, for example, were made of egg-shaped plastic containers, used to package women's stockings, molded in high-heat aluminum epoxy to withstand the heat of the three, two-inch-wide halogen projection lamps built into the model.

A major innovation for all the space ships was that, unlike the shiny spacecraft of bygone science fiction films, *Star Wars* craft would show the physical wear of space travel, the battle-scarred hulls of space combat. The detailing of the models also allowed for scale references, unlike the smooth, featureless surfaces of the old movie ships. "We created the space ship models with what we called 'boiler plate technology,' like how battleships are made, with quarter-inch steel sections riveted together," explains Lorne Peterson. "The idea was to get at what George Lucas called 'a used universe,' the idea that in the future things wouldn't be perfect and shiny, there'd be texture, you'd get used to your technology. Some things would be kept in shape, others would get junky and biodegraded."



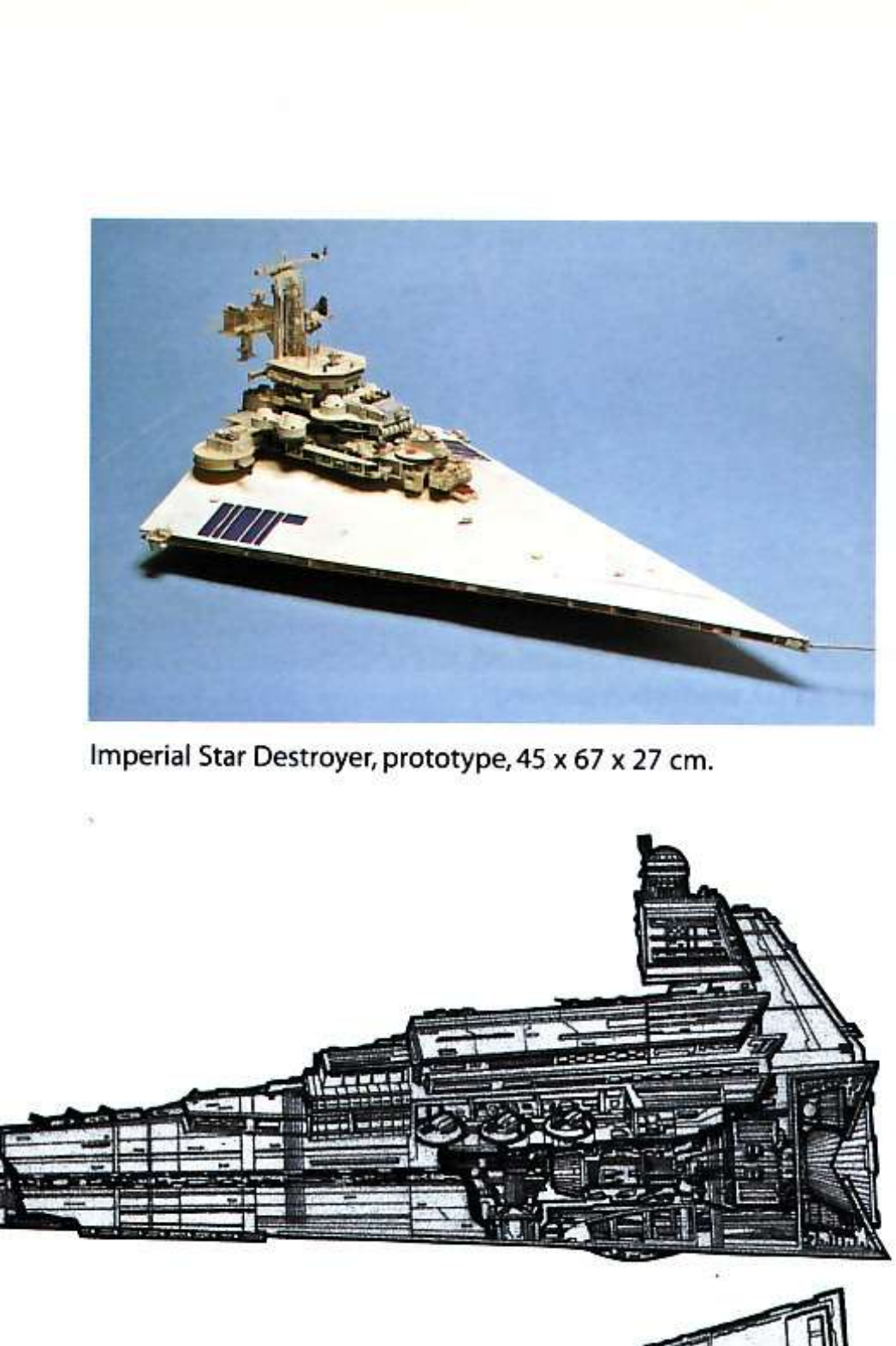
Imperial Star Destroyer, still from film

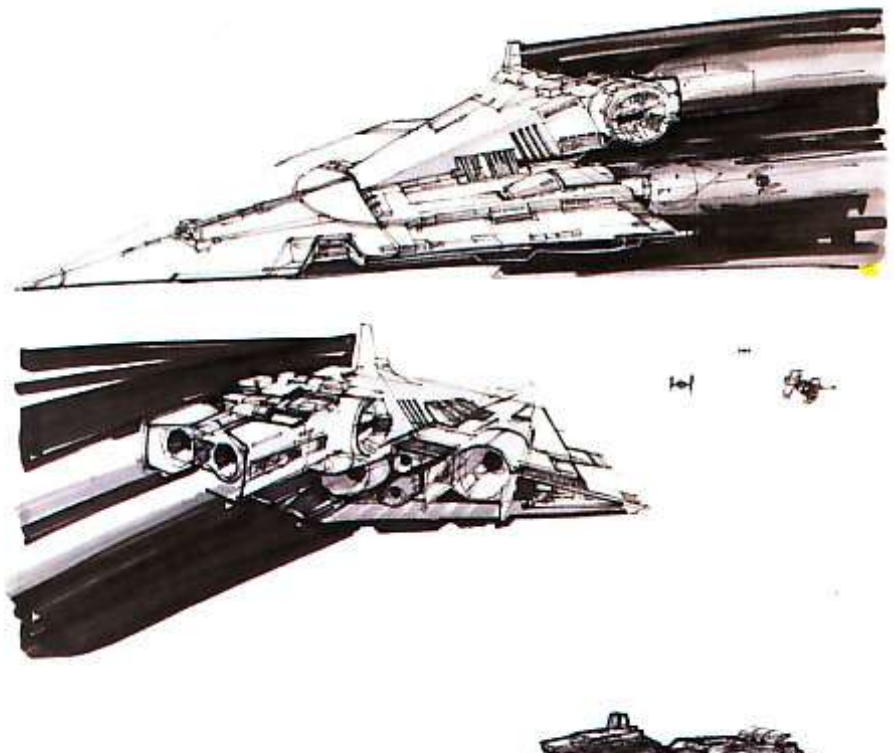
Imperial Star Destroyer, concept sketche



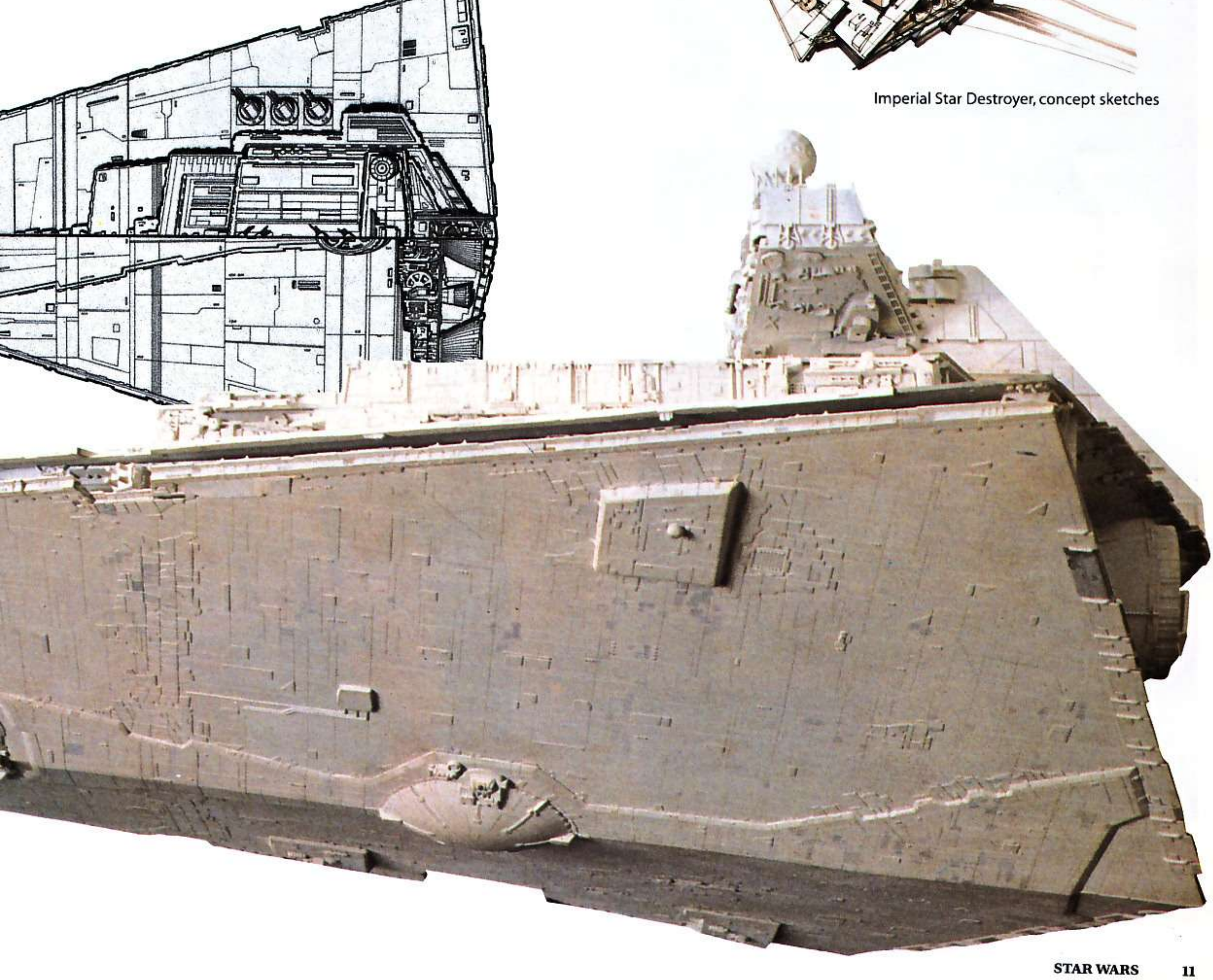
Imperial Star Destroyer, model, 46 x 91 x 46 cm.

Imperial Star Destroyer, prototype, 45 x 67 x 27 cm.





Imperial Star Destroyer, concept sketches



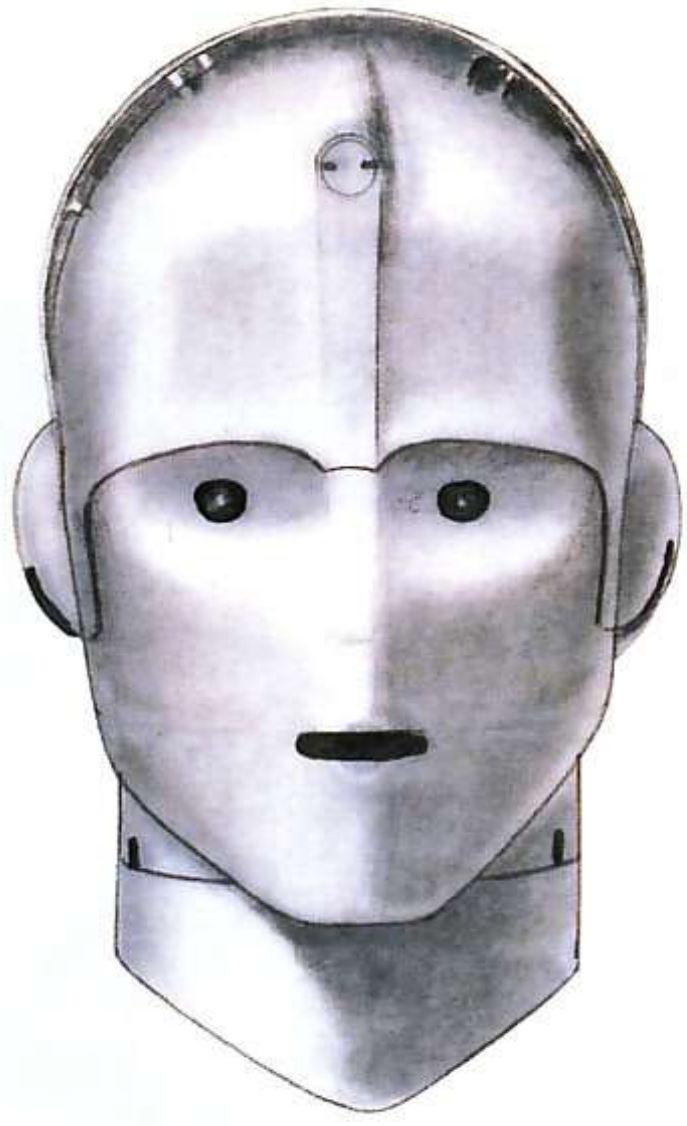
THE DROIDS

The robots (or "droids"), C-3PO and R2-D2 are one of the great teams in the movies, a bickering yet lovable pair with a talent for placing themselves in the most precarious predicaments.

R2-D2 and C-3PO, coming across the desert sands of Tatooine, were the first *Star Wars* characters visualized and painted by artist Ralph McQuarrie. The painting was produced not only to convince Fox executives to do the film, but to stimulate Lucas's imagination. An early "Artoo" design by McQuarrie, depicting the droid perched on a large ball bearing, did not look right to Lucas, and the now-familiar tripod base was substituted. C-3PO was originally conceived with a more humanoid appearance before McQuarrie's final concept illustration, which recalled the art deco lines of the robot in the classic 1927 film *Metropolis*.

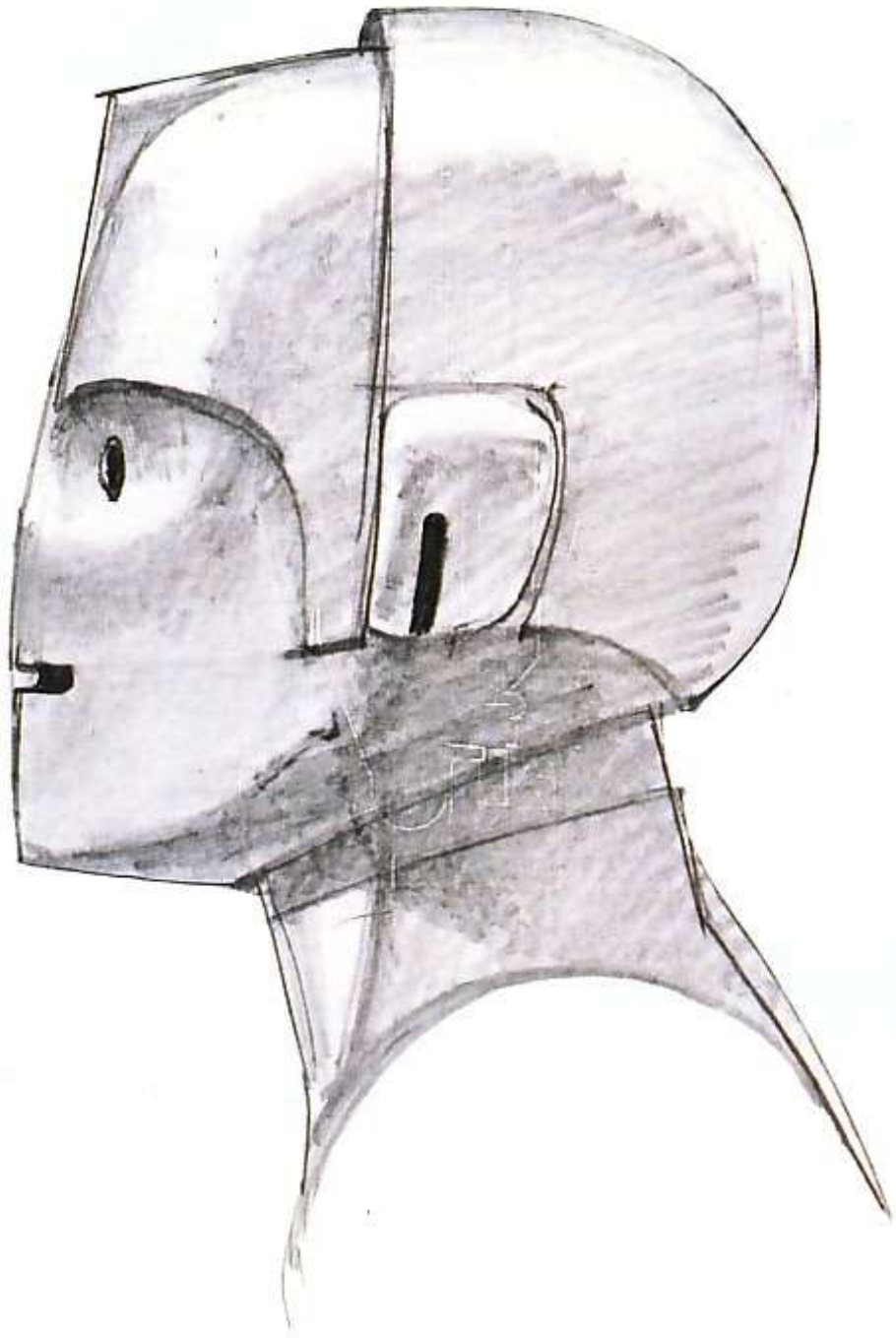
Although many of the nonhuman characters populating the *Star Wars* universe would be realized as articulated puppets, the droids were designed as costumes worn by actors. Hours of sound effects experimentation were required to nail down the unique beeping sounds of the squat little Artoo (played by three-foot, eight-inch tall actor Kenny Baker). C-3PO (played by actor Anthony Daniels) went through a major personality shift: Lucas initially imagined the droid as the stereotype of a fast-talking used-car salesman before deciding on the cultivated voice and manner of a proper English butler.

C-3PO and R2-D2, production painting



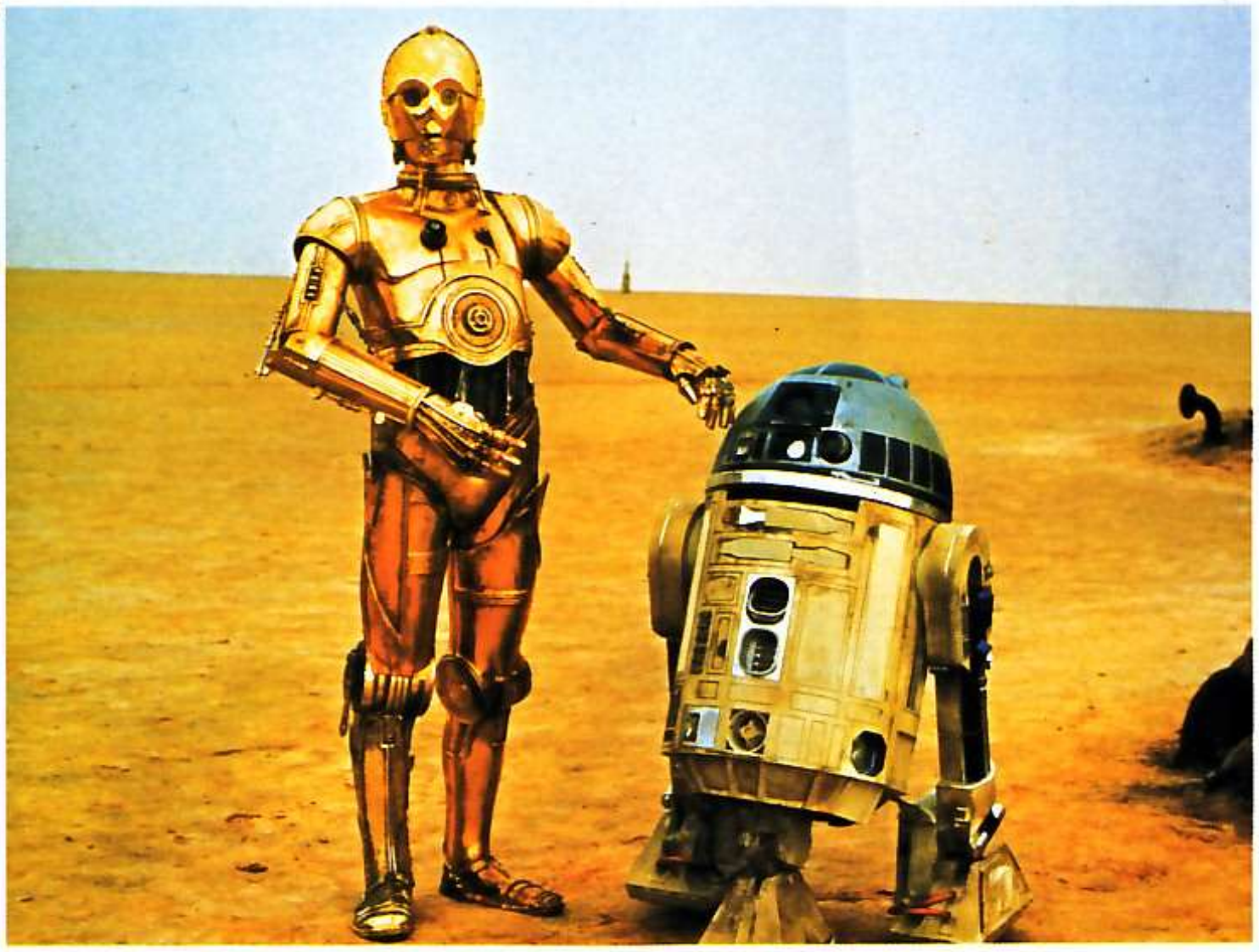
C-3PO, concept sketches

R2-D2, mechanical suit, 61 x 46 x 110 cm.



R2-D2 and C-3PO, detail from early storyboard

C-3PO, concept sketches



DARTH VADER: FIGURE OF EVIL

Darth Vader represents one of American film's unique villains, his aura of omnipotent power underlined by the opening shot of the Star Destroyer at his command. Vader was one of the first characters conceived by Lucas and artist Ralph McQuarrie to interest Fox in the film. "George asked me to create a guy with a cape that fluttered in the wind, with a wide brim helmet like the headgear of a medieval samurai," McQuarrie recalls. "Early in the script there was a description of Vader crossing between two ships in space so I created this mask so he could breathe in space, with a suggestion of teeth in the mask's grill work. George loved it."

The mask and helmet were so distinctive it was decided they would be a permanent feature of the character, incorporated into the saga as being protective equipment for lung and other injuries suffered by Vader during a battle with Obi-Wan Kenobi.

Although actor David Prowse filled the black Vader costume, the evil personality of the character was enhanced in postproduction with a dubbed-in voice by veteran character actor James Earl Jones. To create the labored breathing from Vader's tortured lungs, sound effects expert Ben Burtt, Jr., first tried to synthesize more than eighteen types of human breathing, but they proved unsatisfactory, so he used a scuba regulator for the final effect.

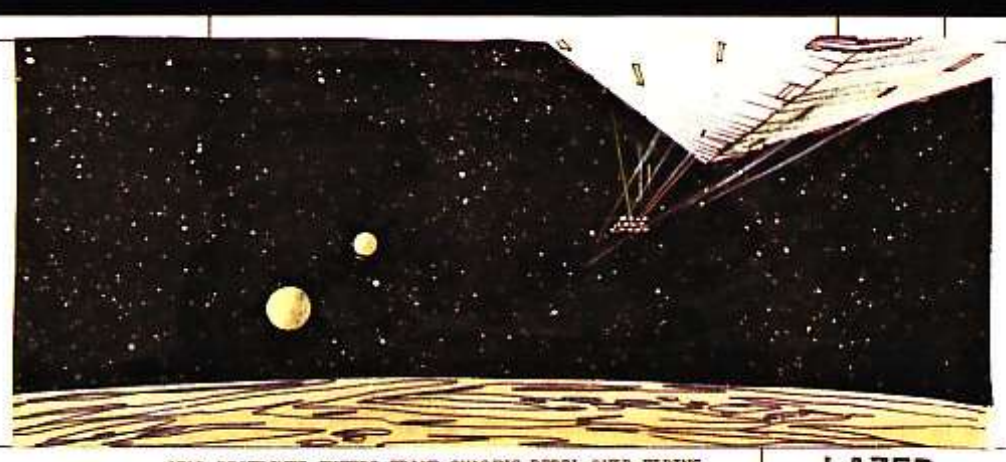
Faceoff, production painting

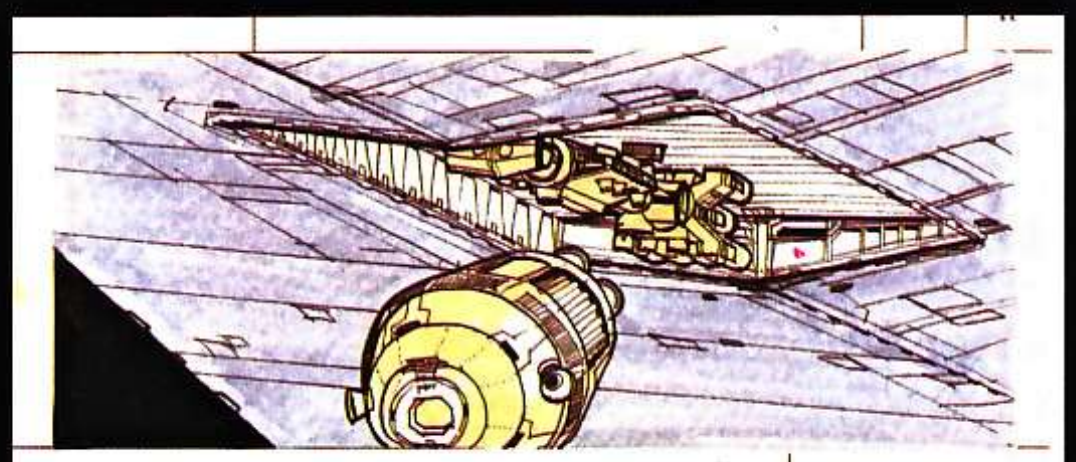
Darth Vader, early character sketches

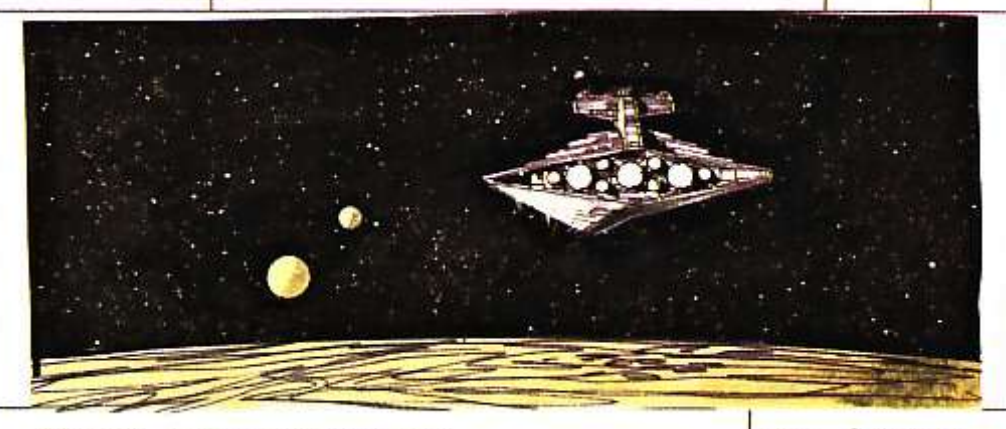
Imperial Stormtrooper's helmet, costume headgear, 35 x 35 x 48 cm.

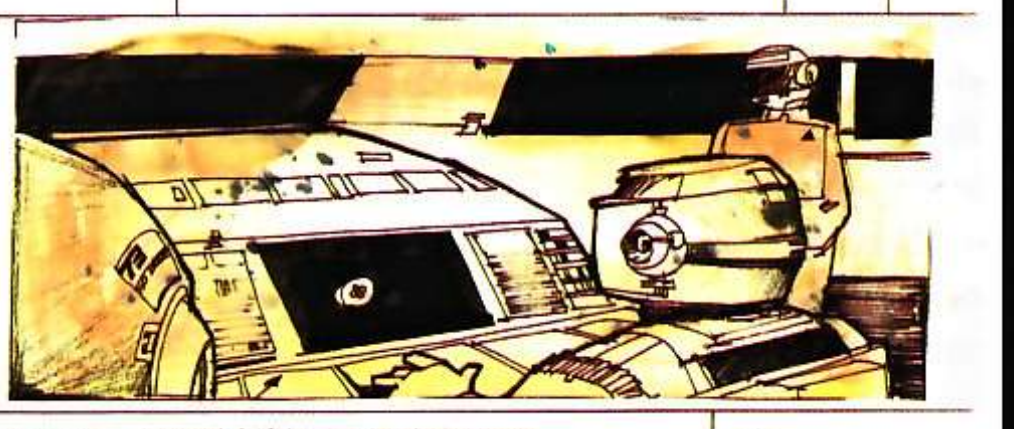
Darth Vader, costume, 97 x 46 x 204 cm.

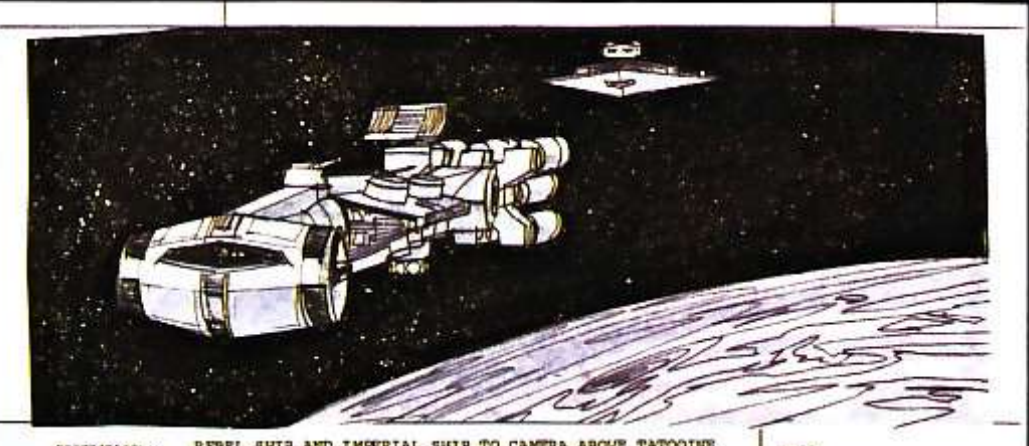
Imperial pursuit, storyboard,
opening sequence of Star Destroyer chasing Rebel Blockade Runner

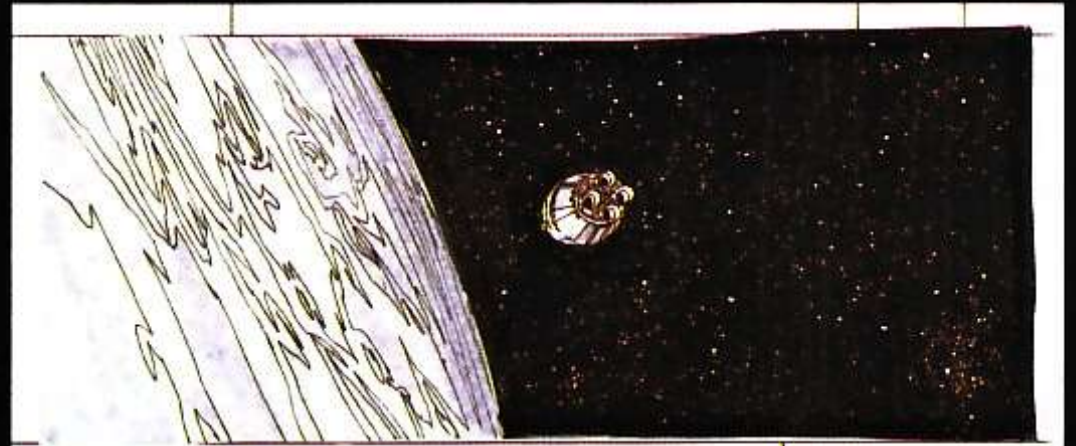


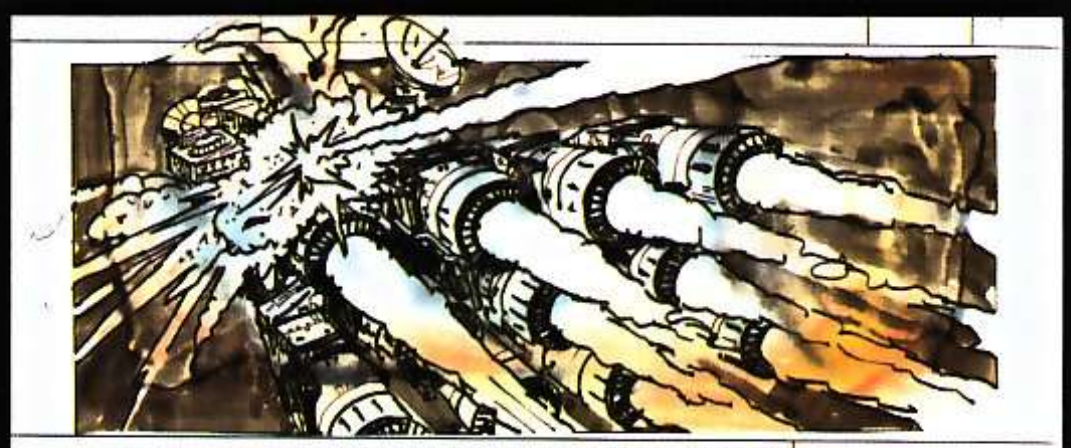


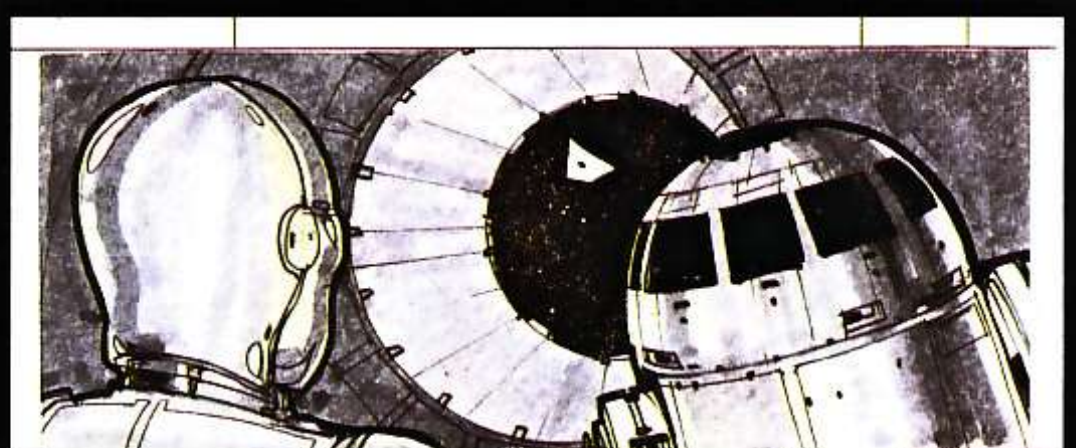












TRIP TO TATOOINE

The desert planet of Tatooine was conceived as a forsaken place, where the burning heat of its twin suns forces settlers such as Luke Skywalker (played by Mark Hamill) and his uncle and aunt to live underground. Dangers lurk on Tatooine as well: in the arid wastelands prowl the armed and dangerous Tusken Raiders and the three-foot-tall Jawas, a semihuman species who dress in monkish robes.

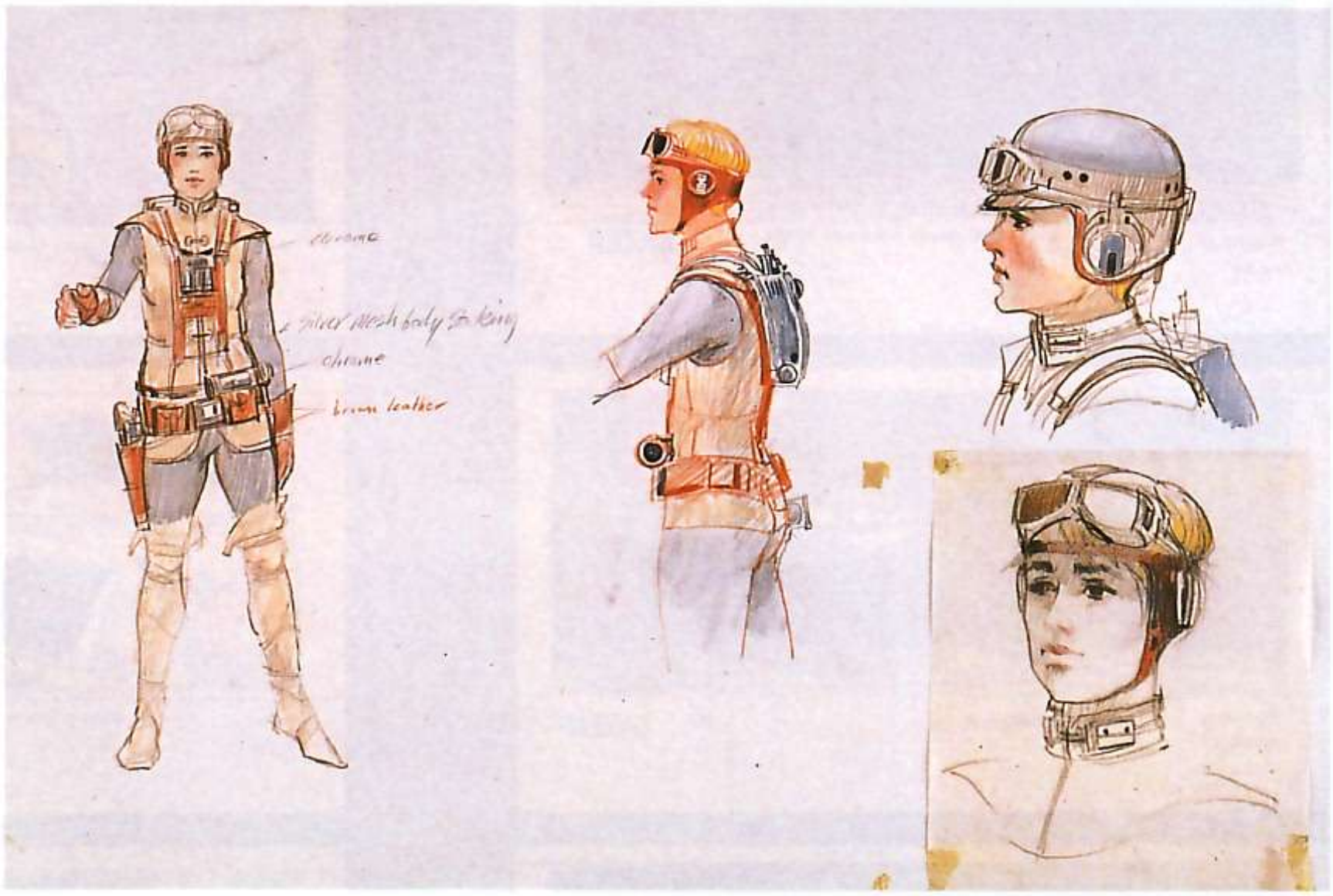
The creation of the *Star Wars* universe, from alien creatures to fantastic planet environments, was always first visualized in production sketches, illustrations, and paintings. "My job, as George defined it, was to capture the grand theme, the scale, the complexity of structures," artist McQuarrie notes. "After that, they'd worry about the effects and whether it could be built or not."

The planet was created with a combination of live-action location work in the Tunisian desert, miniature sandcrawler scenes shot in the California desert (at a spot where mine tailings had settled in sediments, forming a miniature Grand Canyon), and matte painting effects.

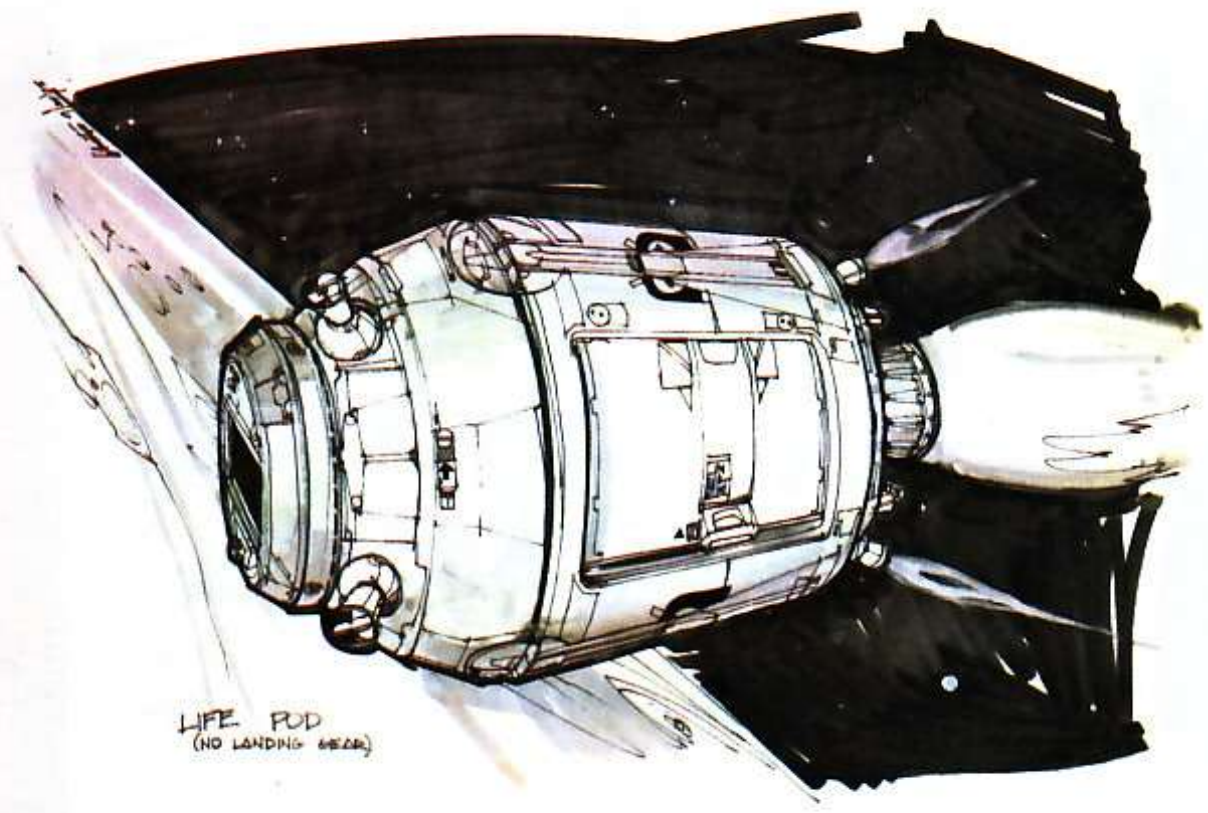
The escape pod used by the droids to reach Tatooine, an eighteen-inch final model, is another example of "found object" model making: the pod was created with two throwaway paper paint buckets, one whole and one truncated, joined together and covered with laminated plastic and detailing. (According to Lorne Peterson, the time and expense estimated by the shop head for a model dictates the effort that goes into it. The escape pods were, as Peterson recalls, "a five-day wonder.")

Luke's landspeeder was realized as both a miniature model and a full-scale, three-wheeled motorized vehicle built for the first-unit work in England. When the full-scale land-

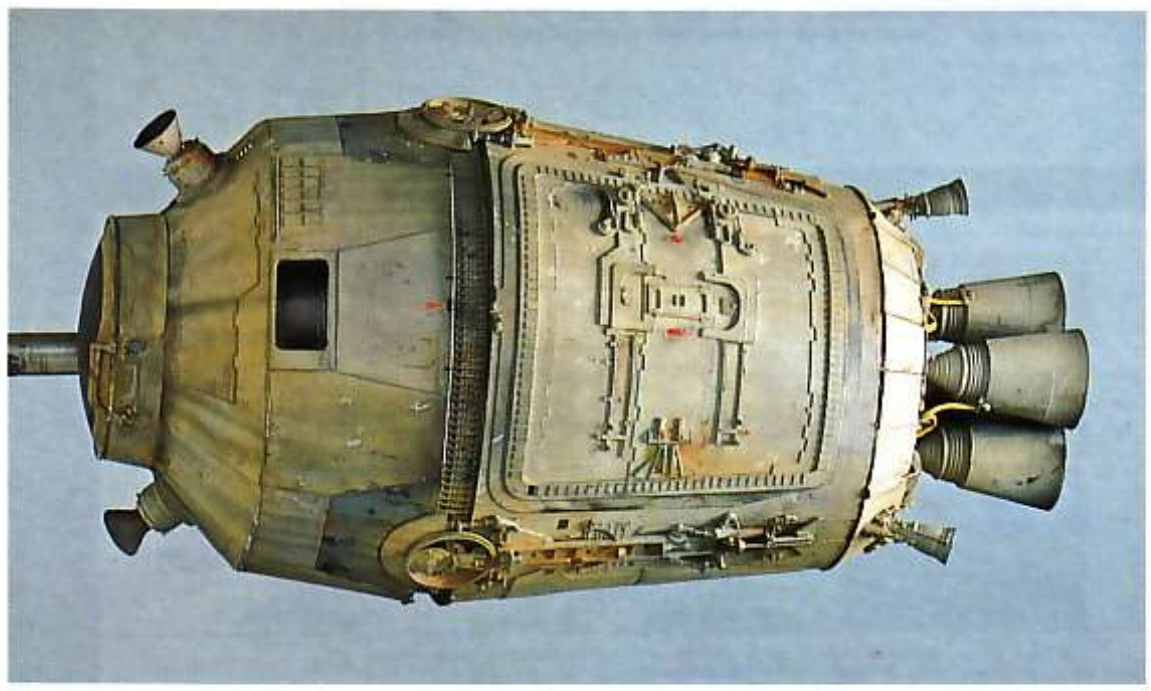
Luke and the twin suns of Tatooine, production painting



Luke Skywalker, costume sketches



Rebel Blockade Runner Escape Pod, concept design



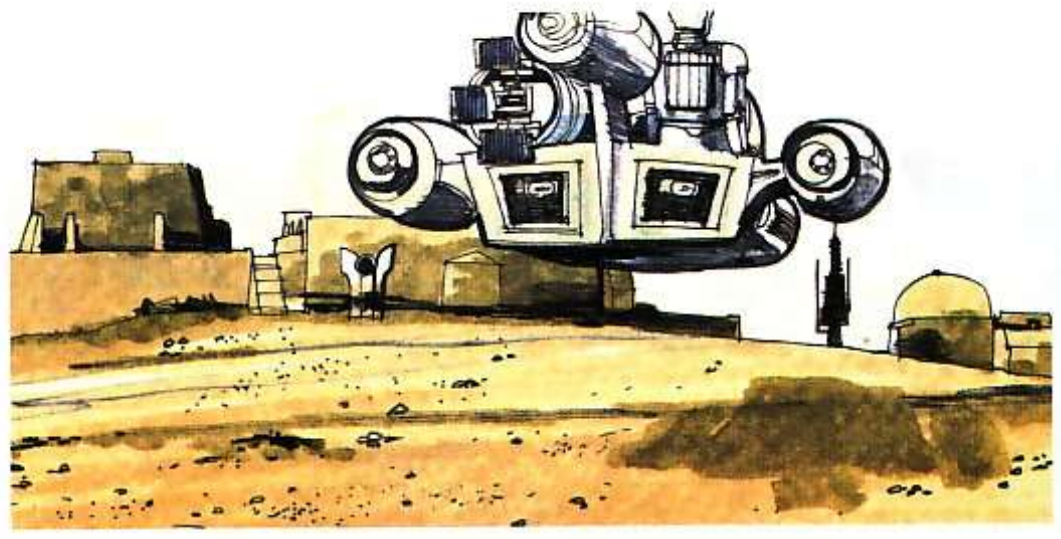
Rebel Blockade Runner Escape Pod, final model, 21 x 21 x 44 cm.

Landspeeder, early prototype, 37 x 9 x 40 cm.

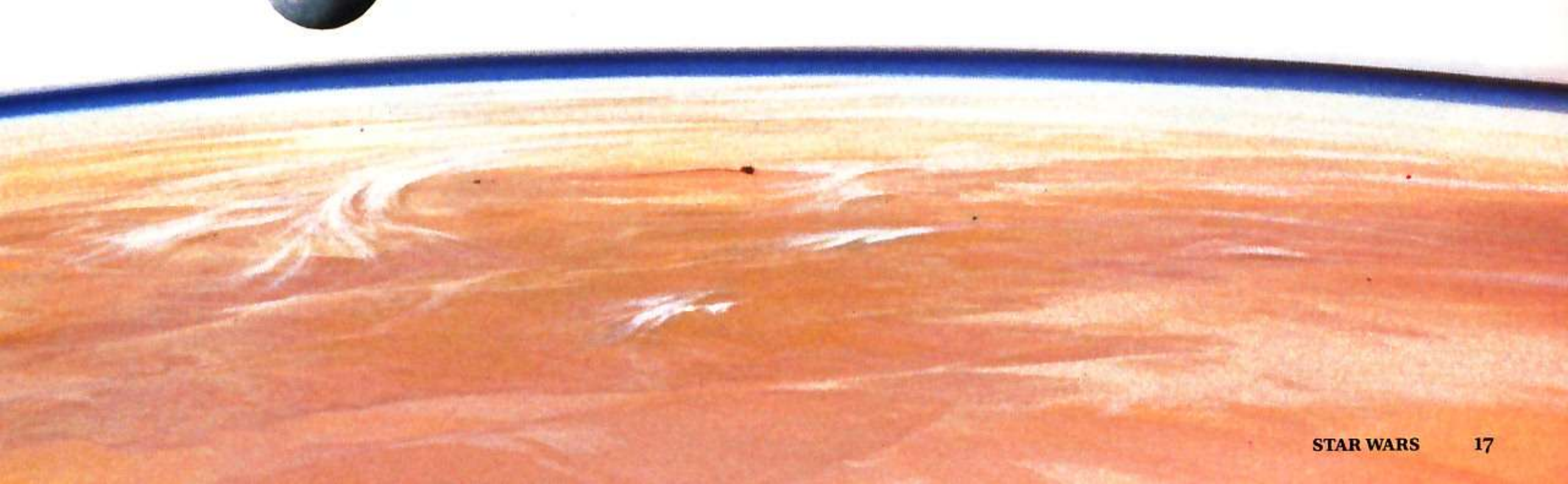
Luke's Landspeeder, model, 56 x 97 x 31 cm.,
with off-the-shelf toy figures

Luke's Landspeeder, full-scale mechanical prop,
217 x 402 x 114 cm. with Obi-Wan figure

Tatooine, matte painting, 127 x 86 cm.

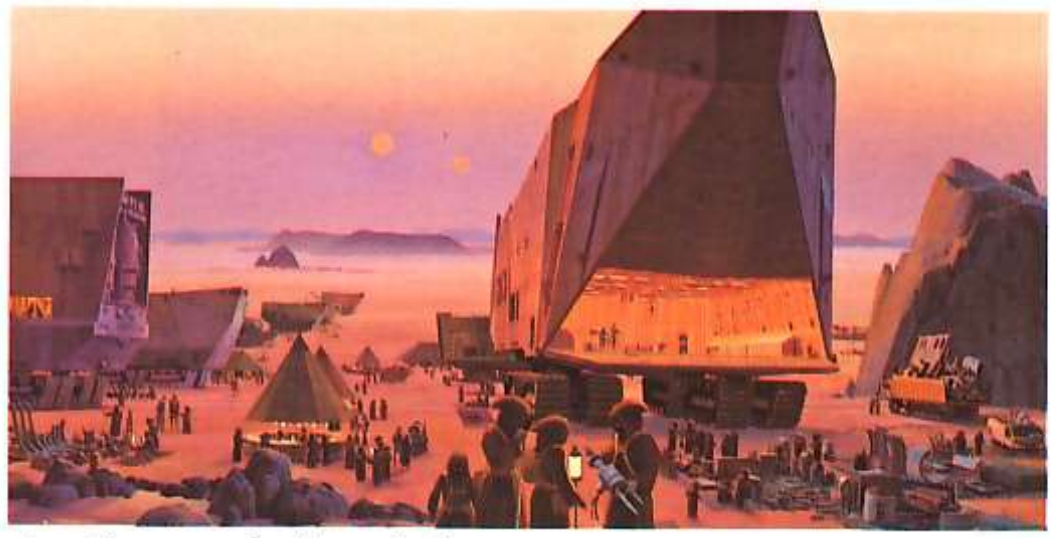


Landspeeder in motion, storyboard detail

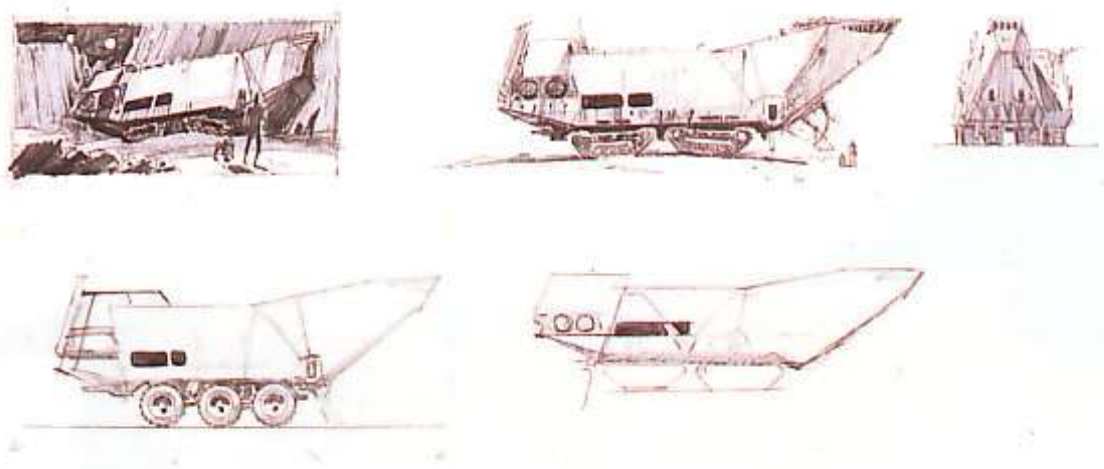


speeder was shipped to the states, some ILMers took the vehicle out for a spin around Van Nuys, drawing stares from passing motorists who didn't know they were witnessing a piece of movie history driving by. The miniature landspeeder model,which developed from a Colin Cantwell disc-shaped prototype, was built nearly three feet long to handle the foot-tall, store-bought action figures made up to look like Luke and the sage Ben (Obi-Wan) Kenobi.

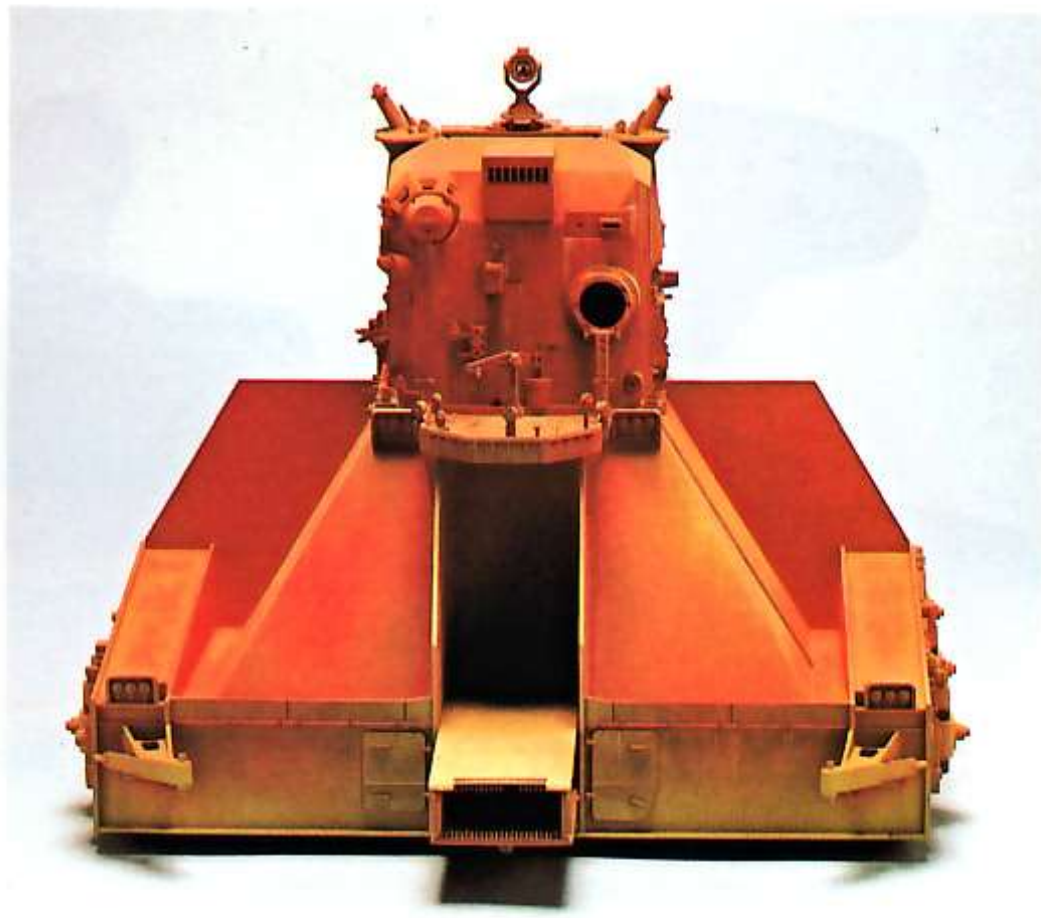
Off-the-shelf parts are an important part of big-movie model making. The sandcrawler craft, used by the Jawas to scour the flatlands for minerals and plunder, utilized four store-bought panzer tank tracks at its four corners. The final sandcrawler model was a fully motorized, radio-controlled vehicle three feet long and constructed of birch plywood covered with plastic and detailing. It was built with such powerful motors that its radio operators could make the sandcrawler pop a wheelie, although when the cameras rolled the miniature vehicle only had to lumber over the Tatooine wasteland.



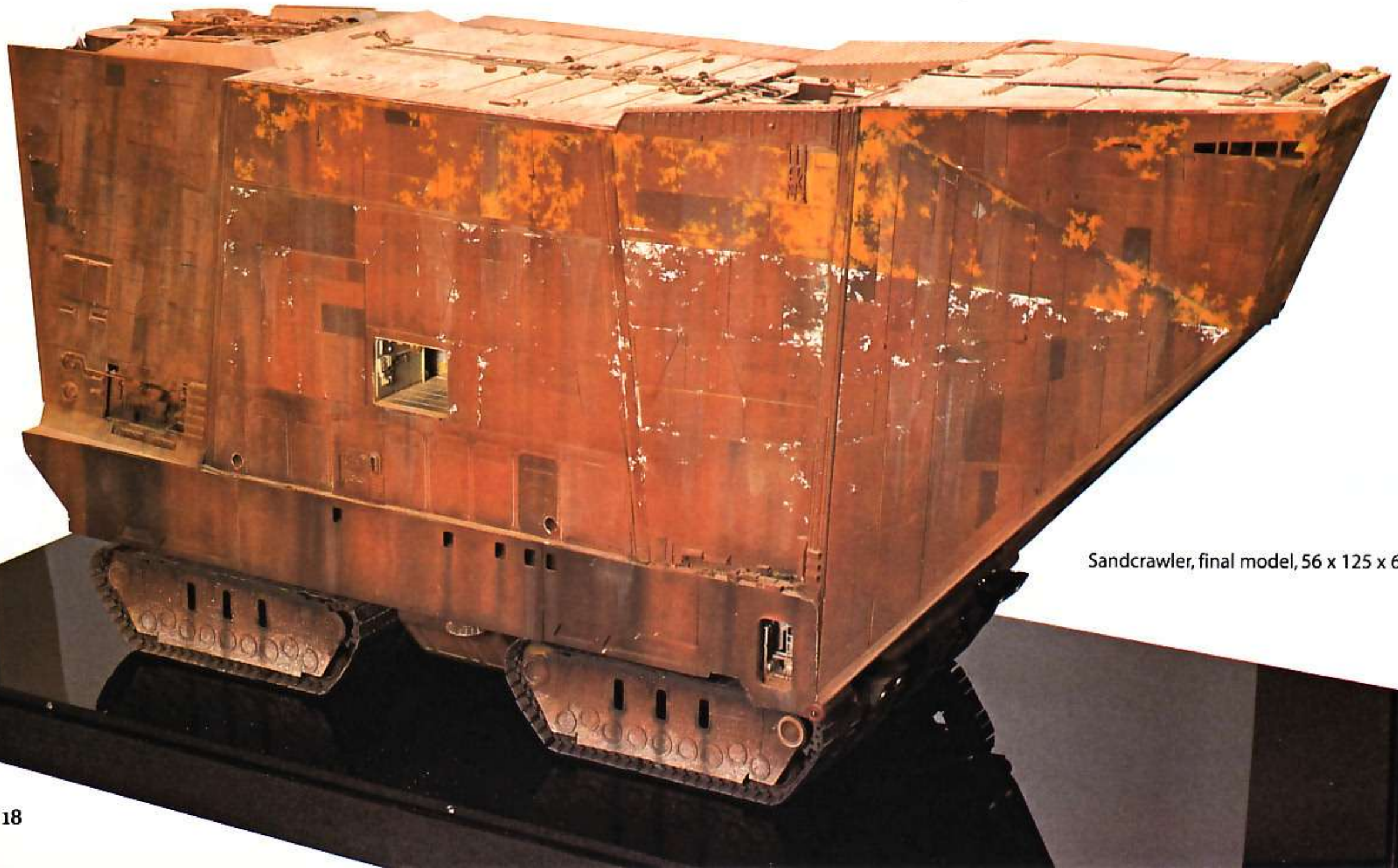
Jawa Camp, production painting



Sandcrawler, concept sketches

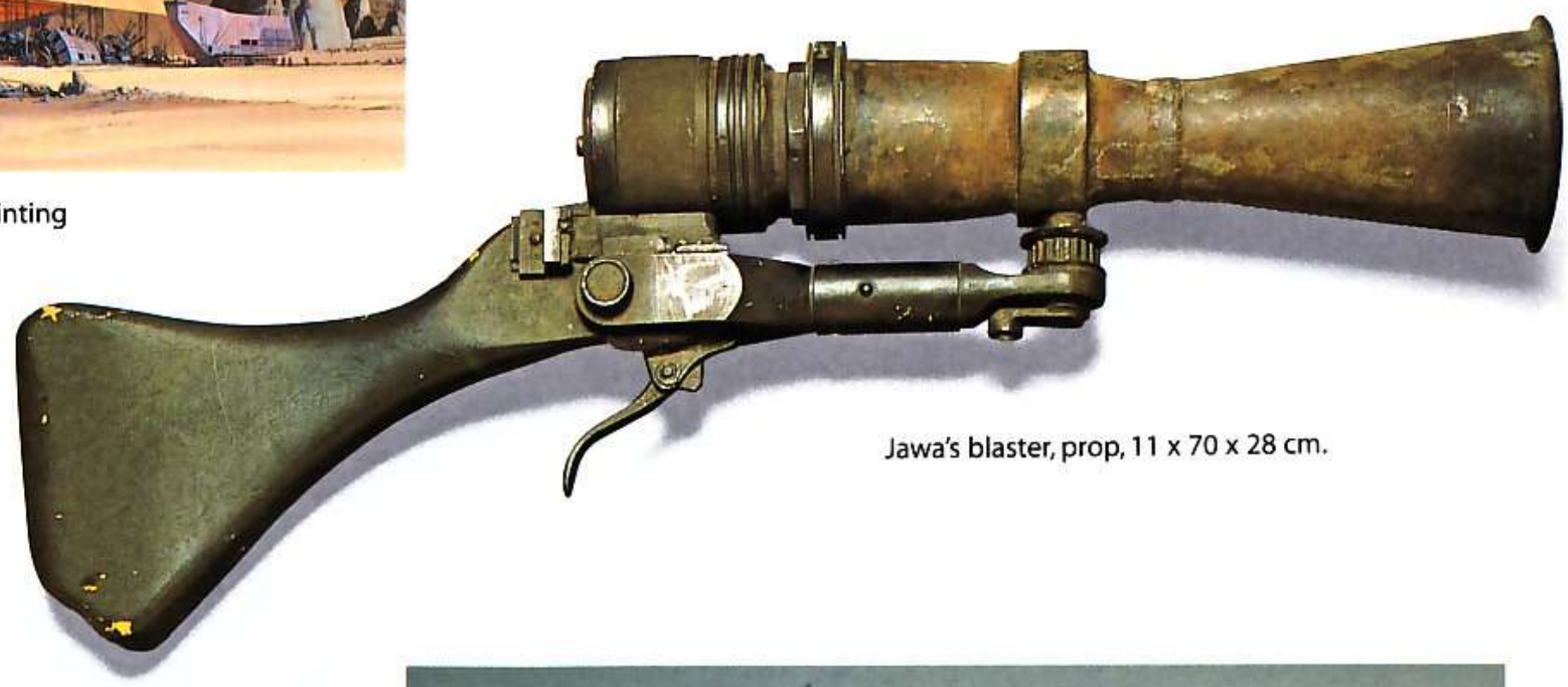


Sandcrawler, early prototype, 33 x 40 x 28 cm.

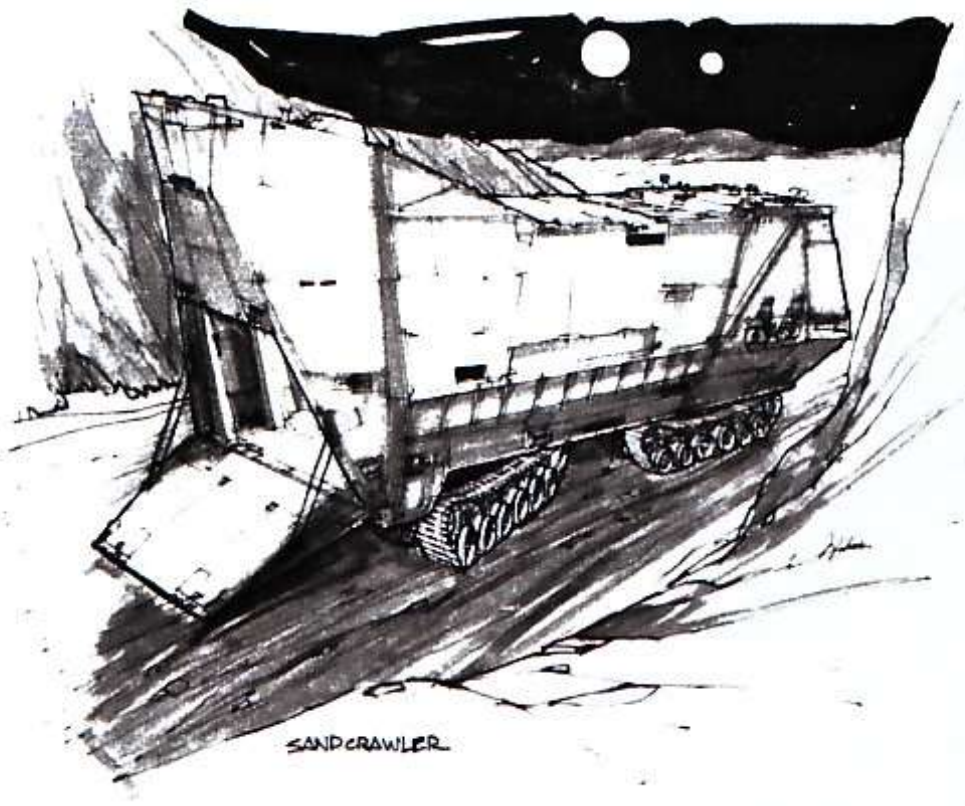


Sandcrawler, final model, 56 x 125 x 66 cm.

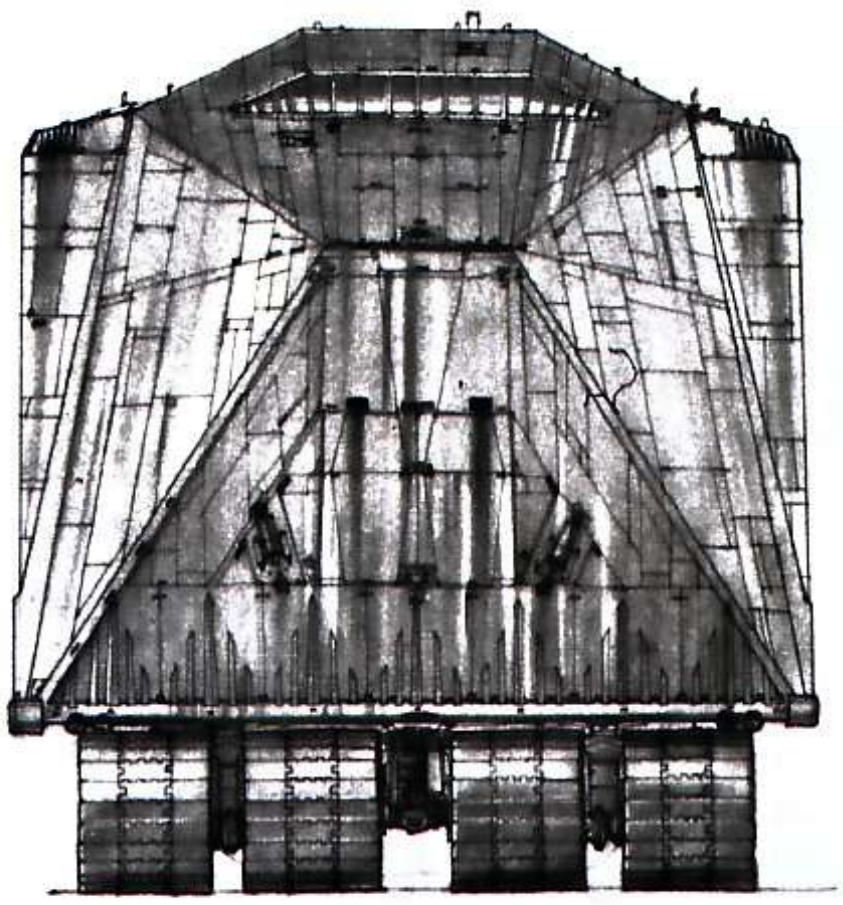
Jawa Camp, distant view, production painting



Jawa's blaster, prop, 11 x 70 x 28 cm.



Sandcrawler, production sketch



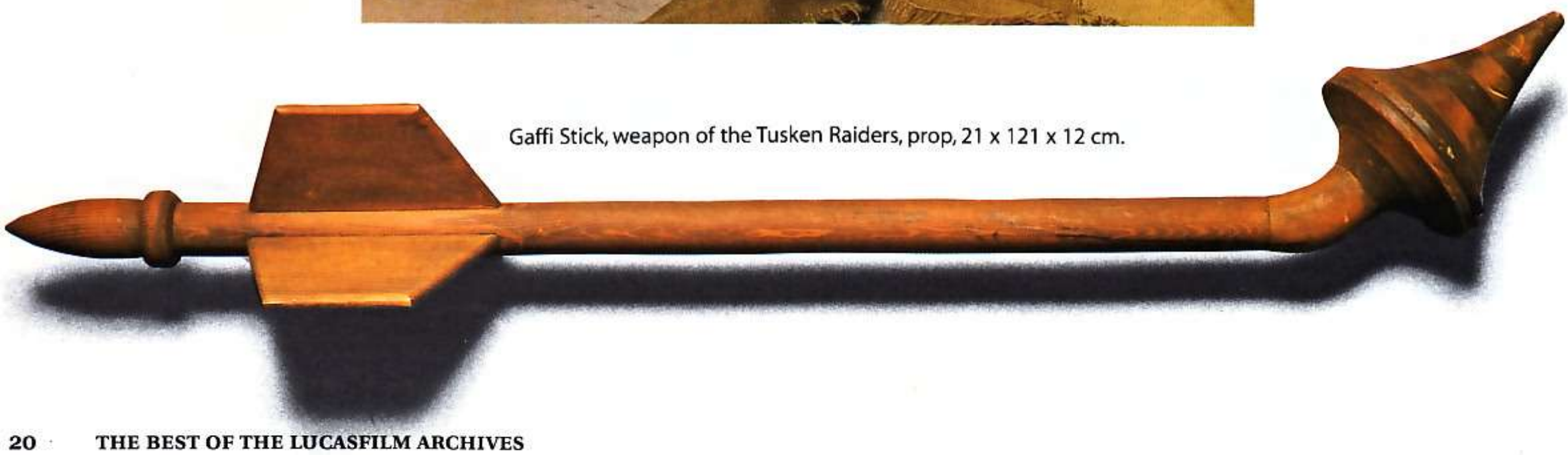
Sandcrawler, production sketch

Jawa, costume, model, 46 x 23 x 97 cm.

Tusken Raider, costume sketch

Tusken Raider, production painting

Tusken Raider, full-head mask



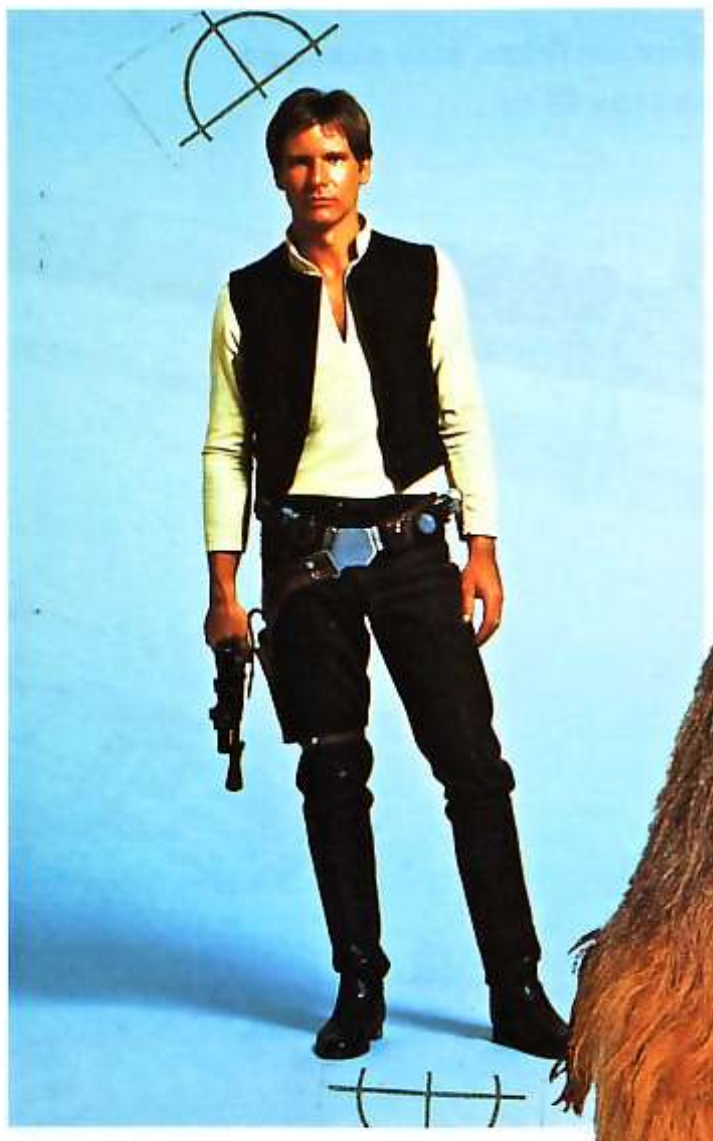
Gaffi Stick, weapon of the Tusken Raiders, prop, 21 x 121 x 12 cm.

HOT RODDER IN SPACE

Before he crosses paths with Princess Leia (played by Carrie Fisher) and Luke Skywalker, Han Solo (played by Harrison Ford) successfully avoids taking sides in the great struggle between the Rebels and the Empire. He is content as a mercenary, piloting through space with his partner, the towering Wookiee Chewbacca (played by Peter Mayhew).

The design of Solo's hot-rodding *Millennium Falcon* stalled after several versions, from an elongated prototype to a design for what eventually became the Rebel Blockade Runner. Then Lucas had another quirky design inspiration for the *Falcon*—the shape of a hamburger he had for lunch. That basic shape was developed with what model maker Peterson calls "guts on the outside," glued-on details meant to provide realistic scale. Off-the-shelf *Falcon* detailing

Millennium Falcon in hangar, production painting



Han Solo, photo of actor Harrison Ford

Chewbacca, costume suit, 82 x 38 x 219 cm.

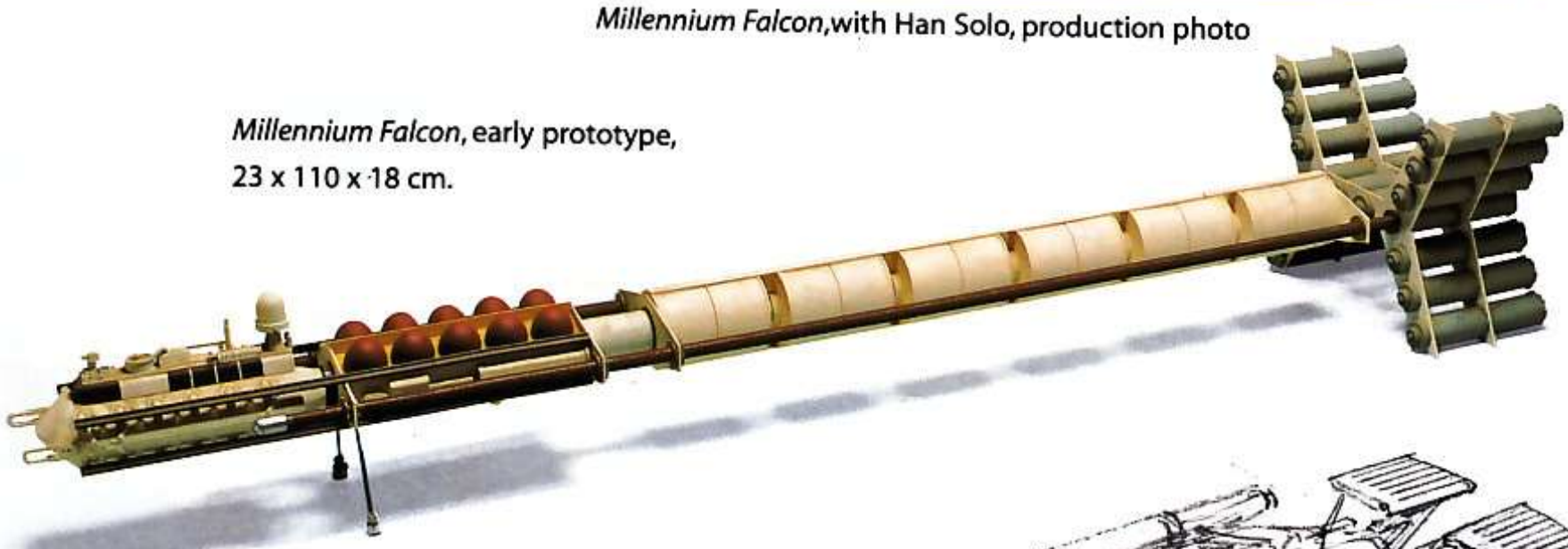
Han Solo's blaster and holster, prop, holster, 6 x 30 x 18 cm.

included engine parts from Formula-1 race car and motorcycle model kits.

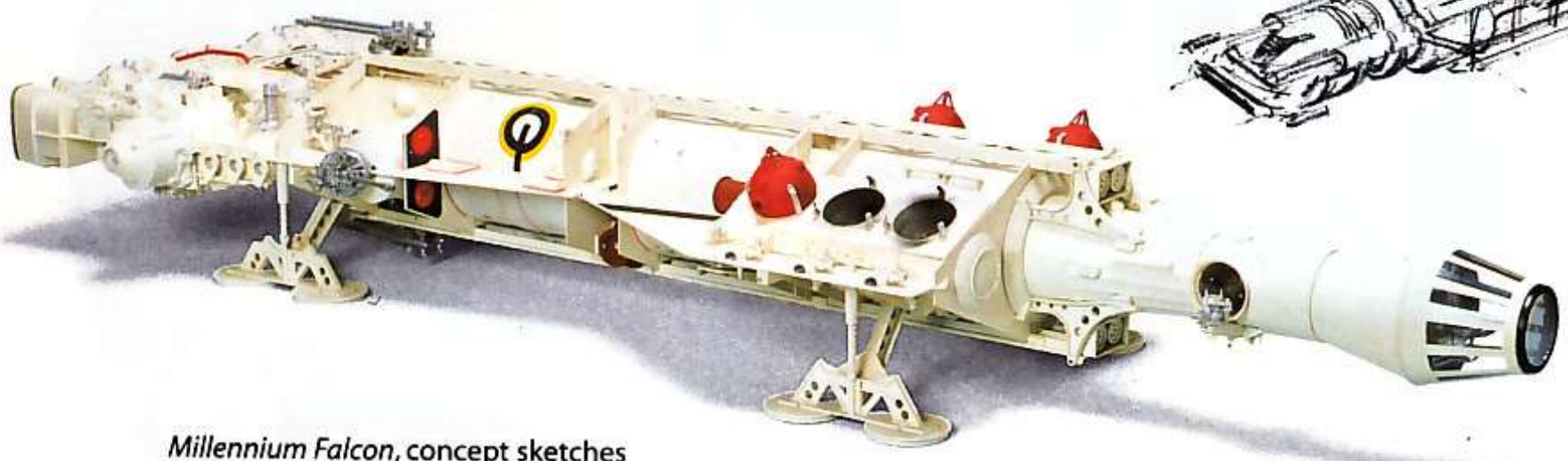
Since the *Falcon* figured in so much action, both as a bluescreen model effect and as a live-action prop, its importance necessitated many designs. Lucas even considered having the ship fly vertically through space. Although the ship became a horizontally powered craft, there are occasions in the trilogy when the *Falcon* is piloted as originally conceived, such as the flight through the Death Star tunnel in *Return of the Jedi*. Even the ship's hatch, which would figure in some key action sequences, went through more than ten basic configurations until a final was accepted.

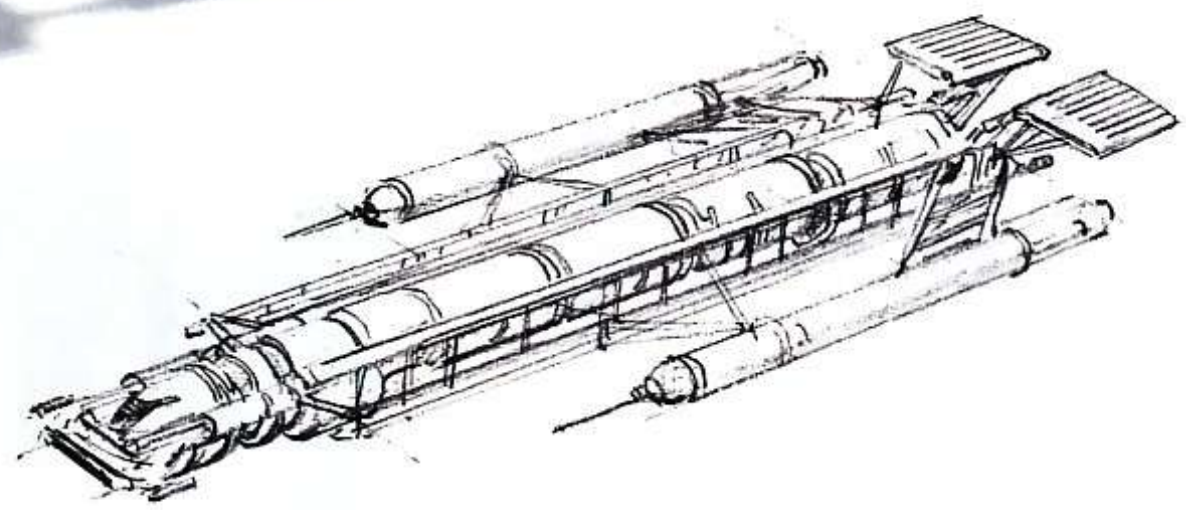
Millennium Falcon,with Han Solo, production photo

Millennium Falcon, early prototype, 23 x 110 x 18 cm.

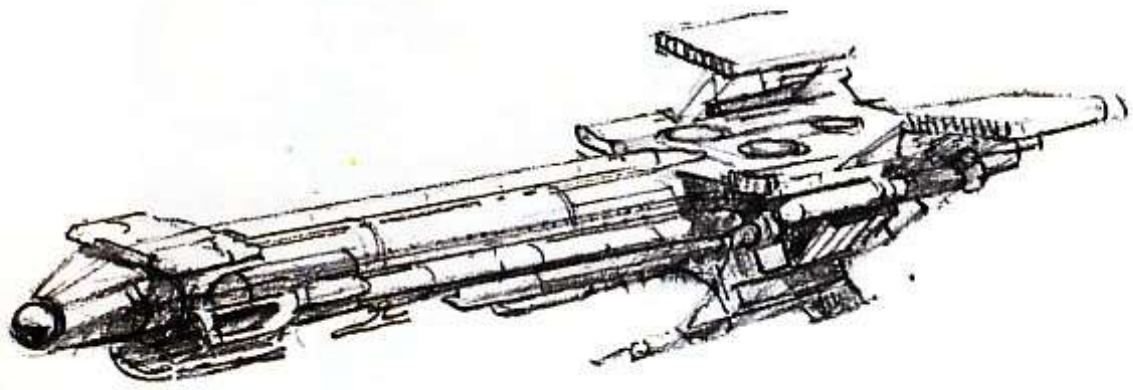


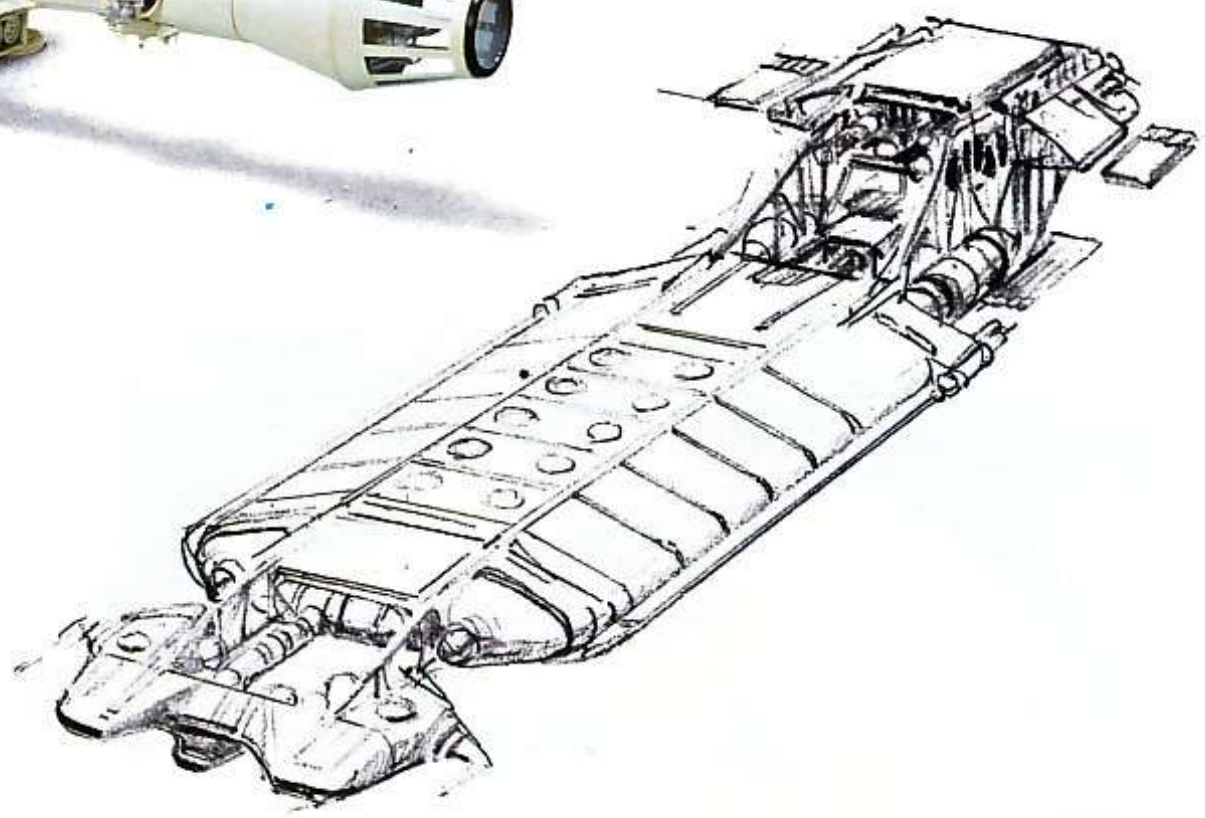
Millennium Falcon, early prototype, 30 x 104 x 20 cm.

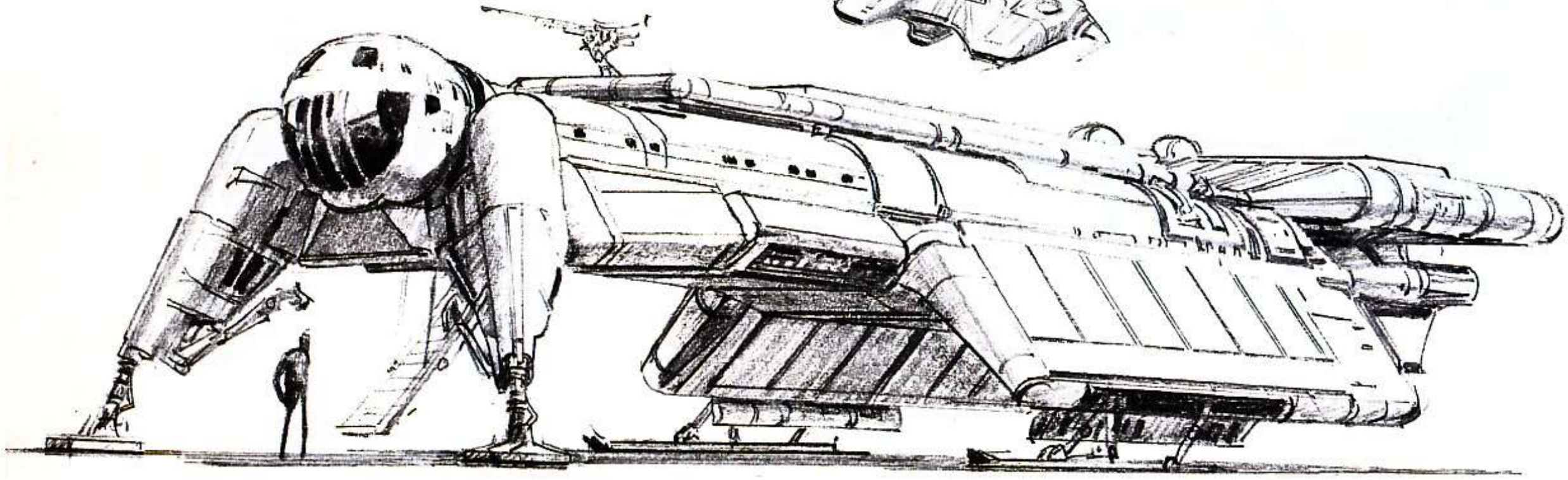


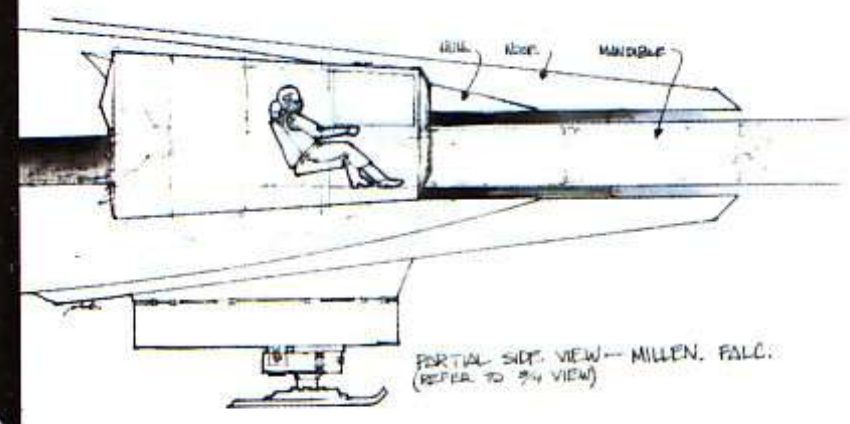


Millennium Falcon, concept sketches

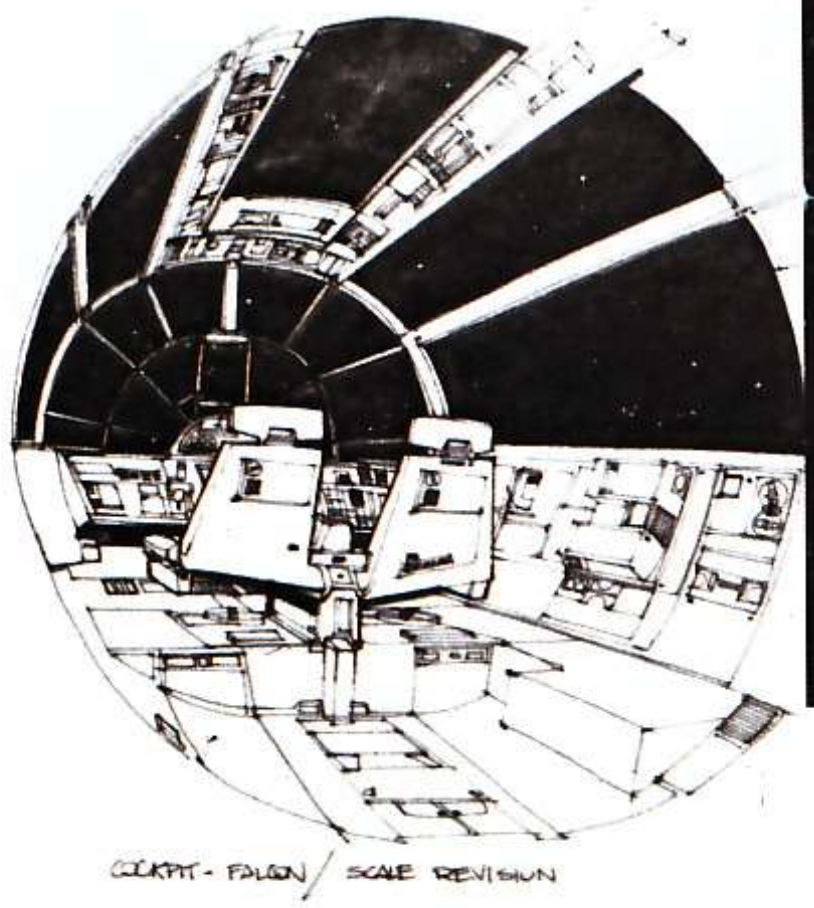




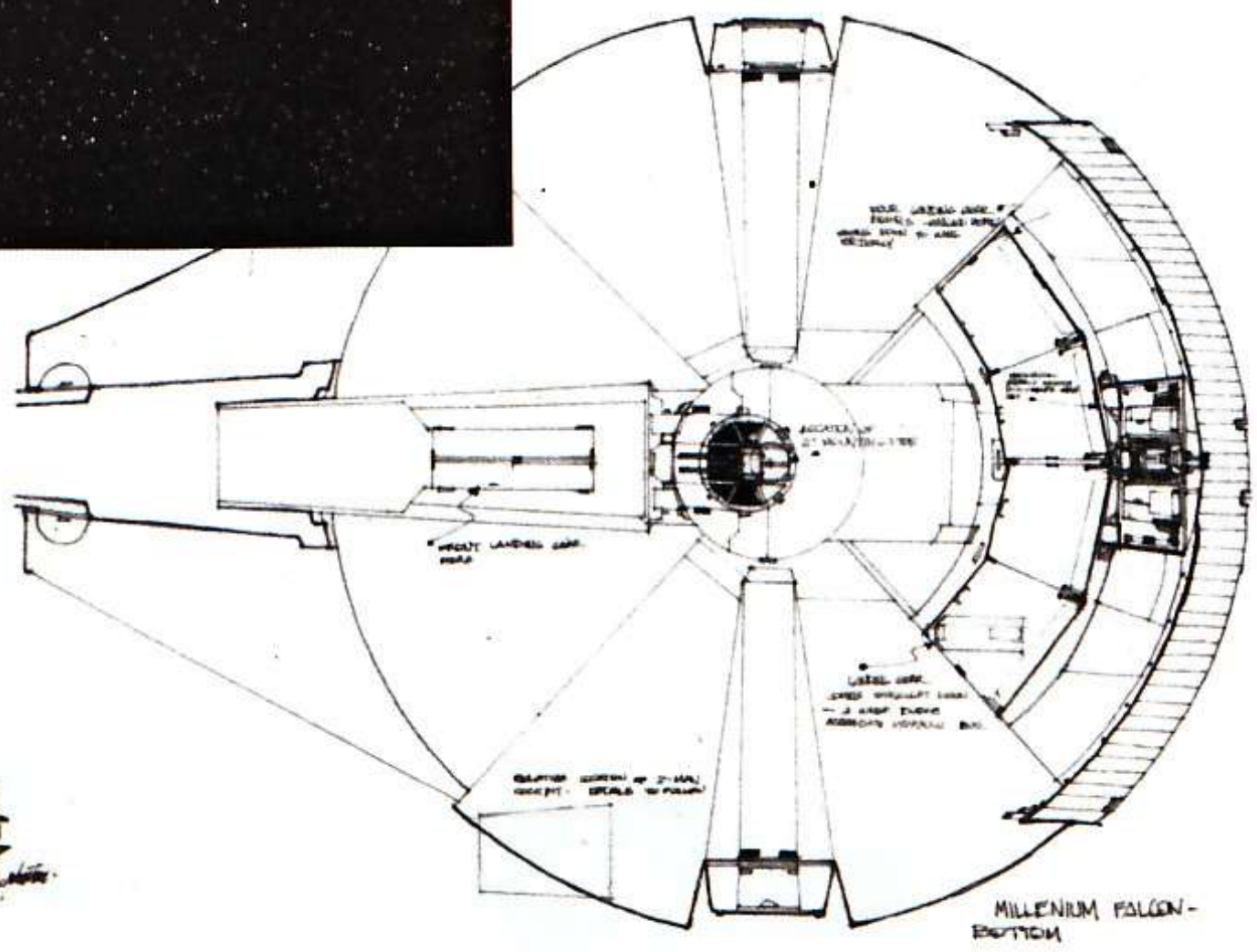




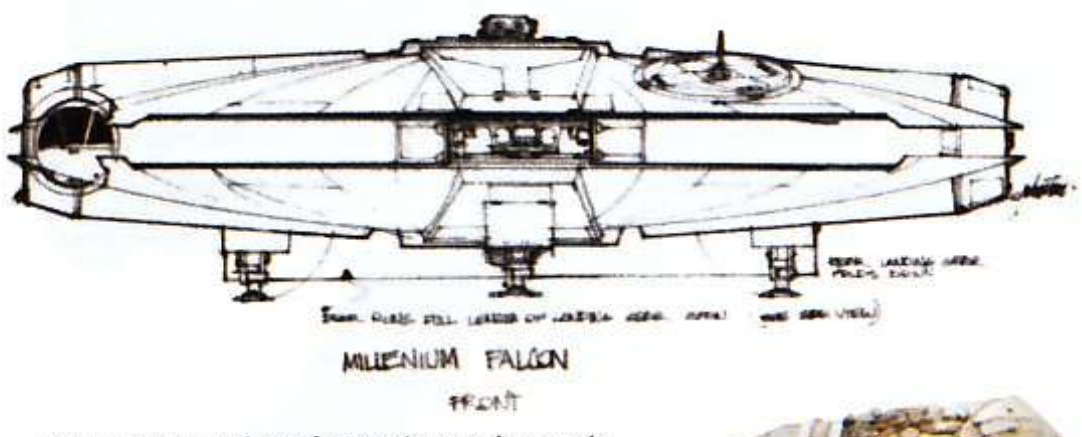
Millennium Falcon side view, design sketch



Millennium Falcon cockpit, scale revision sketch



Millennium Falcon bottom view, schematic



Millennium Falcon front view, schematic

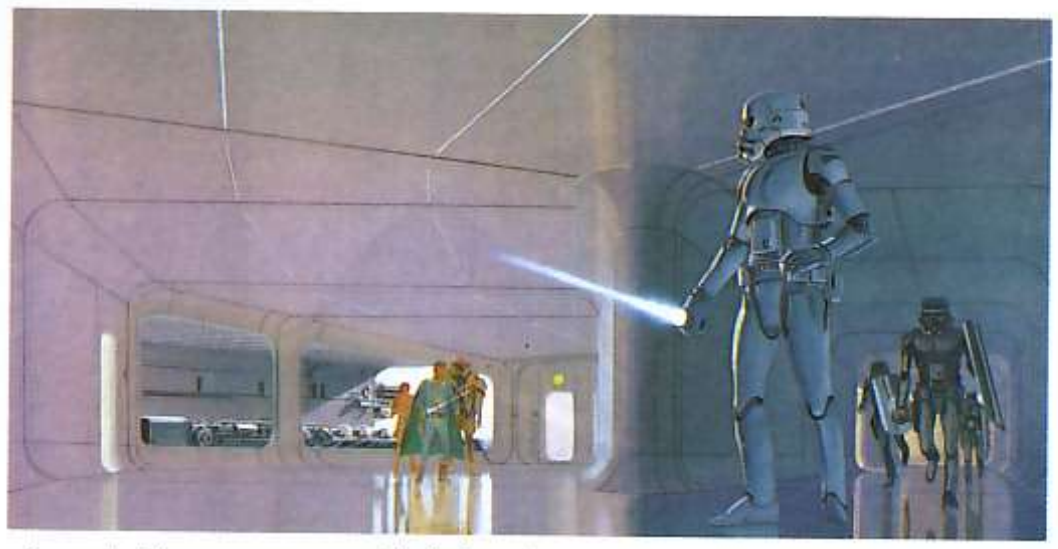
Millennium Falcons, scale models,
61 x 76 x 21 cm. and 4 x 6 x 1 cm.

STAR WEAPONS

Although the weaponry used in battles between Rebels and Empire includes different classes of blaster guns, such as Han Solo's laser pistol, modeled after a German Mauser, the greatest weapon of the *Star Wars* universe is the lightsaber of the Jedi Knight tradition. To Jedi Knights a blaster is a random, clumsy weapon while the lightsaber represents the Zen-like elegance of the civilized age when the Old Republic reigned with peace and justice for all. To use the lightsaber properly is to be at one with the Force, described by Obi-Wan as "an energy field created by all living things...[that] binds the universe together."

Different styles of lightsaber props were constructed from old-fashioned press photography camera flash bars, with additional parts machined on. The saber's laser-light glow was achieved by filming the actors holding stick swords wrapped with highly light-reflective material. In subsequent installments the lightsaber glow effect would be created as animation laid frame by frame over prop swords used by the actors.

The Jedi training remote, used by Obi-Wan to test Luke Skywalker during an early lightsaber training session, was called the "seeker ball" by the model crew. The turnaround for the model was a mere two days. (Note the chrome wheel rims from an off-the-shelf model truck kit that decorate the orb's surface.) The remote was shot as a bluescreen element for later optical compositing, but instead of programming a computerized motion-control move, artist Joe Johnston manually manipulated the model from its bottom with a quarter-inch rod as the camera rolled.

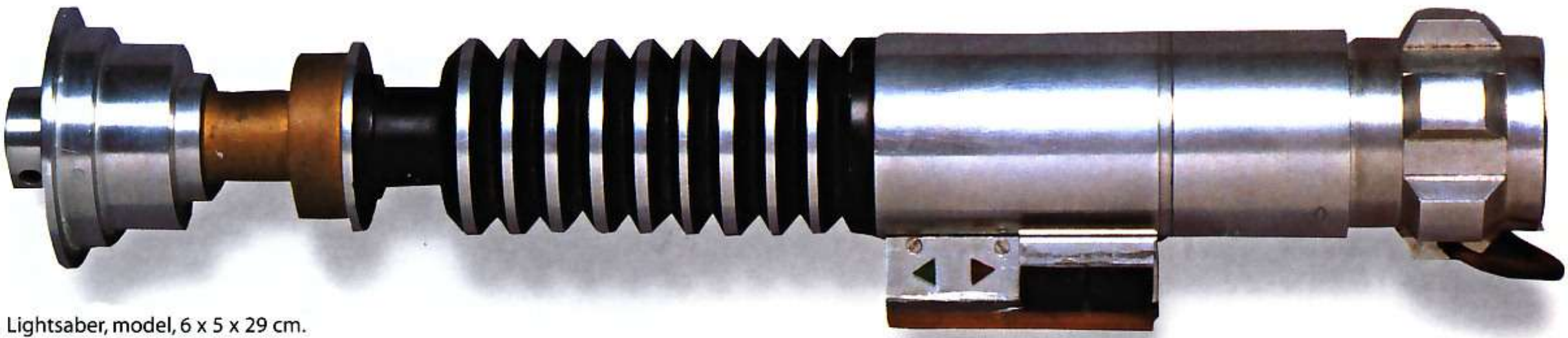


Imperial Stormtrooper with lightsaber, production painting

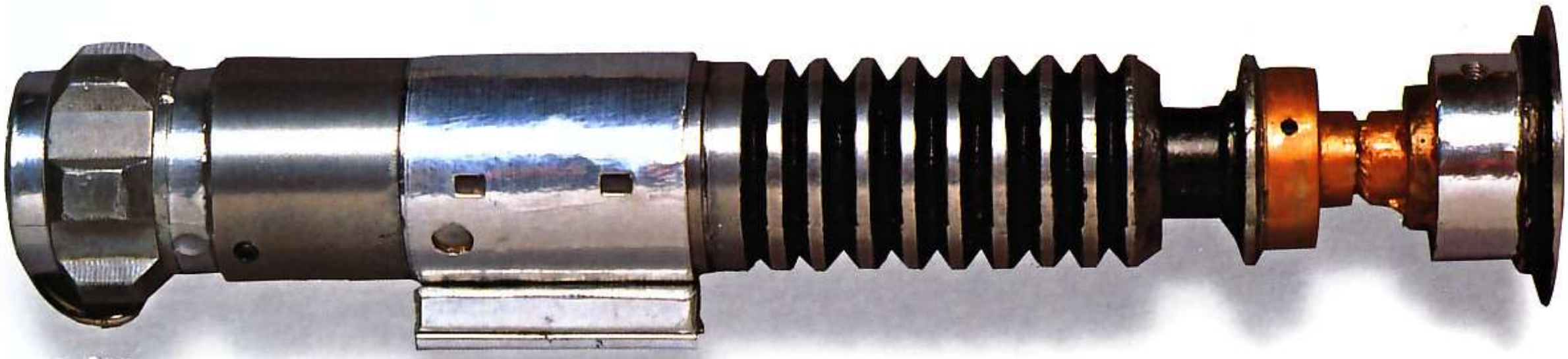
Rebel blaster, prop, 12 x 43 x 20 cm.

Mouse Robot, prop, 30 x 54 x 40 cm.

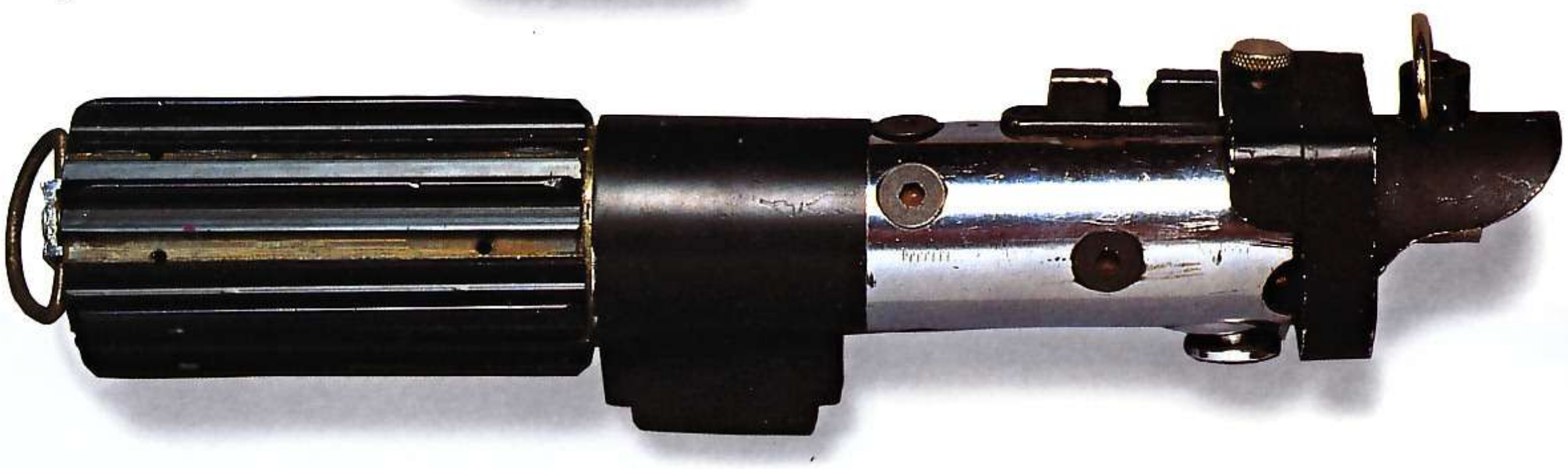
Imperial Stormtrooper's blaster, prop, 47 x 13 x 20 cm.



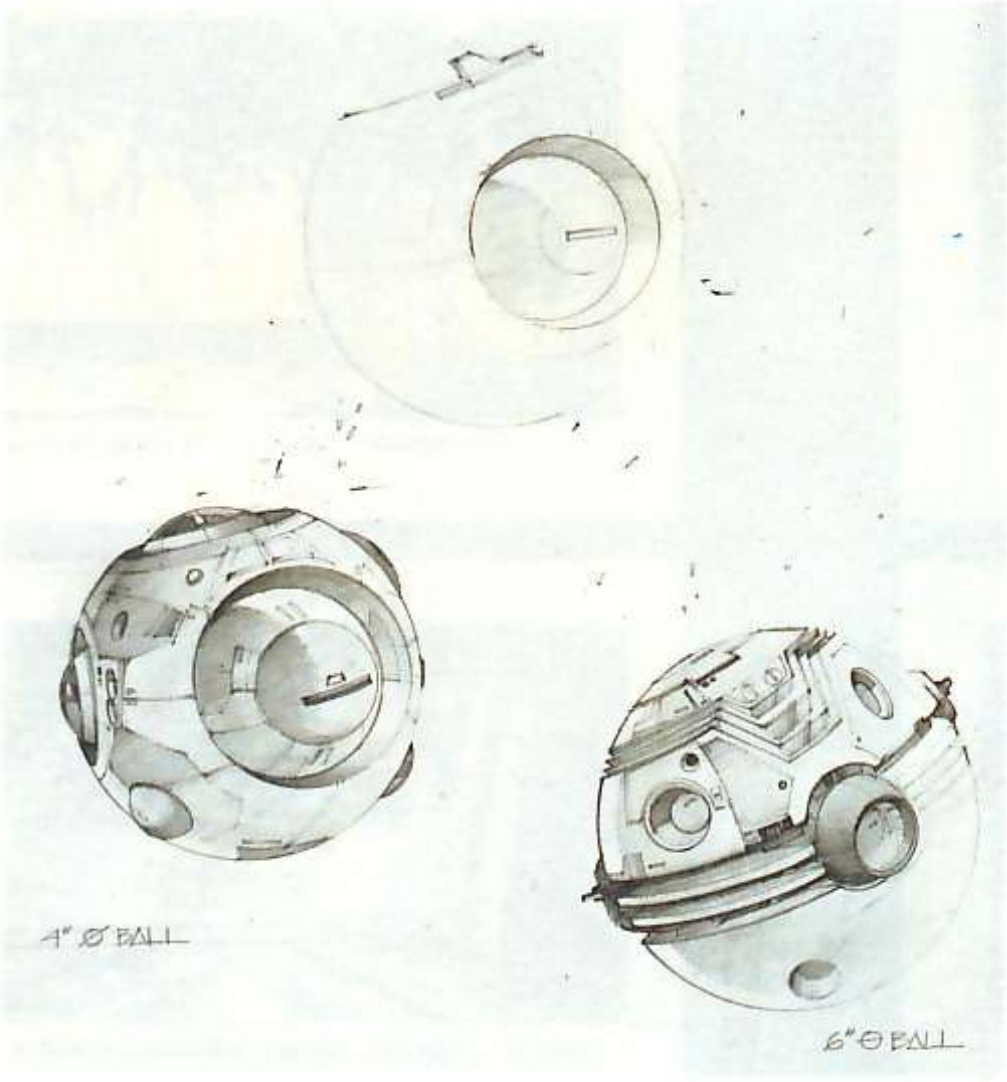
Lightsaber, model, 6 x 5 x 29 cm.



Lightsaber, model, 6 x 5 x 29 cm.



Lightsaber, model, 5 x 5 x 28 cm.



Jedi Training Remote, design sketches

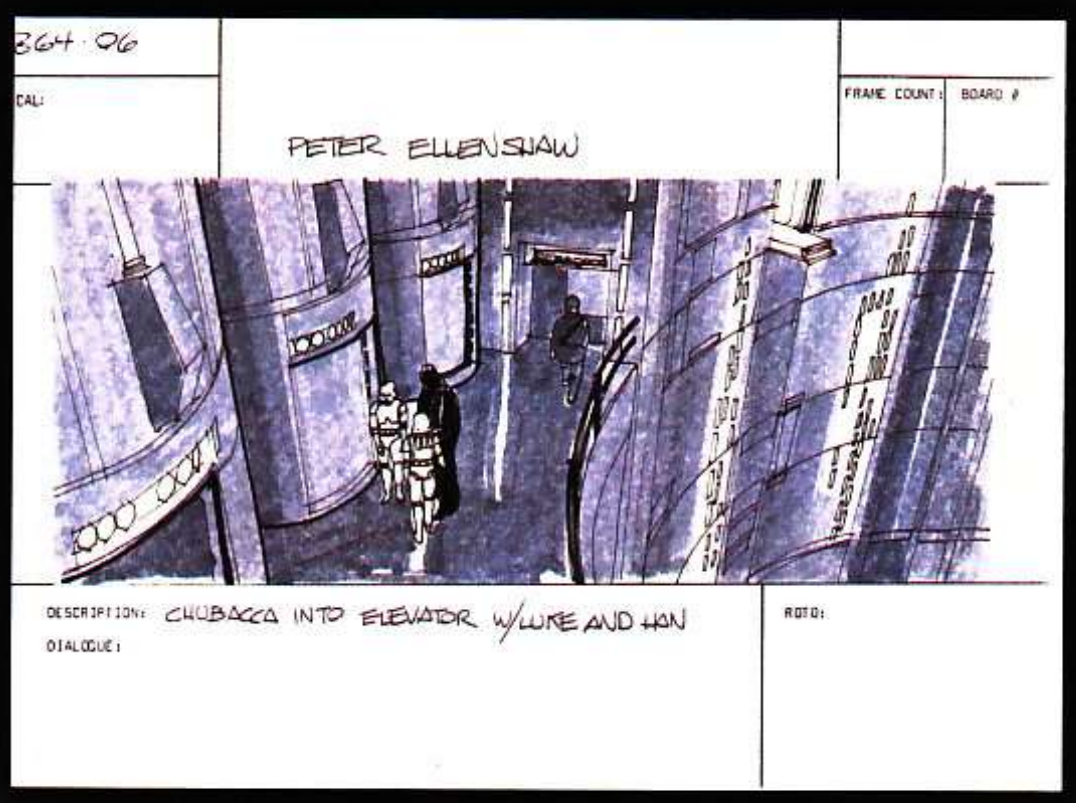
Jedi Training Remote, model, 15 x 15 x 15 cm.

BATTLE AT THE DEATH STAR

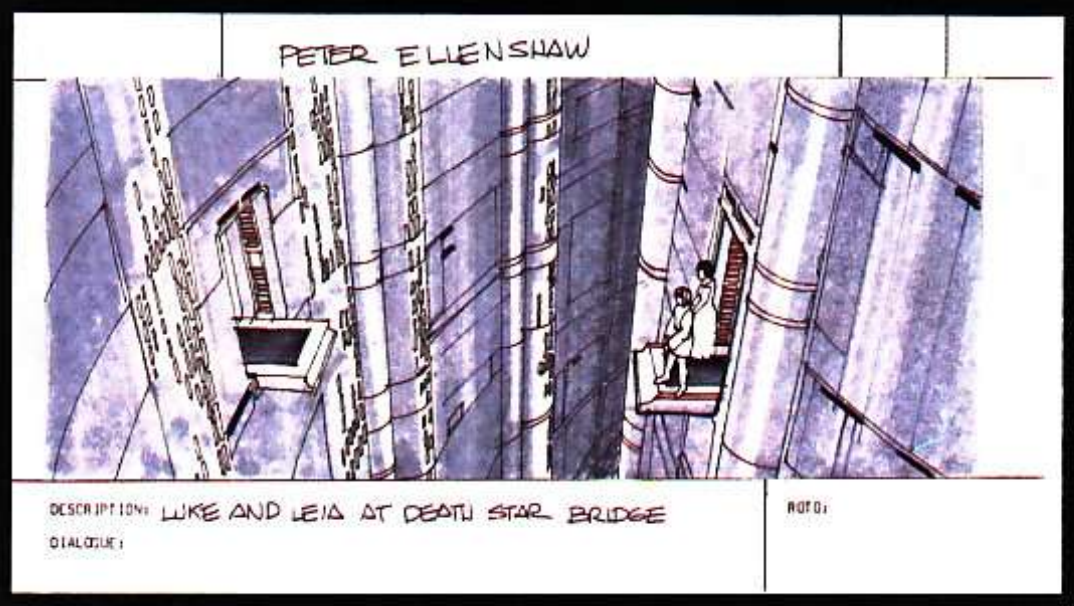
The climax of the film, the battle between Rebel X-wing and Y-wing fighters and Empire TIE fighters along the trench of the Imperial Death Star, was a fighting sequence inspired by the World War I and II aerial dogfight footage studied by Lucas.

The Death Star, the citadel of the Imperial force, was written as a planet -sized structure, protected by Imperial TIE fighters and laser towers (which Joe Johnston called the "ack-ack" guns for the pump-action report of the model's firing system).

Death Star interior, production painting (above)
Darth Vader and Obi-Wan face off with lightsabers, still from film (below)



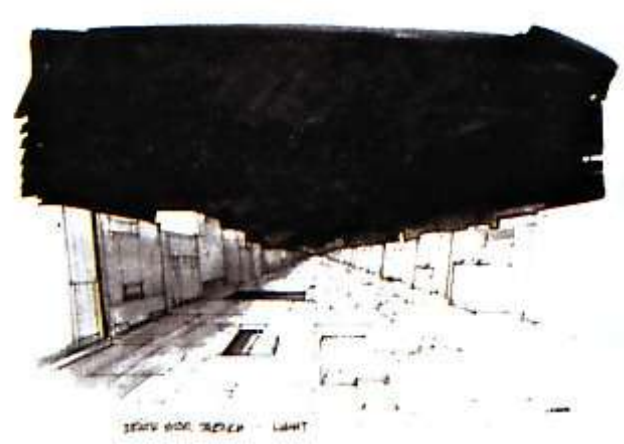
Interiors, Death Star and Rebel hangar, storyboards



The TIE fighter models, which ranged in size from two feet across to several inches, were named after the "bow ties" some ILMers said they resembled.

The Rebel X-wing and Y-wing fighters were named for their respective shapes. Once again, off-the-shelf and found objects were used to build the models: the Y-wing fighters utilized both glued-on model kits of Saturn rockets and egg-shaped stocking containers used, as noted earlier, for the Star Destroyer thrusters. (For rough size approximations of *Star Wars* ships and vehicles see

Luke and Leia in Death Star reactor chamber, production painting

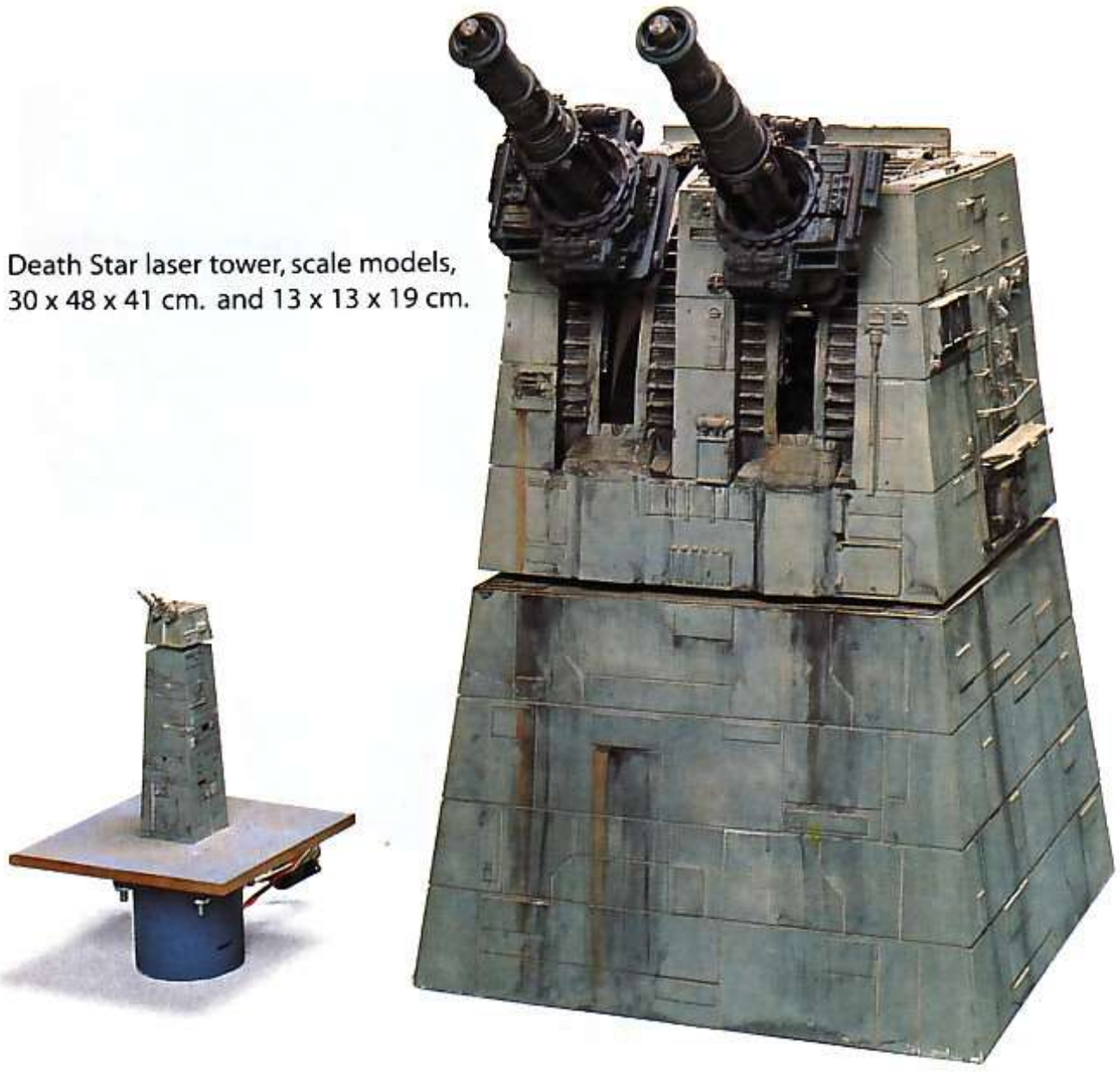


Death Star trench, design sketch

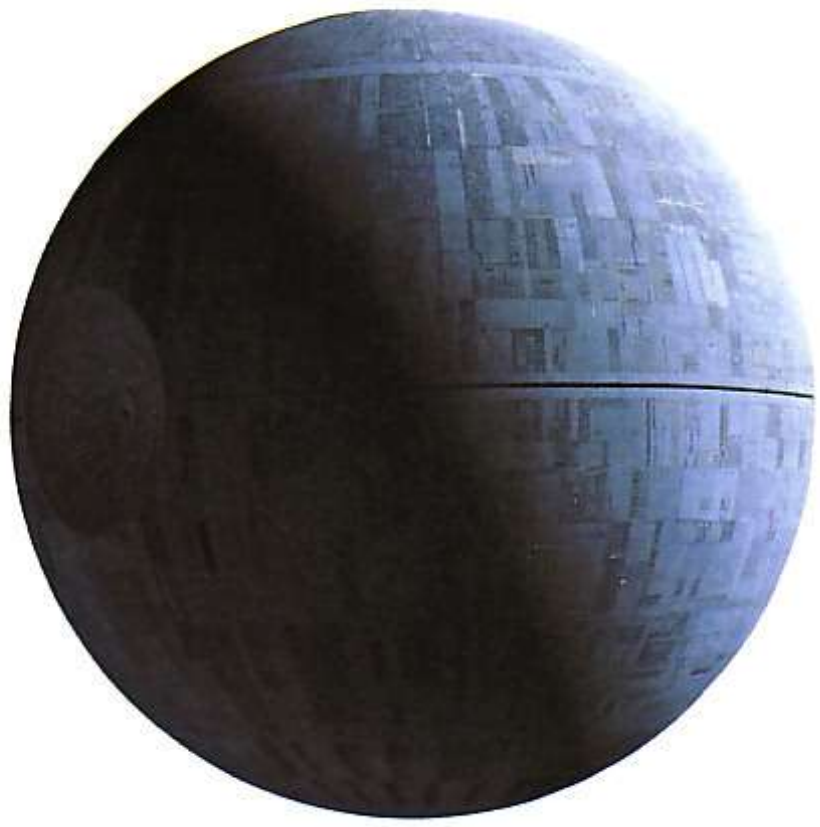
Death Star, prototype,
38 x 38 x 38 cm.

Death Star surface, matte painting, 127 x 86 cm.

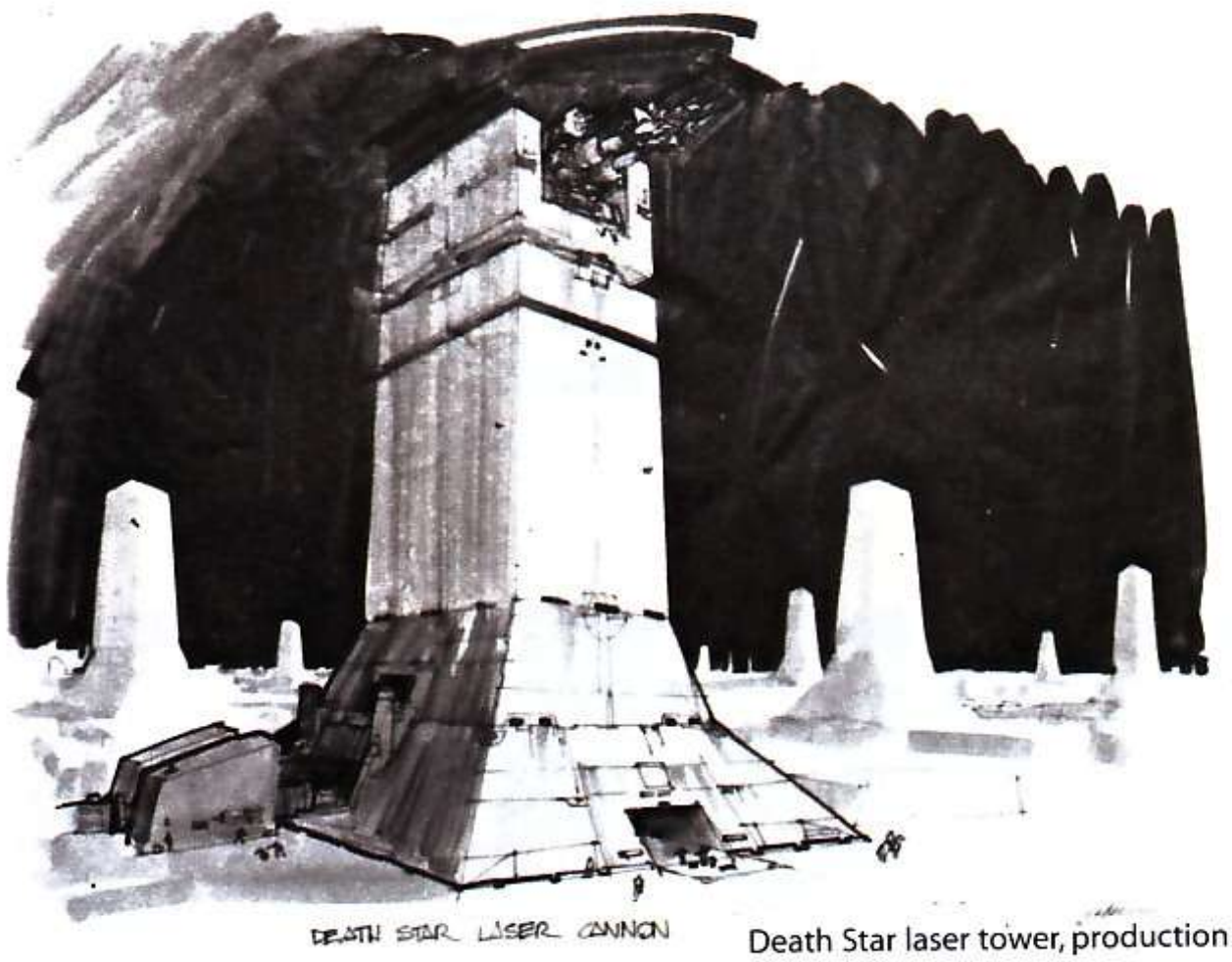
Death Star laser tower, scale models,
30 x 48 x 41 cm. and 13 x 13 x 19 cm.



Millennium Falcon flying into Death Star hangar, production painting

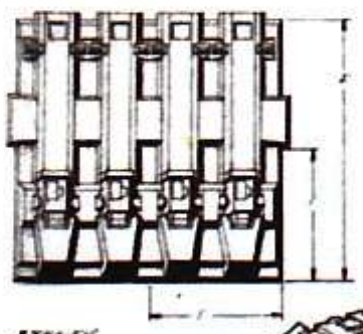


Death Star, matte painting, 127 x 86 cm.

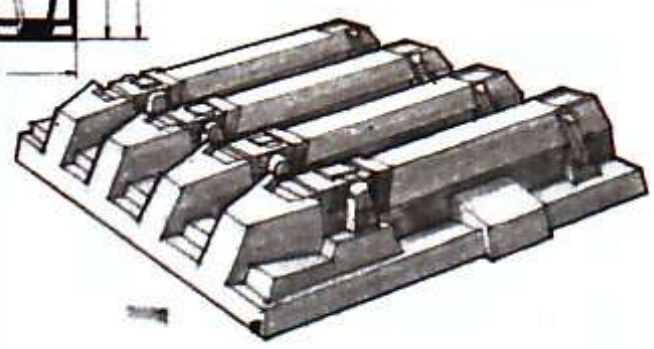


DEATH STAR LASER CANNON

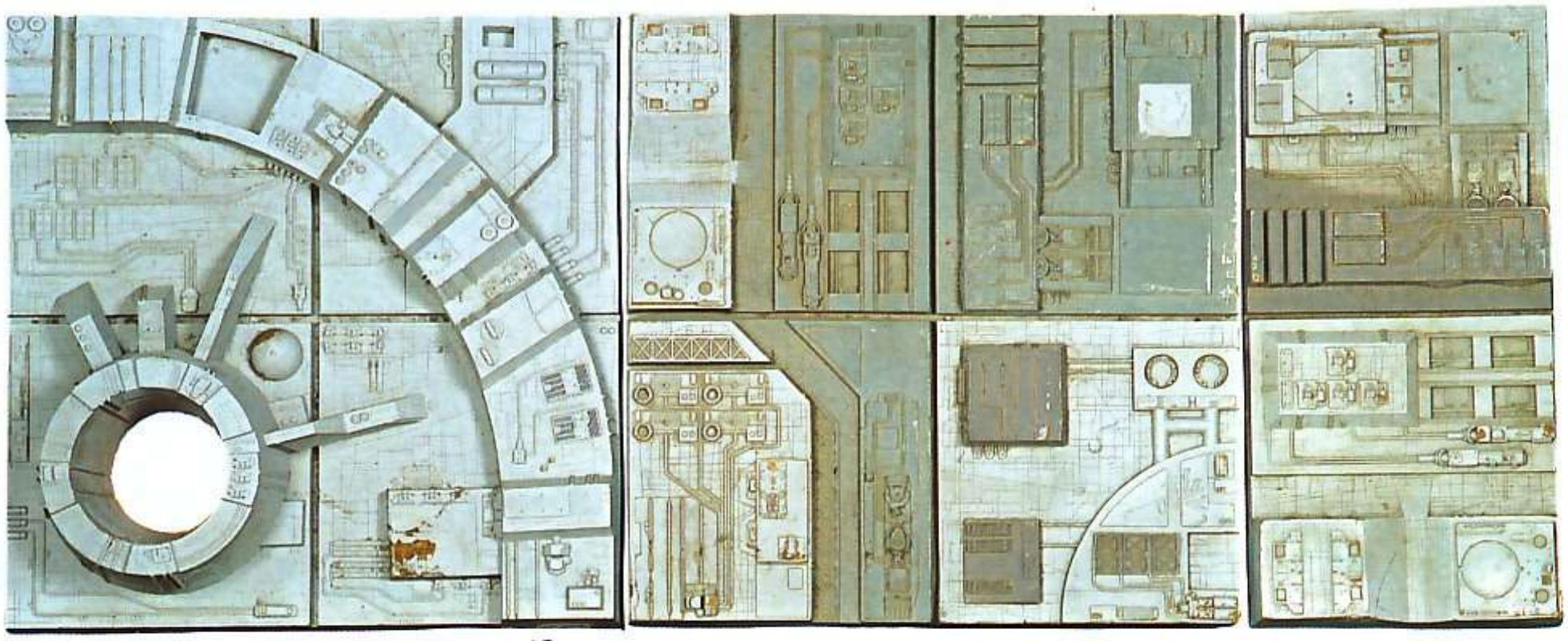
Death Star laser tower, production sketch



Death Star module, design sketch

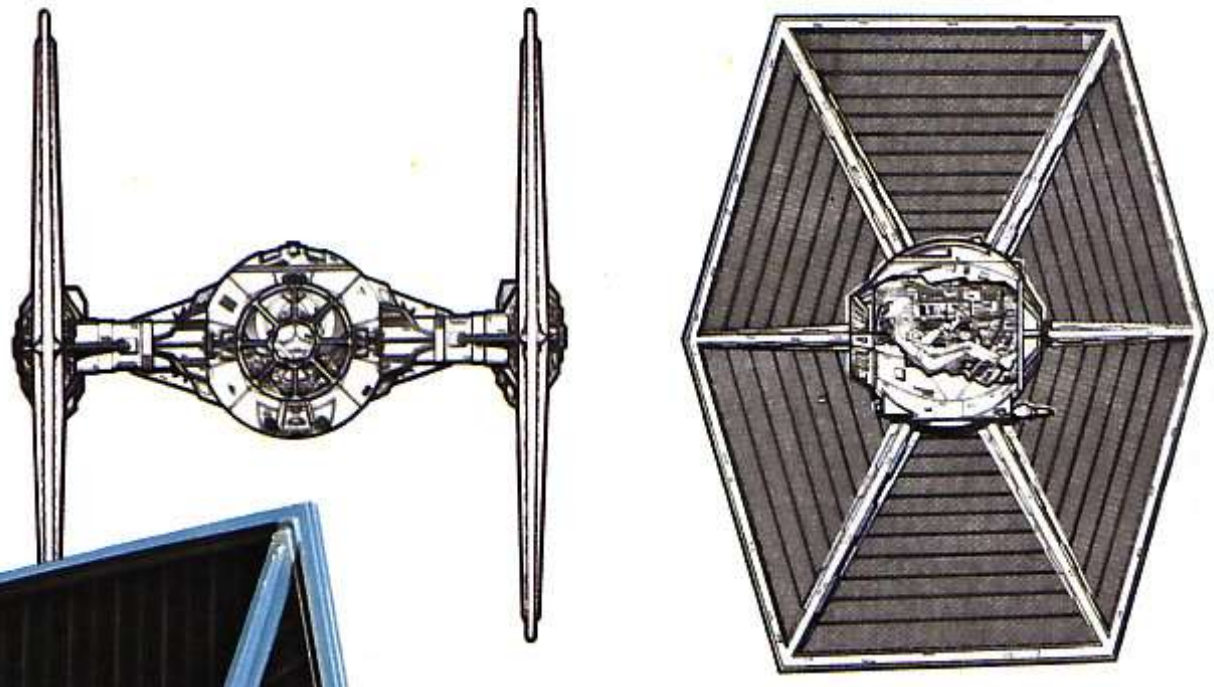


DEATH STAR MODULE - 3

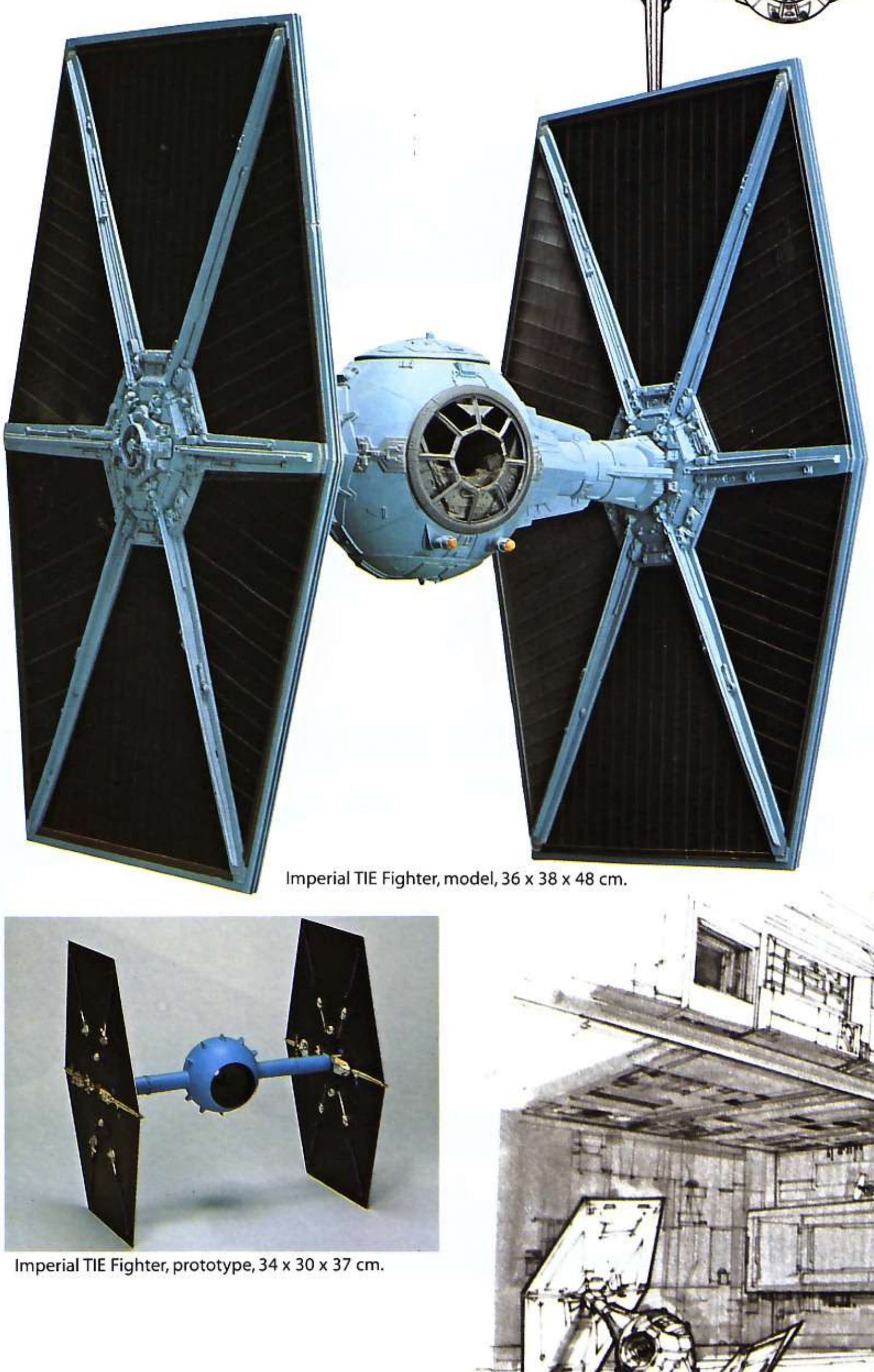


Death Star surface module, model, 65 x 150 x 15 cm.

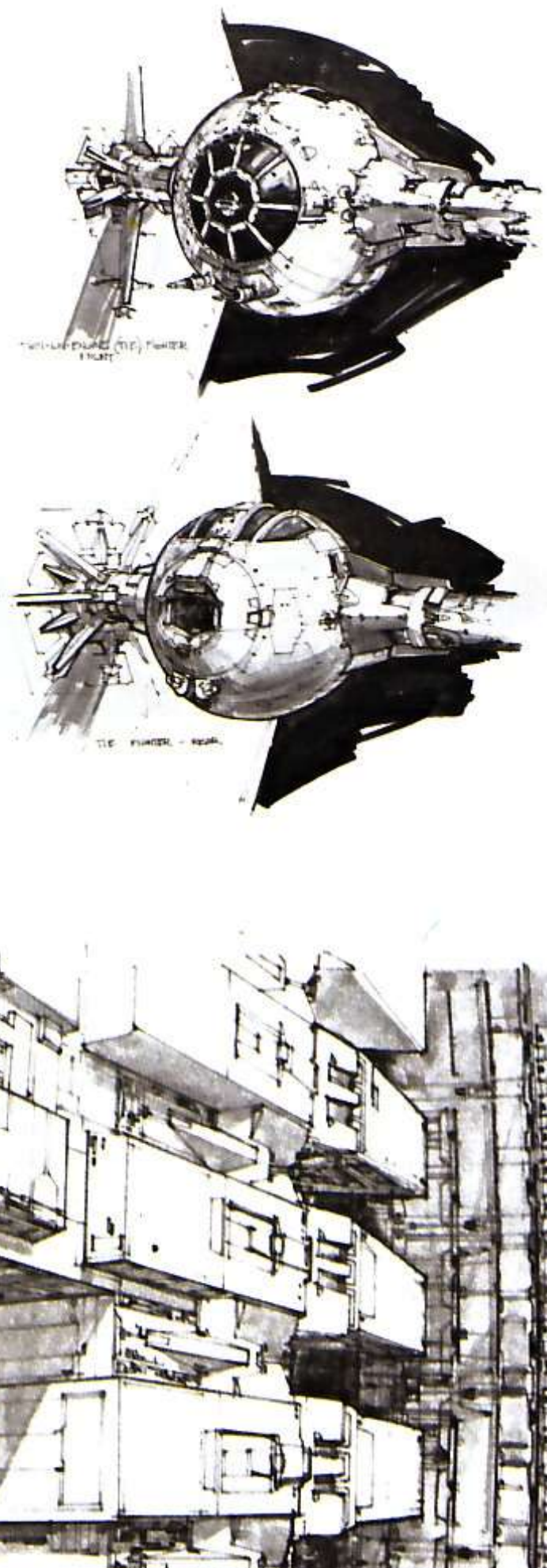
X-Wing and TIE Fighter dogfight, production painting



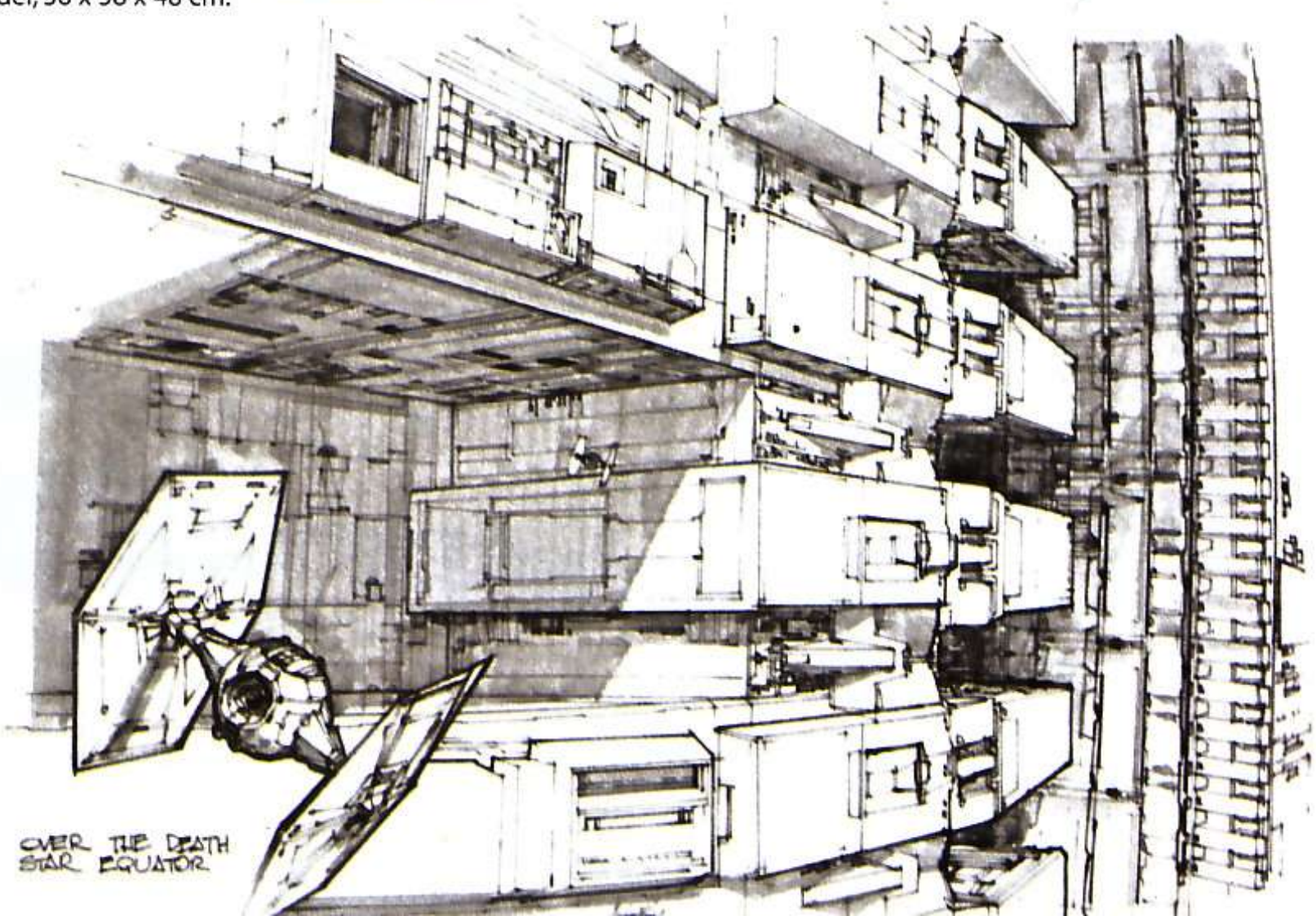
Imperial TIE Fighter, design sketches



Imperial TIE Fighter, model, 36 x 38 x 48 cm.



Imperial TIE Fighter, prototype, 34 x 30 x 37 cm.



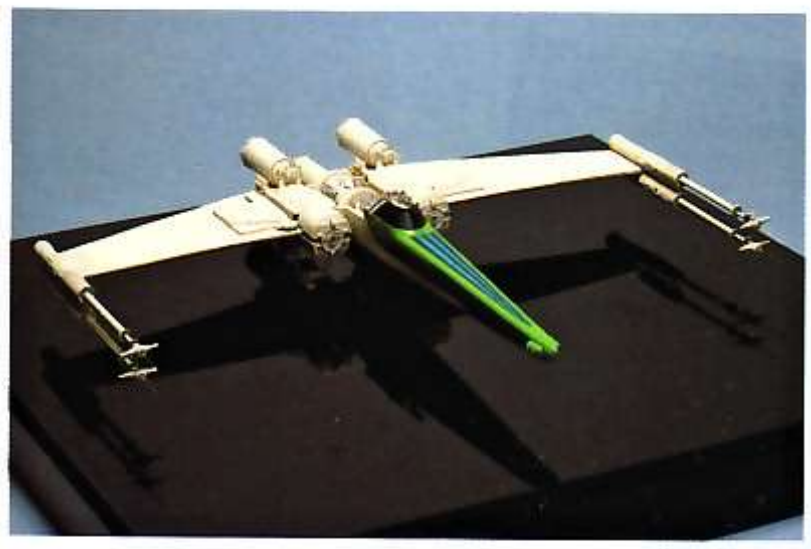
TIE Fighter over Death Star equator

the Joe Johnston schematics on the final page of this chapter.)

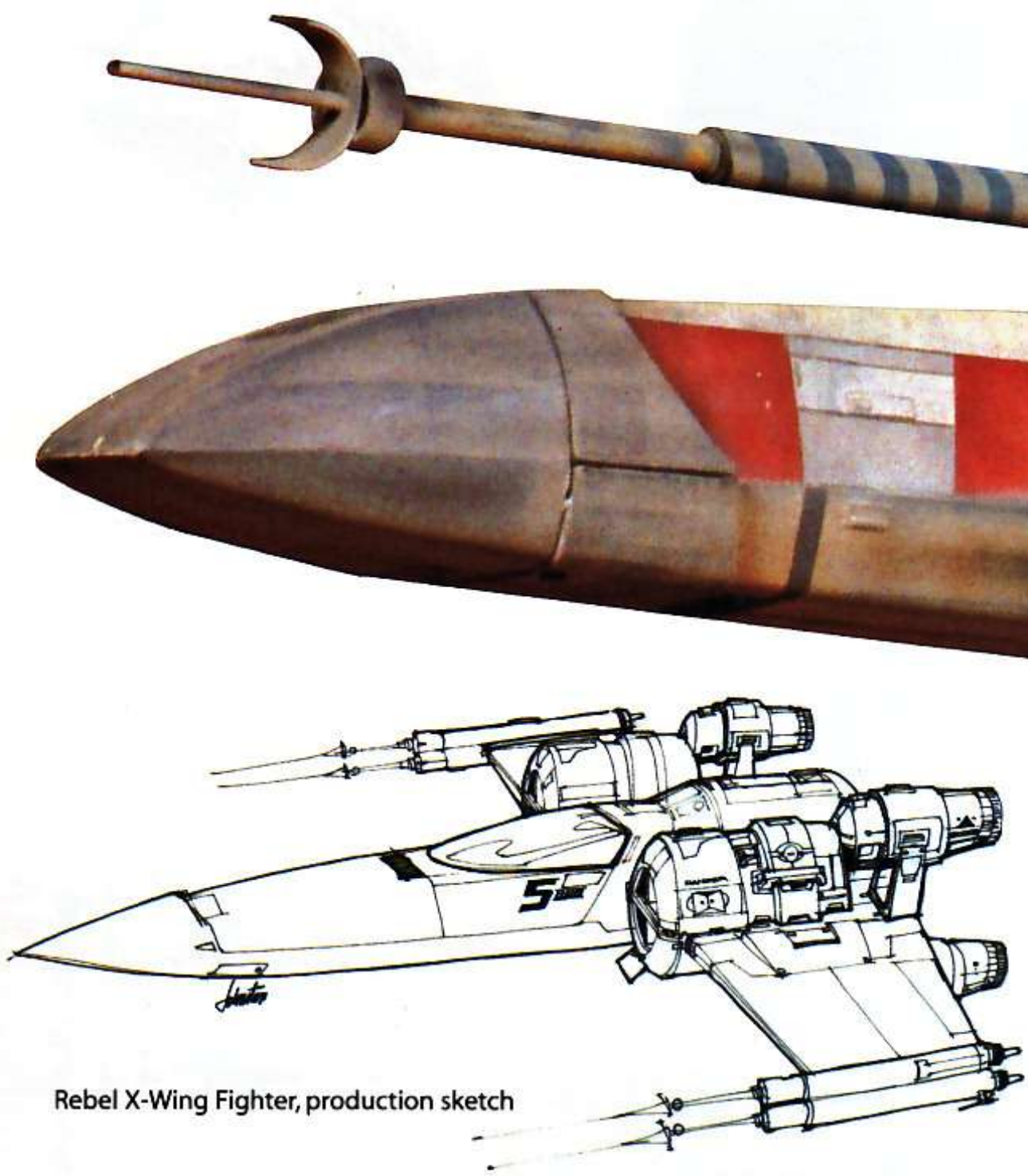
In the film, Luke Skywalker is able to bomb and destroy the Death Star because it has a deadly weakness: a breachable trench opening to the citadel's exposed reactor core.

The Death Star trench was created as a miniature, sixteen-hundred-square-foot set that was filmed outdoors, in natural sunlight, on the ILM lot. The motion-control Dykstraflex camera was suspended in the trench and reeled across to give audiences a pilot's eye view of the attack. (Pyrotechnic effects for the explosive fire along the trench required filming at speeds of more than three hundred frames per second.)

Rebel X-Wing in Death Star trench, production painting

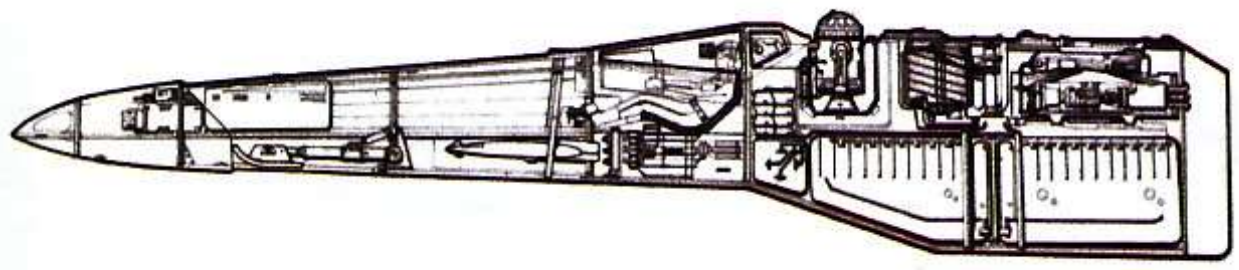


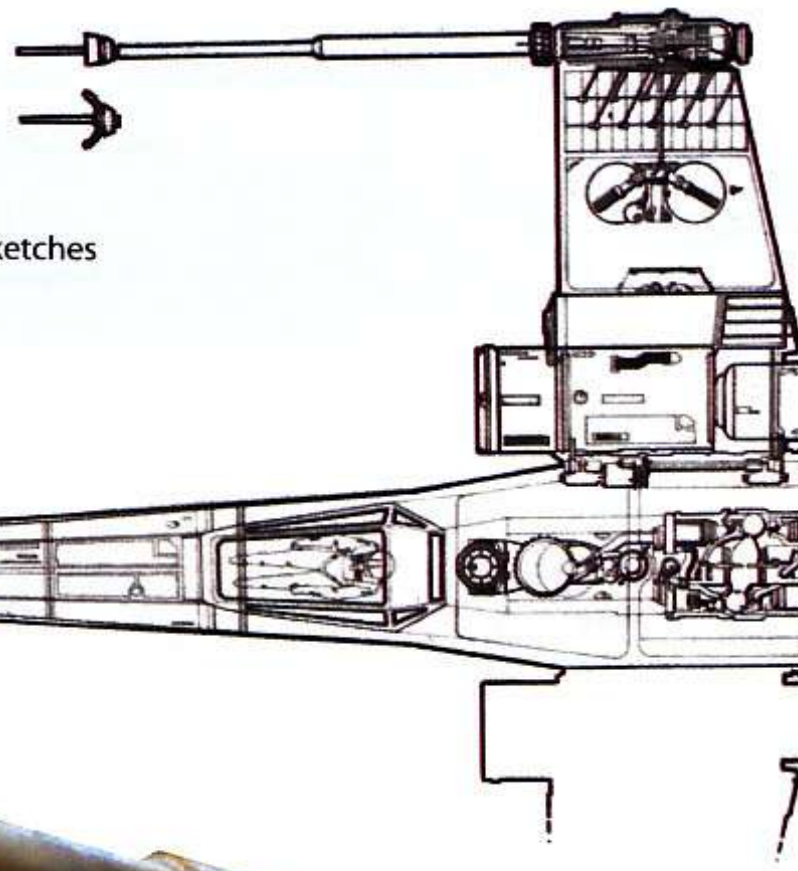
Rebel X-Wing Fighter, early prototype, 48 x 41 x 6 cm.



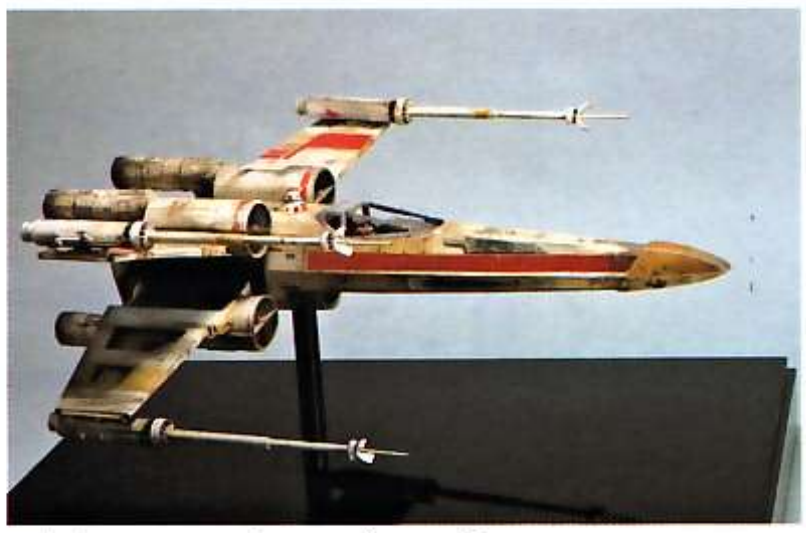
Rebel X-Wing Fighter, production sketch

Rebel X-Wing Fighter, scale model, 56 x 46 x 18 cm.



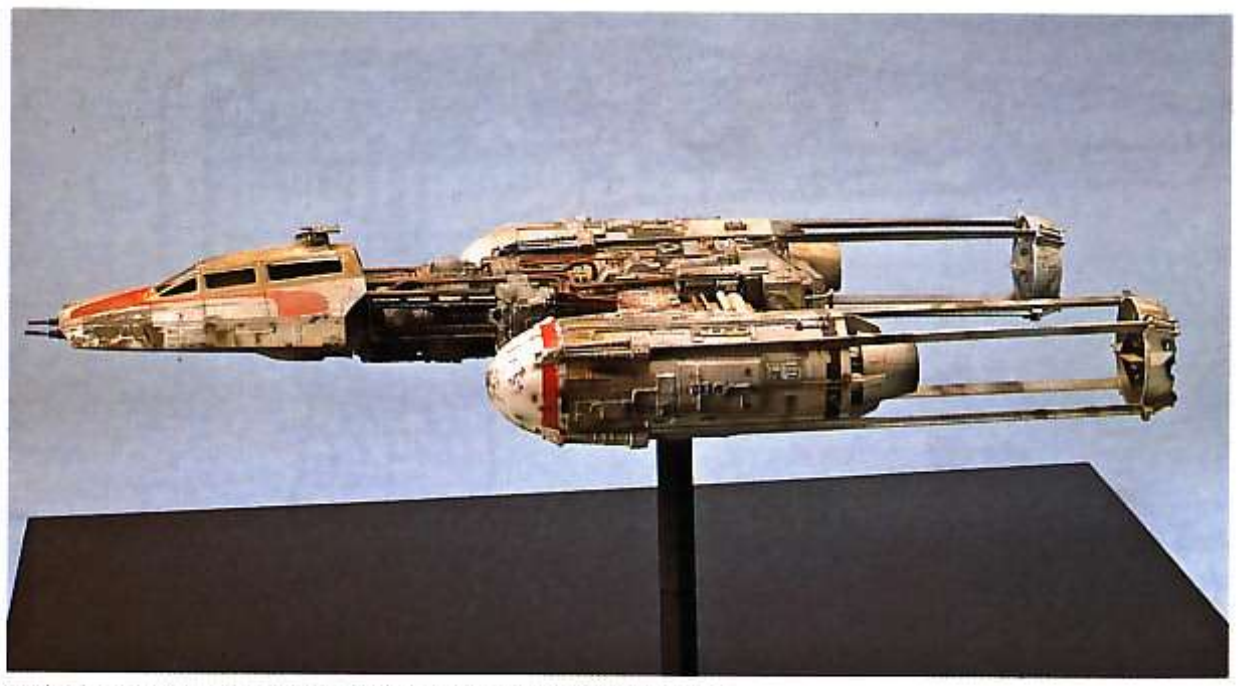


Rebel X-Wing Fighter,
side and top design sketches



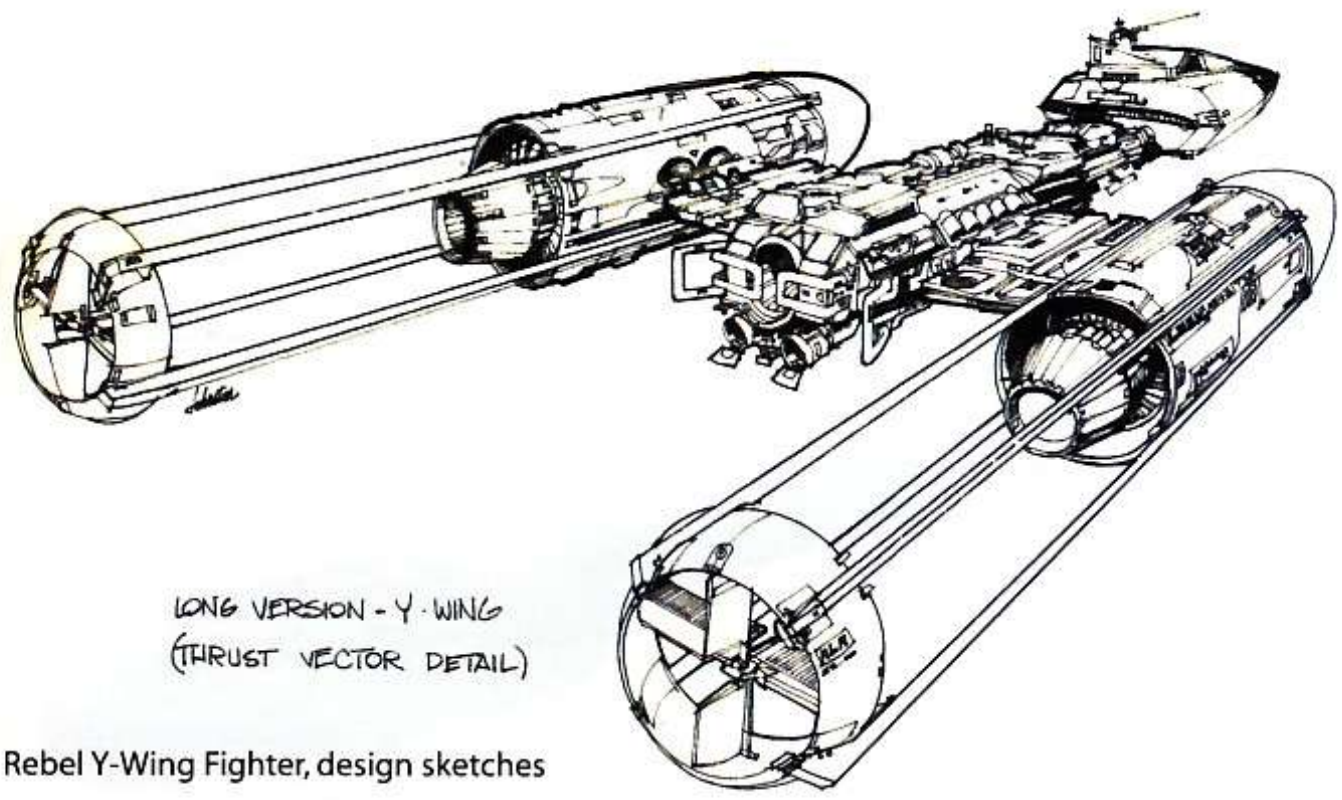
Rebel X-Wing Fighter, scale model, 53 x 46 x 17 cm.

Rebel X-Wing Fighter, large scale model, 127 x 145 x 51 cm.

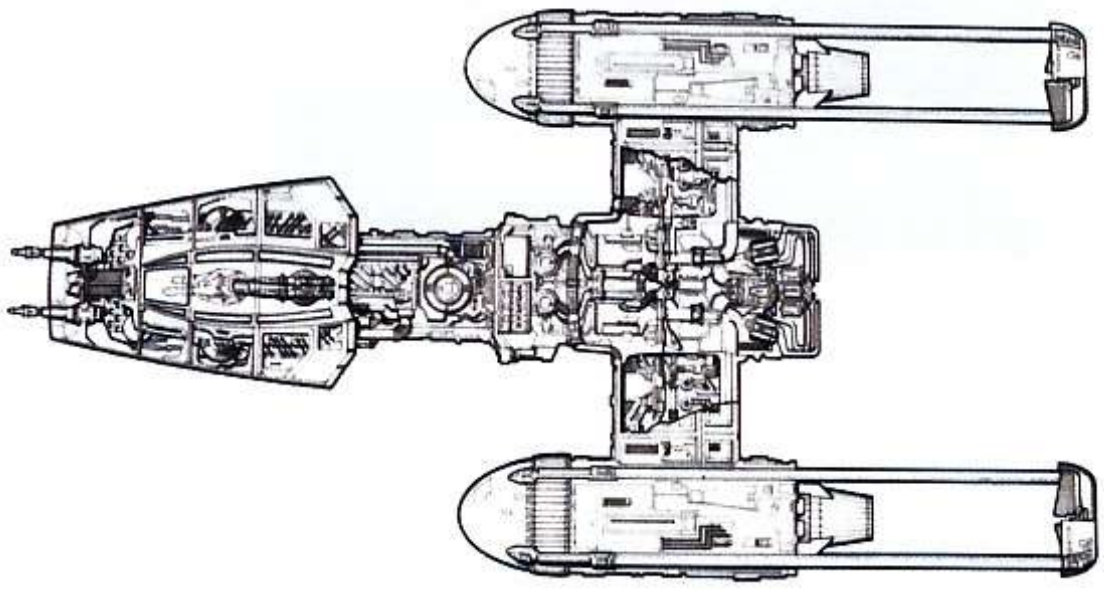


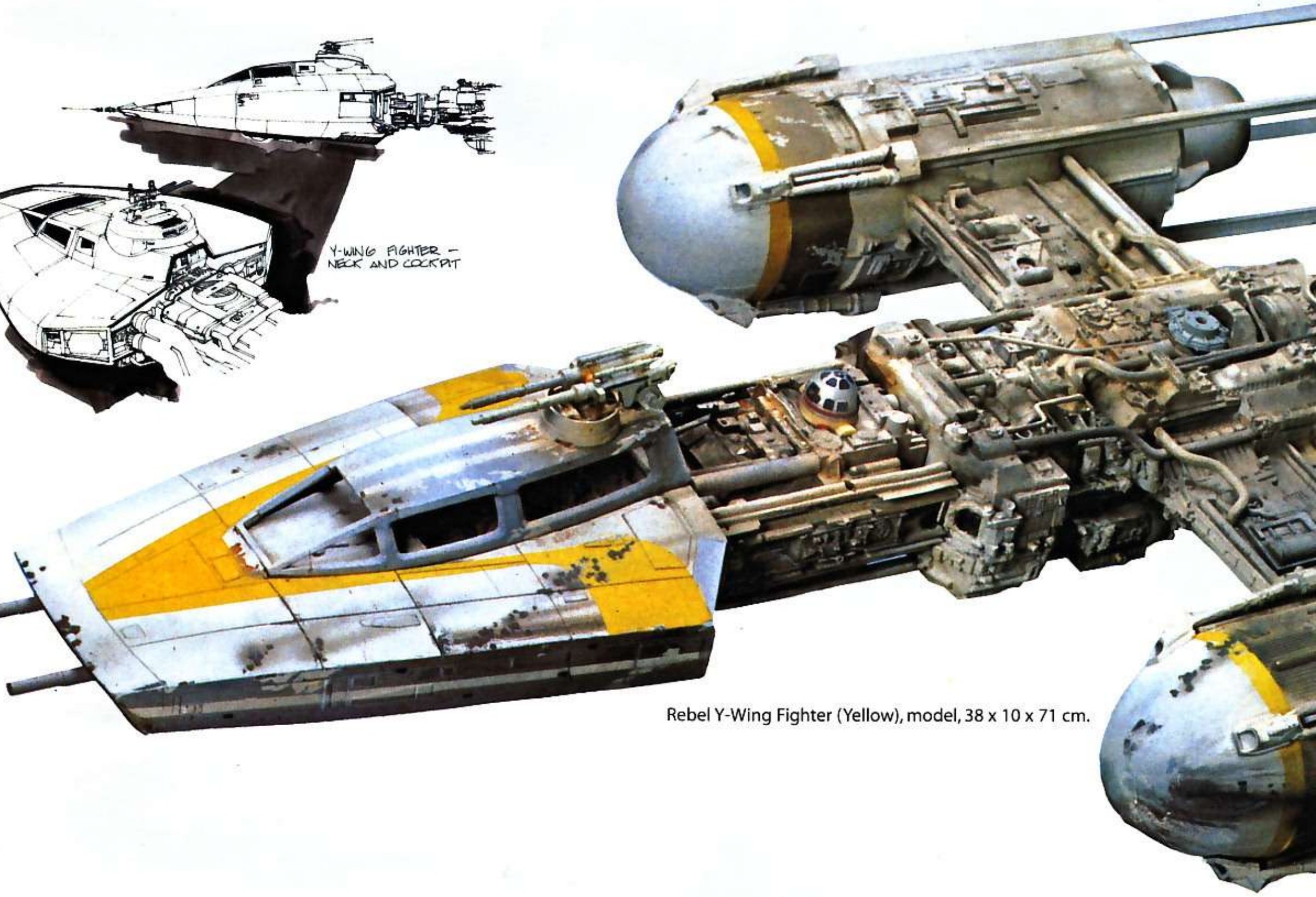
Rebel Y-Wing Fighter (Red), model, 38 x 10 x 71 cm.

Rebel Y-Wing hangar, production painting



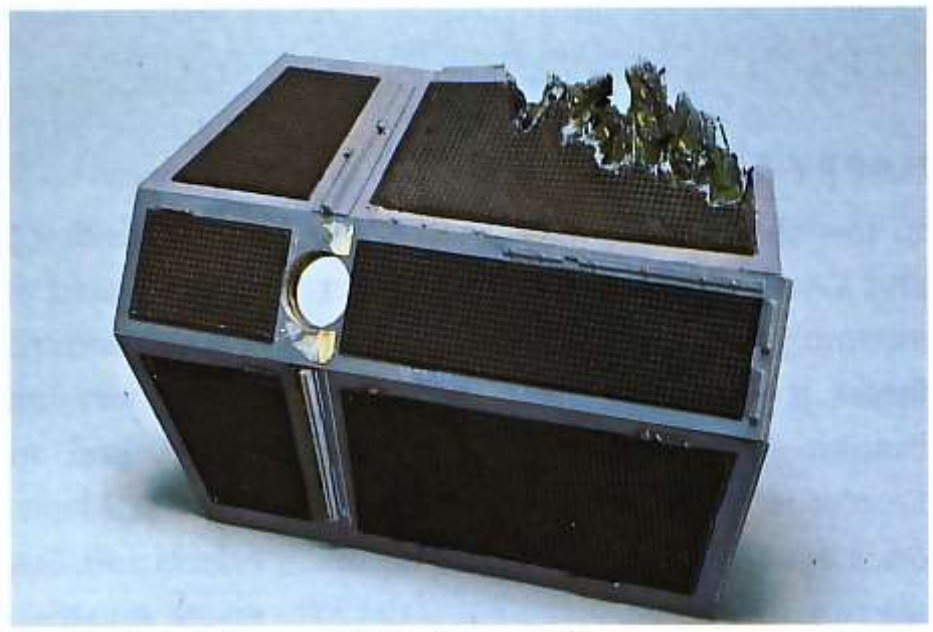
Rebel Y-Wing Fighter, design sketches



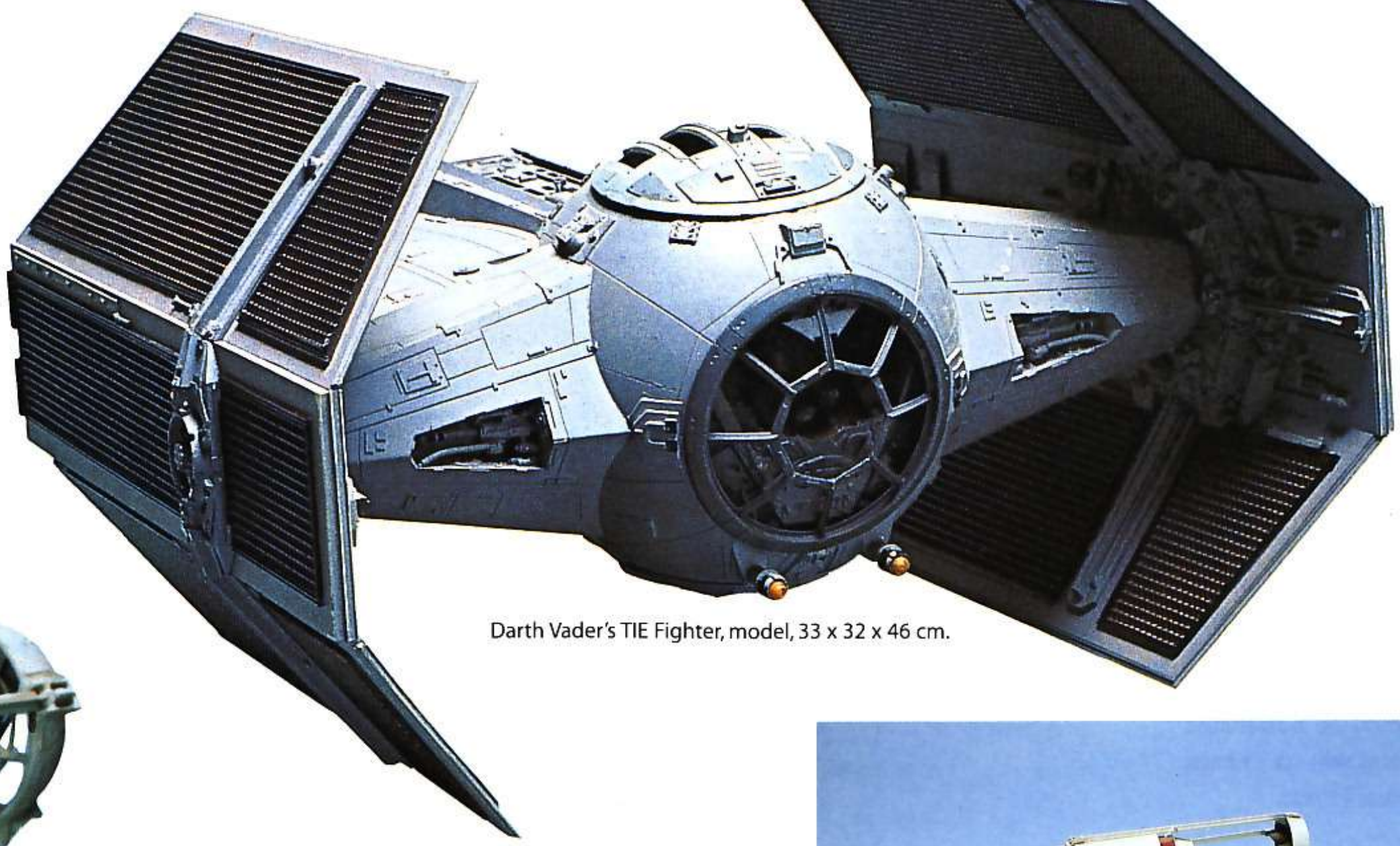


Rebel Y-Wing Fighter (Yellow), model, 38 x 10 x 71 cm.

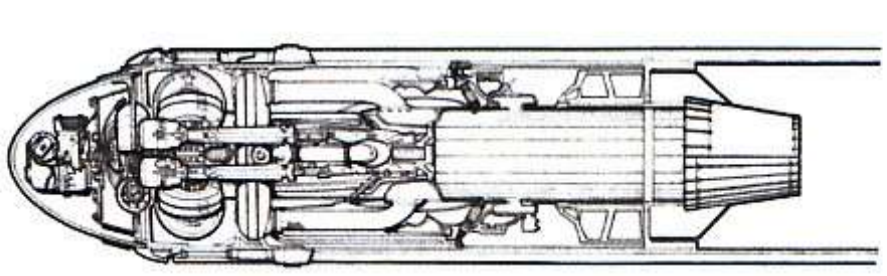
Rebel Y-Wings above Death Star, production painting



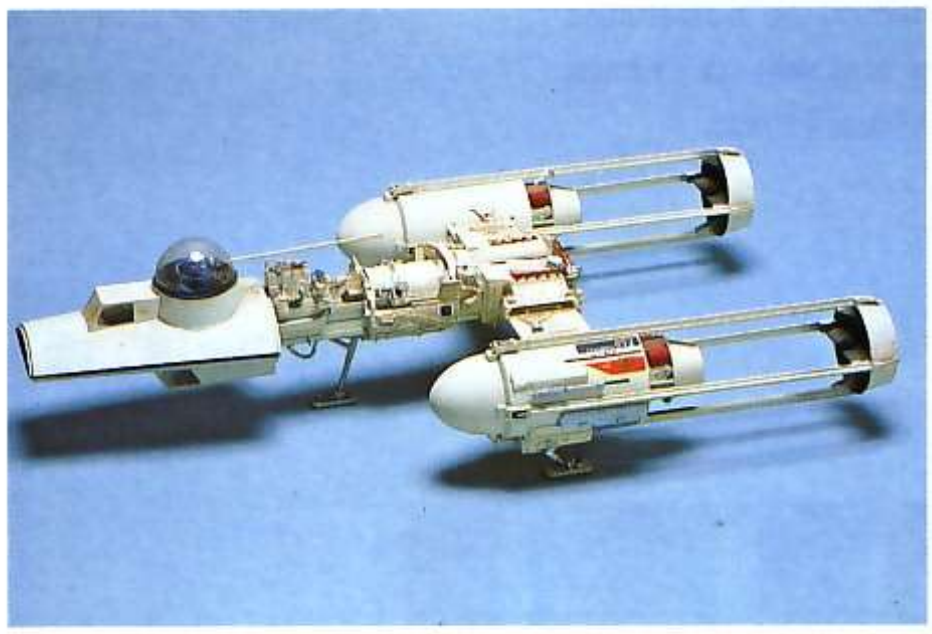
Darth Vader's damaged TIE wing, model, 22 x 6 x 31 cm.



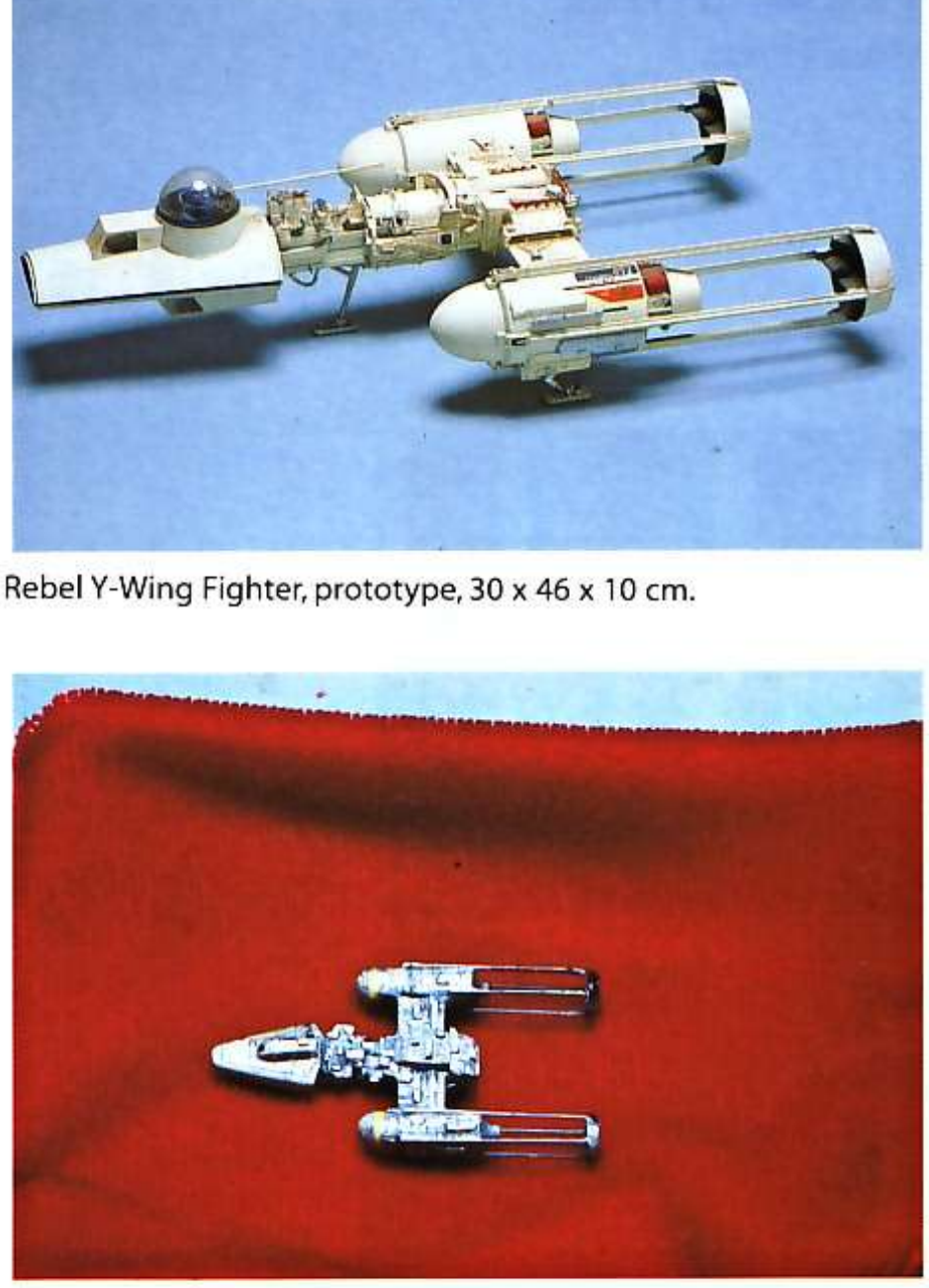
Darth Vader's TIE Fighter, model, 33 x 32 x 46 cm.



Rebel Y-Wing Fighter, design sketch



Rebel Y-Wing Fighter, prototype, 30 x 46 x 10 cm.



Rebel Y-Wing Fighter, scale model, 2 x 3 x 0.3 cm.

HAPPY ENDINGS

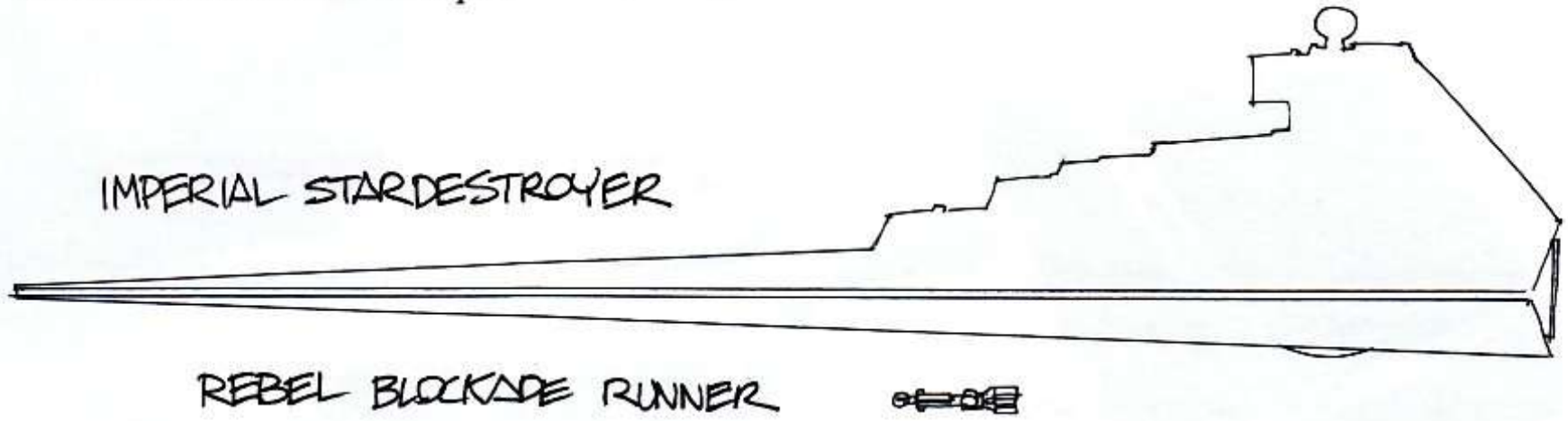
In the film's finale, Skywalker, Solo, and Chewbacca are honored by an assembly of the victorious Rebel forces. It would be a short-lived celebration—by the next chapter the Empire would be regrouped and, once again, the Rebels would be on the run.

When *Star Wars* opened at Hollywood's fabled Mann's Chinese Theater, there were lines around the block, eight or nine people deep, forcing one lane of traffic to be closed off. Lucas himself, dining at a nearby restaurant, saw what he recalls as "a mob scene" and was astounded when he realized his film was the cause of the commotion. During a vacation to Hawaii later in the week he received reports that his movie was breaking box office records. (During that fateful trip, at which he was joined by his friend Steven Spielberg, Lucas advanced his concept of an adventuring archaeologist named Indiana Jones.)

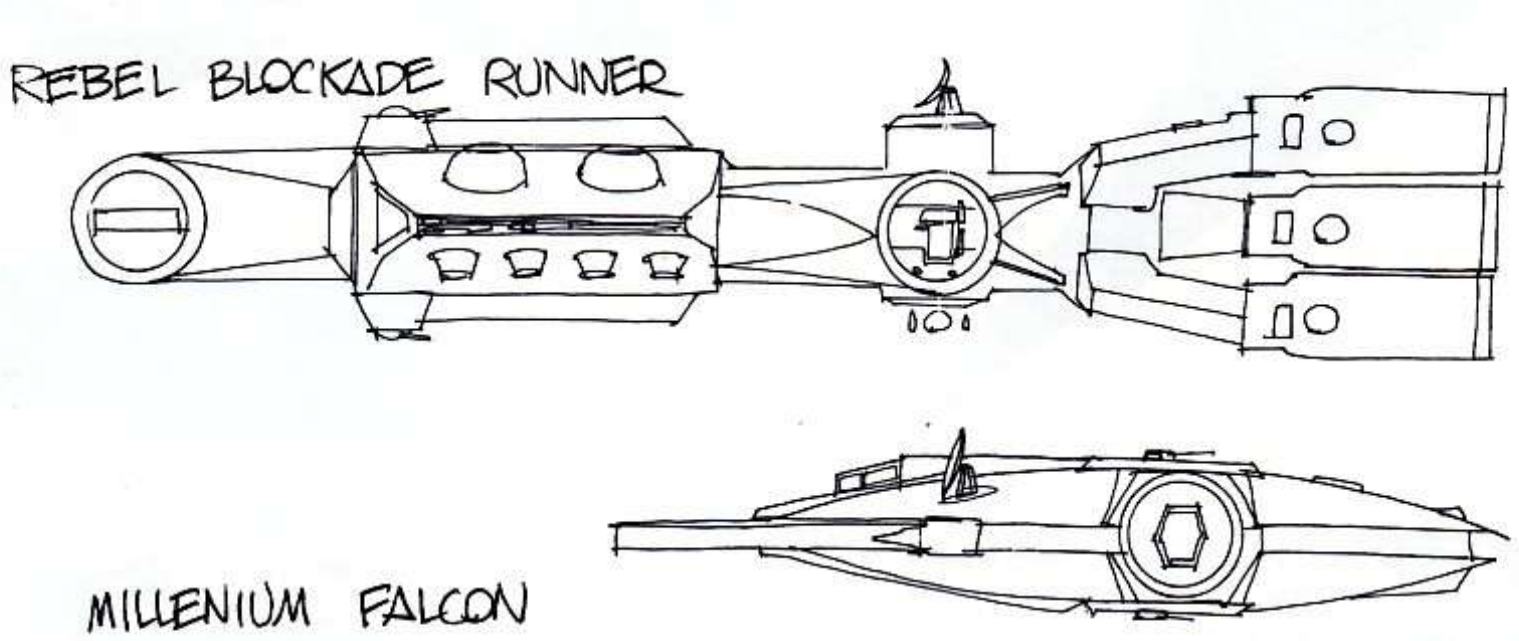
For years *Star Wars* would rank as the number one box office attraction in movie history (nearly twenty years later it still ranks third on the all-time list). The film would be nominated for Best Picture and win six Oscars, including Best Visual Effects.

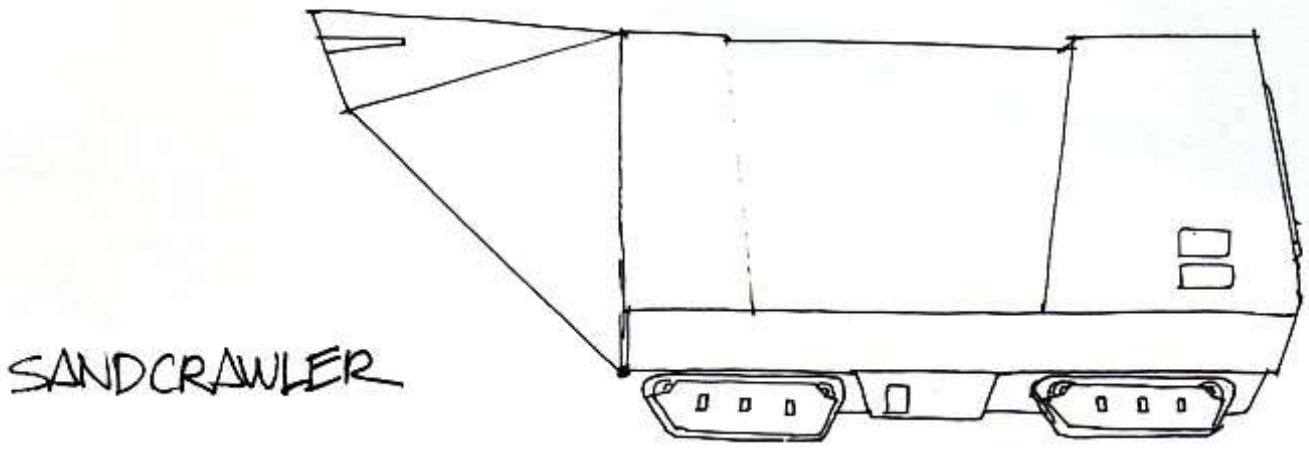
In his first flush of major success Lucas shared profit percentages with key cast and crew and began to funnel his grosses into building Skywalker Ranch and maintaining Industrial Light & Magic as a fully operating effects unit. But with worldwide audiences impatiently awaiting the next chapter in the saga, the creative forces of Lucasfilm knew they would have to outdo themselves in the sequel.

The Main Throne Room, Rebel base on Yavin Four, production painting, with still from film below



Star Destroyer to Sandcrawler, images drawn in approximate scale to each other





IN THE CLUTCHES OF DARTH VADER

THE EMPIRE STRIKES BACK

(Lucasfilm/20th Century Fox) 1980

THE ICE PLANET

It was a long way from the old Zoetrope studio, a warehouse on San Francisco's Folsom Street that housed what Lucas recalls as a "loose confederation of radicals and hippies," to his 1978 purchase of seventeen hundred acres of former ranch land in Marin County.

Lucas, laying the foundation for Skywalker Ranch, also relocated his ILM effects unit from Van Nuys to nearby San Rafael. Ralph McQuarrie even created a whimsical change of address card featuring *Star Wars*

Industrial Light & Magic, setting up shop at San Rafael facility

The Empire Strikes Back release poster, 61 x 91 cm.

characters in a landspeeder, followed by a huge sandcrawler, making their way out of Hollywood.

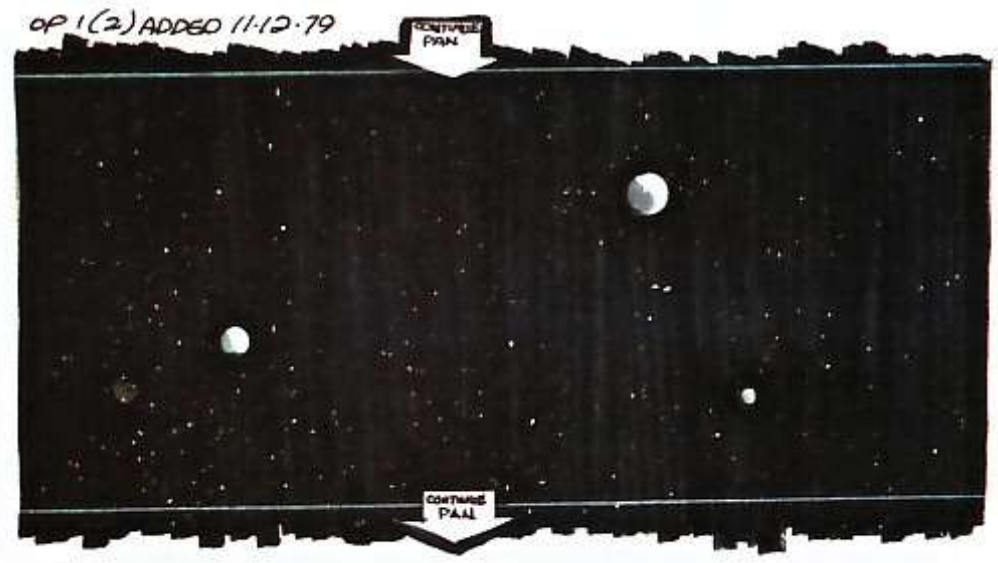
But Lucas's dreams of expansion, as well as future *Star Wars* episodes, were predicated on the success of *The Empire Strikes Back*.

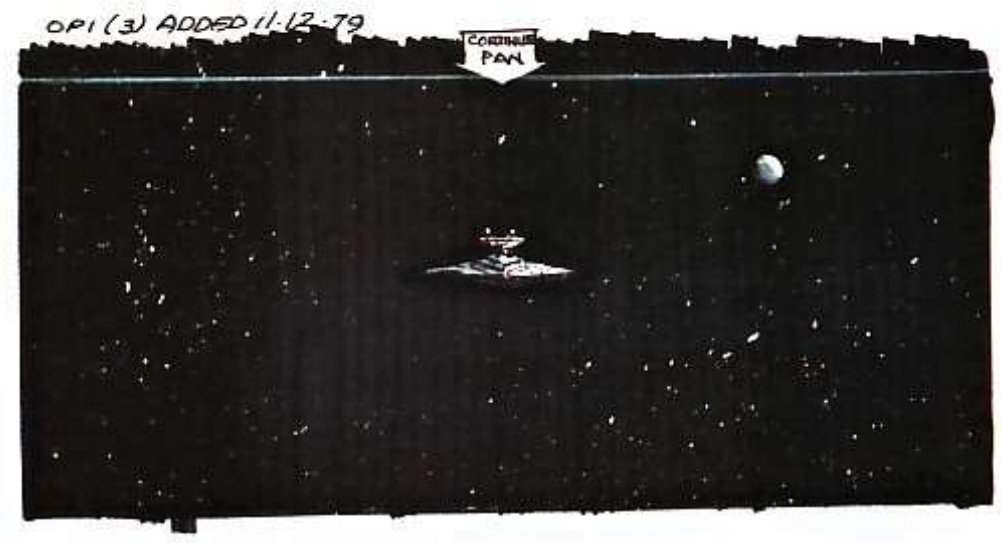
ILM had to hit the ground running on production for *Empire*, forced to work their movie magic while the facility around them was still full of the noise and dust of construction. The soundstage work would, once again, be staged at Elstree Studios in England. A new character would also be introduced, the wise, elfin Jedi master, Yoda.

The major location shoot for *Empire* was Finse, a region of Norway that would serve as the ice planet of Hoth. The freezing location, which in the past had served explorers and military forces training for polar expeditions, required constant vigilance by the crew, who had to contend with frostbite, avalanches, blizzards, whiteouts, and gale force winds.

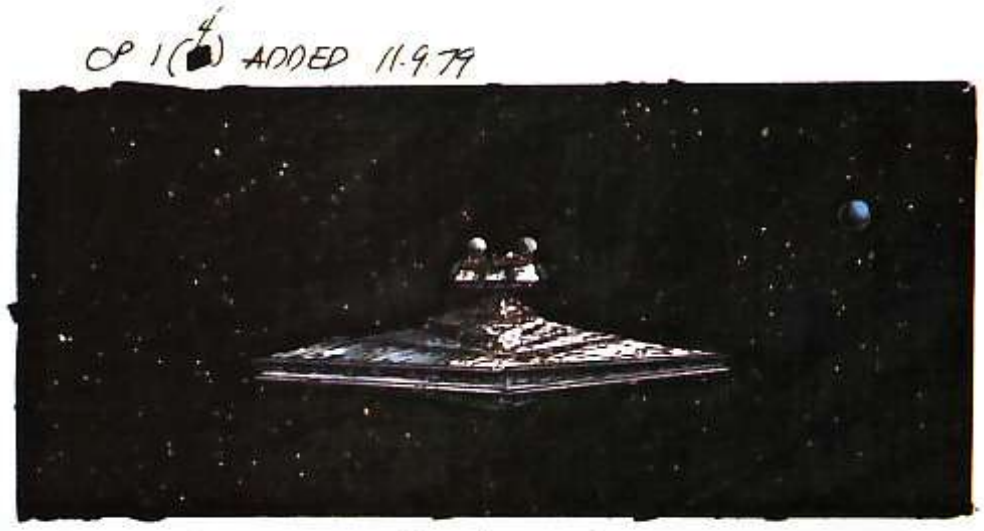
The film opens as Vader, searching for Luke Skywalker, dispatches from his Star Destroyer an Imperial probe robot (nicknamed "probot"). The probot lands on the planet Hoth and is spotted by Skywalker through his special binoculars.

The floating probot, built by model maker Paul Huston and duplicated in England as a full-scale replica, was inspired by an image created by visionary graphic artist Jean "Moebius" Giraud (who gave permission to develop the strange contraption for *Empire*). The eighteen-to twenty-inch-tall probot model was designed with all the hammered steel and rivets of the model shop's "boiler





Ralph McQuarrie concept sketch which became Lucasfilm change-of-address card



Vader's Star Destroyer, storyboards, opening scene (with in-house crawl gag)

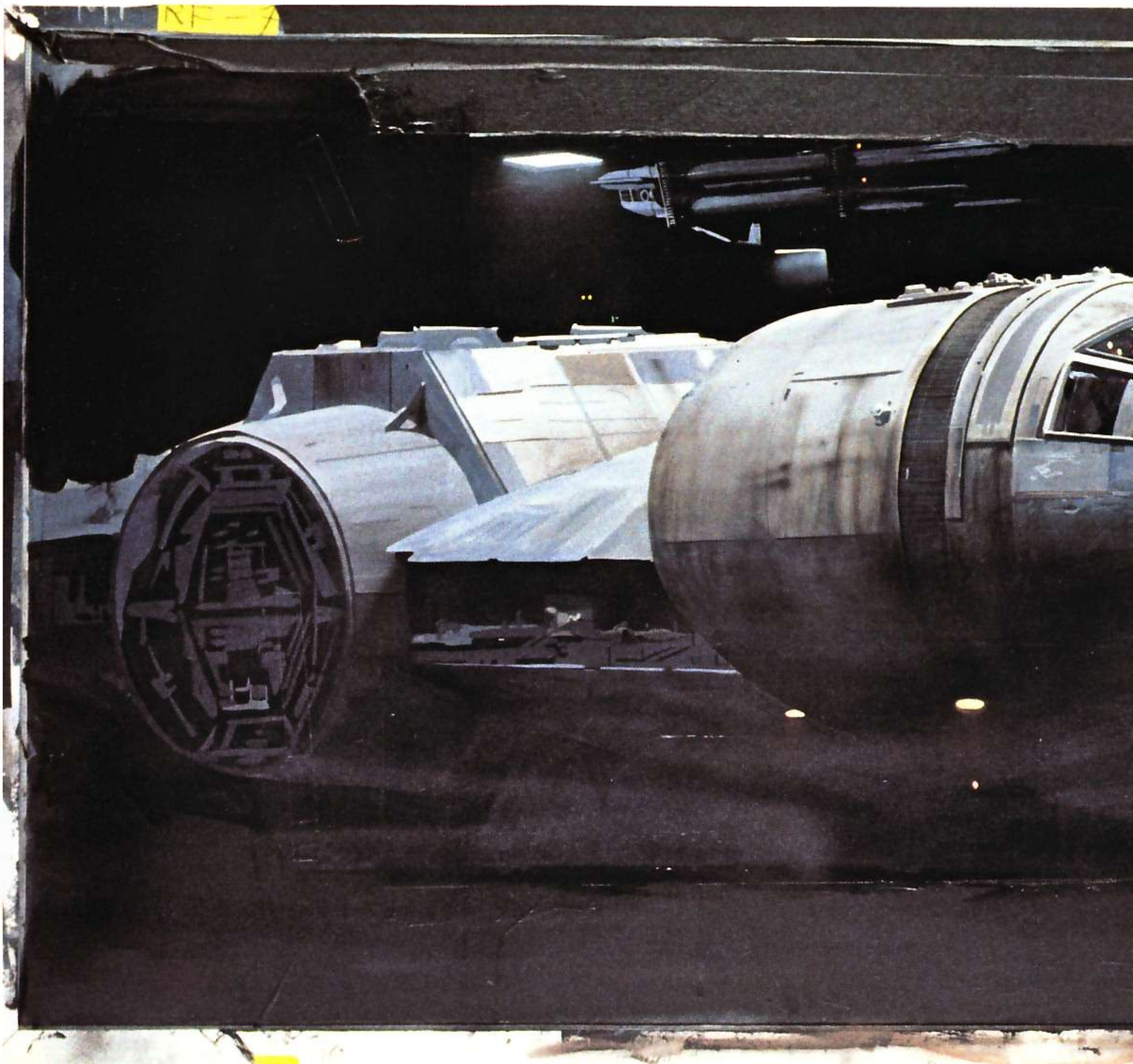
plate" approach to model making. The probot miniature was shot on a motion-control rig as a bluescreen element with the spidery, mechanical legs animated stop-motion.

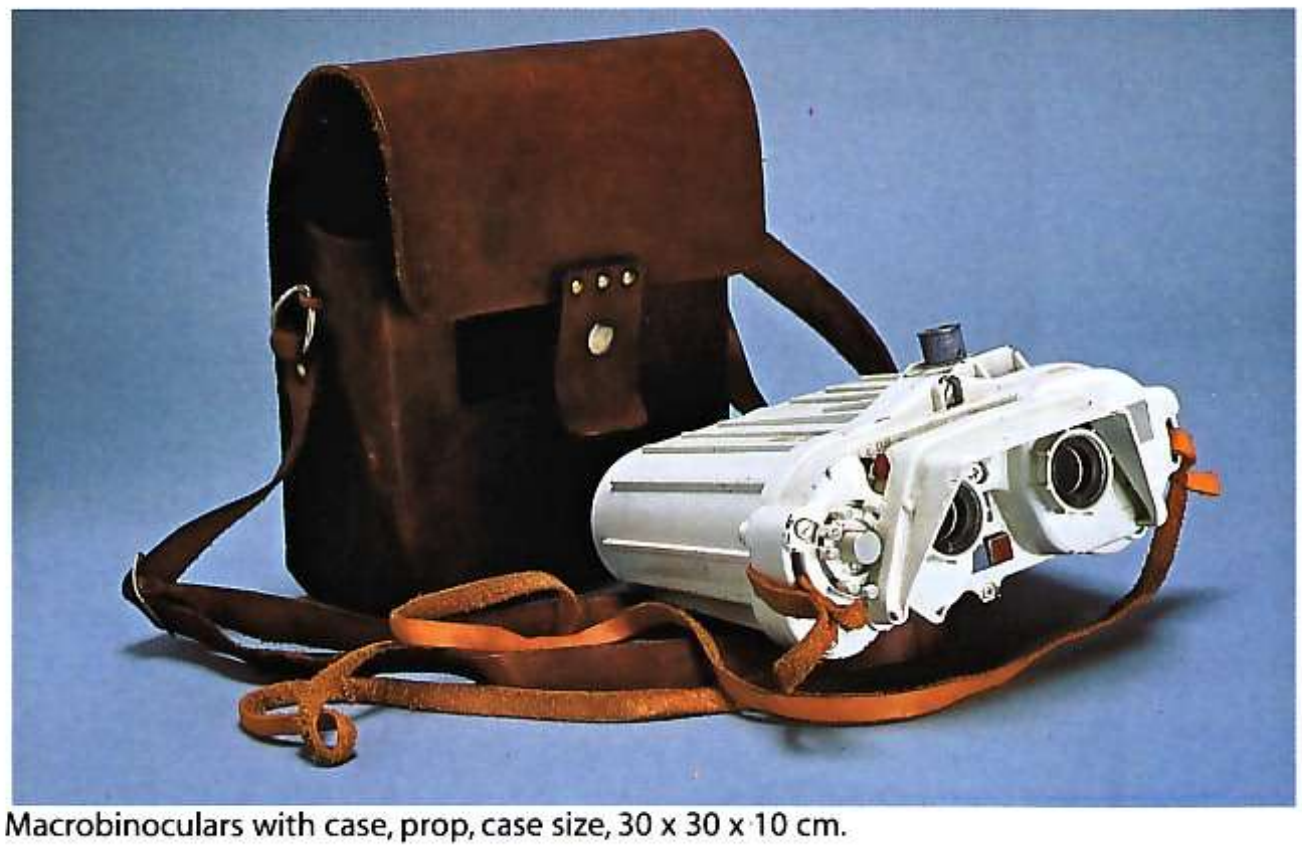
Like Luke's home planet of Tatooine, the ice planet of Hoth is populated by strange creatures such as the tauntauns, which can stand on their two legs and be ridden like horses, and the wampa, an ice creature who captures Luke and hangs him upside down in his icy lair.

The tauntaun design sketches were followed closely in creating a final puppet of the creature and rider for the time-consuming, precise art of stop-motion animation. Many of

Rebel Base on Hoth, production painting

Millennium Falcon in hangar, matte painting, 191 x 84 cm.



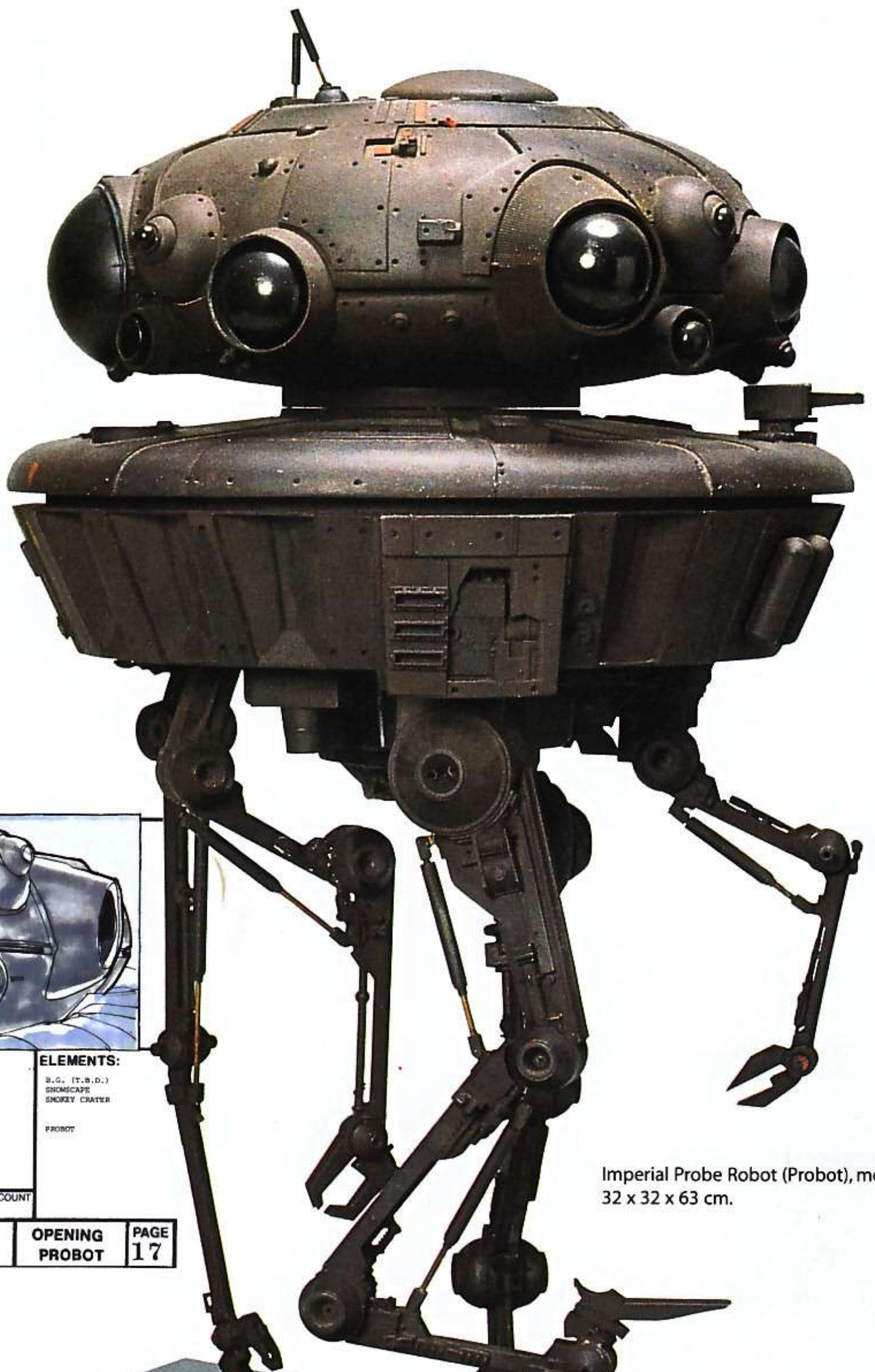


Macrobinoculars with case, prop, case size, 30 x 30 x 10 cm.

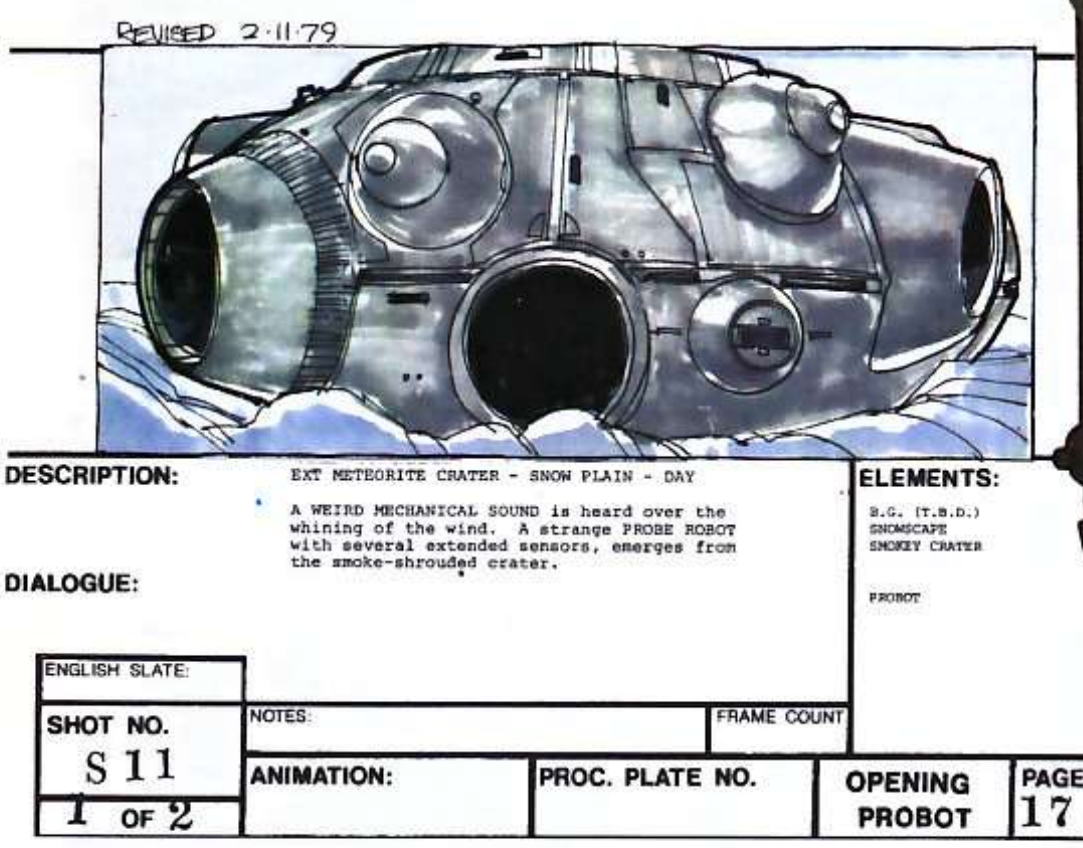
Rebel locator box (Rebel sensor pack), prop, 22 x 14 x 50 cm.

the creatures, even such mechanical contraptions as the four-legged Imperial walkers, were realized as puppets manually manipulated frame by frame. Even though the technique exerts the inevitable wear and tear on puppets (which are usually made of foam latex or similar material), molds of each puppet allow a creature shop to make duplicates as needed. The most important part of a stop-motion puppet is the machined, steel ball-and-socket armature skeleton that, hinged at pivot points, allows the figure to be manipulated by animators.

Probot scouts the Ice Planet, production painting



Imperial Probe Robot (Probot), model, 32 x 32 x 63 cm.



Probot Pod lands on Hoth, storyboard detail

Tauntaun with Luke riding, model, 10 x 28 x 33 cm.

Tauntaun with rider, prototype, 15 x 41 x 34 cm.

Tauntaun with rider, production sketches

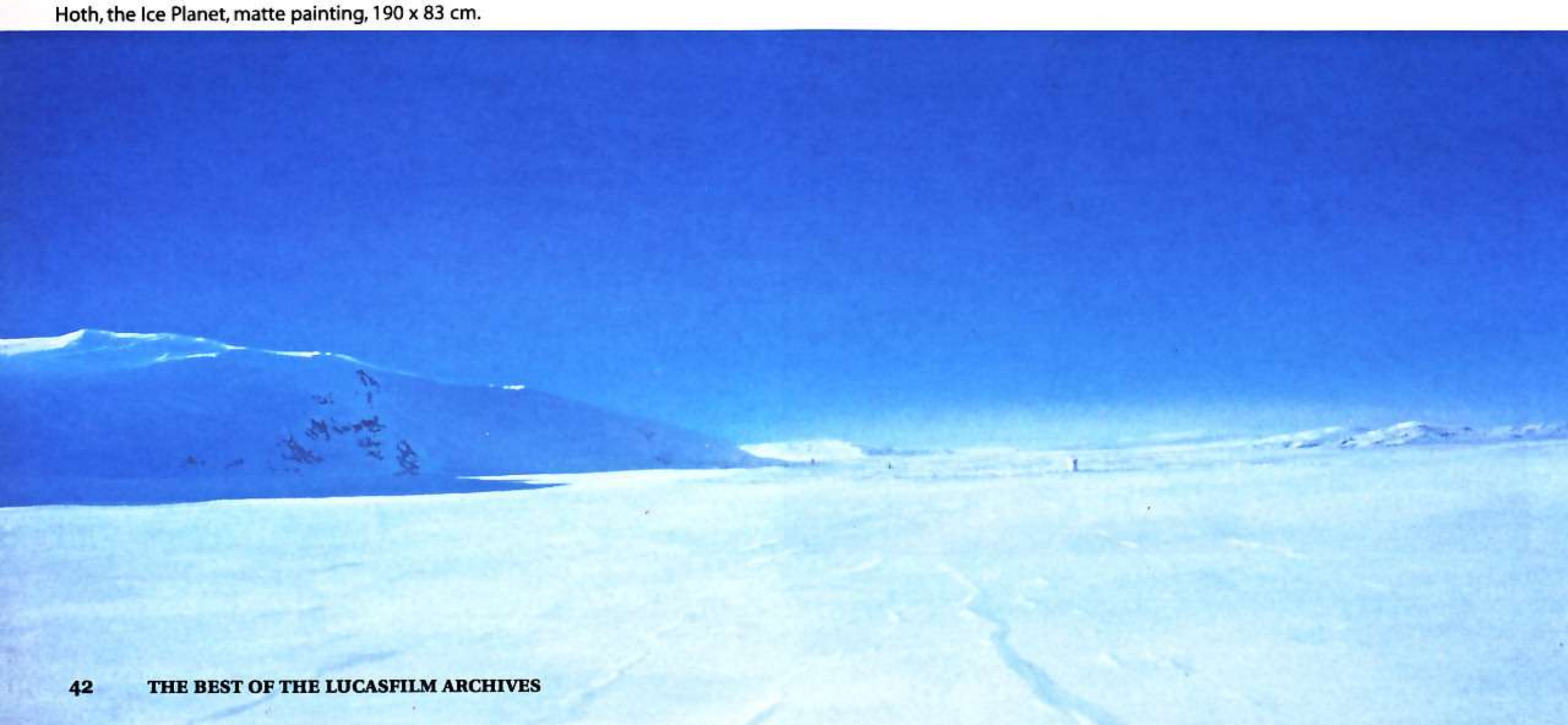
Unlike the time-consuming demands of a stop-motion figure, the wampa, created as a hand puppet made by Jon Berg and animated by Phil Tippett, was on screen for less than a second. Other than that close-up, in which the monster roars out of the snow and swats down Skywalker, the wampa never again shows its face (although audiences hear the monster's terrifying roar and see the hairy arm sliced off by Luke's lightsaber).

After Luke is rescued by Han Solo, aided by a locator box tracking device, the young Rebel leader is tended to by 2-1B, a medical droid.

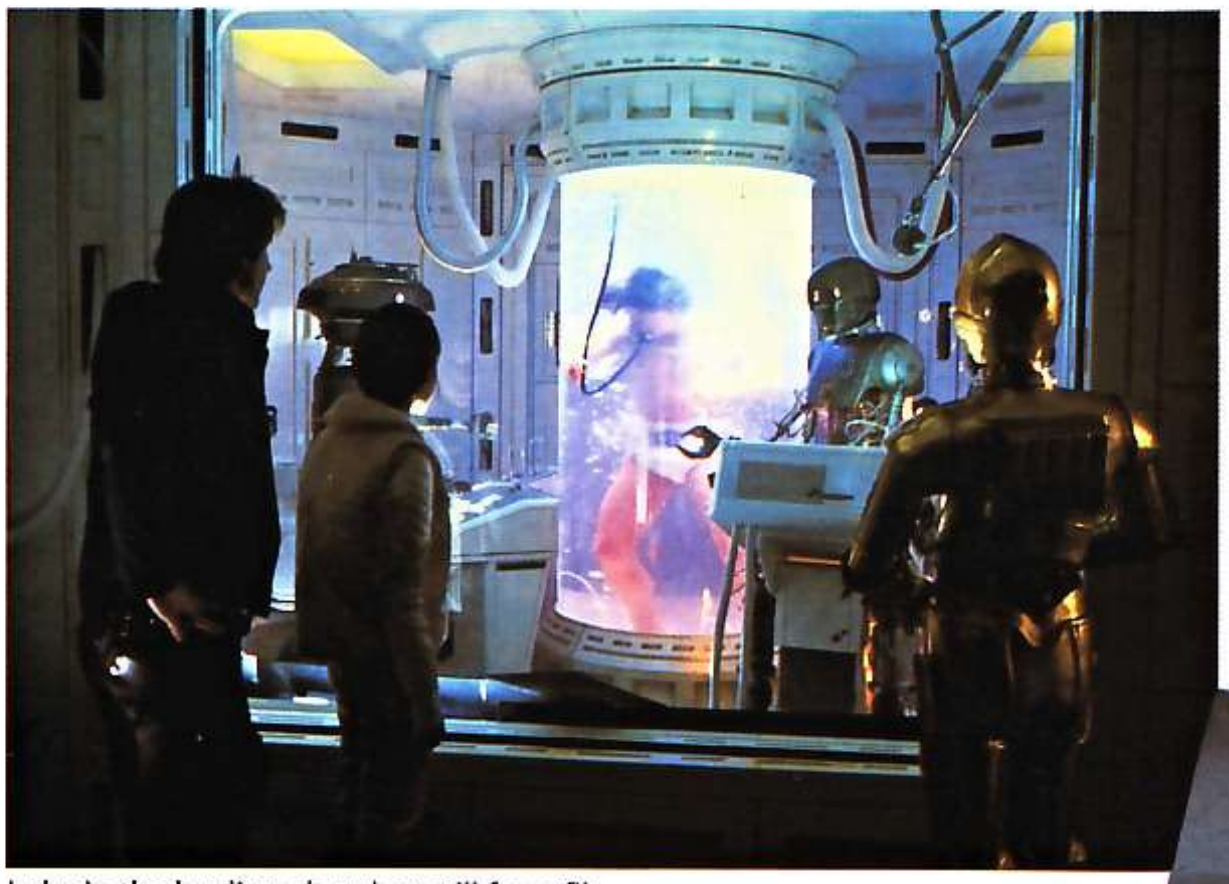
Luke in the healing chamber, production painting

Wampa Snow Creature, puppet, 51 x 31 x 31 cm.

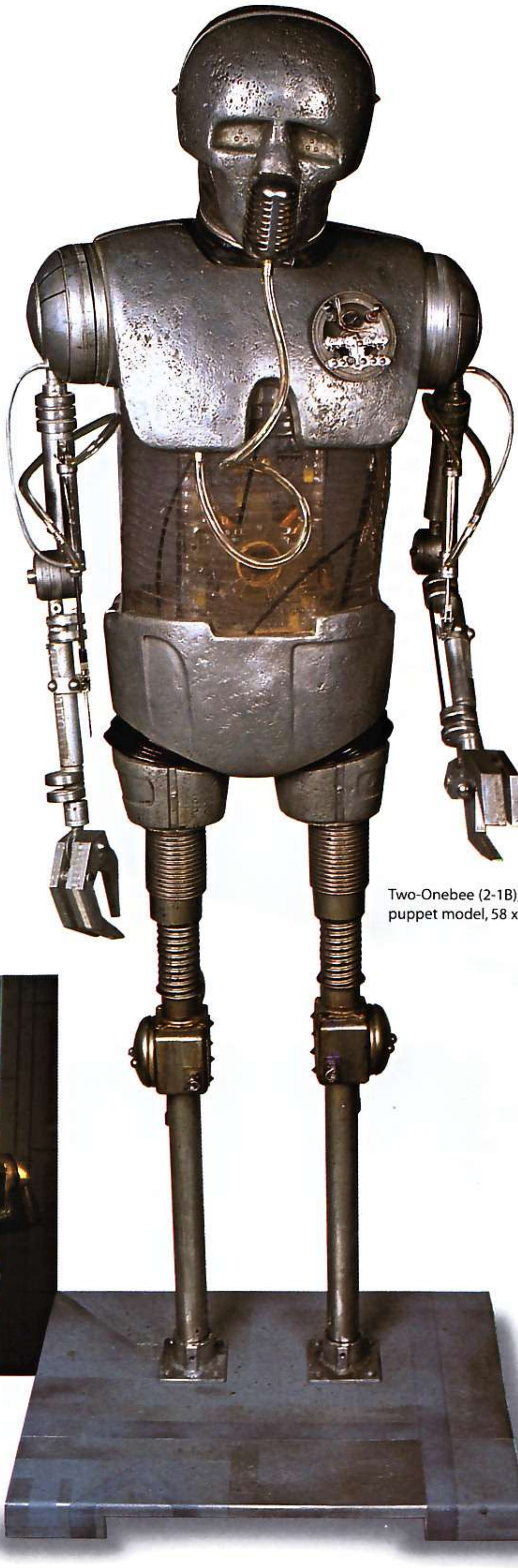
Hoth, the Ice Planet, matte painting, 190 x 83 cm.



Luke trapped in Wampa's cave, storyboards
(with Luke reaching for lightsaber)



Luke in the healing chamber, still from film



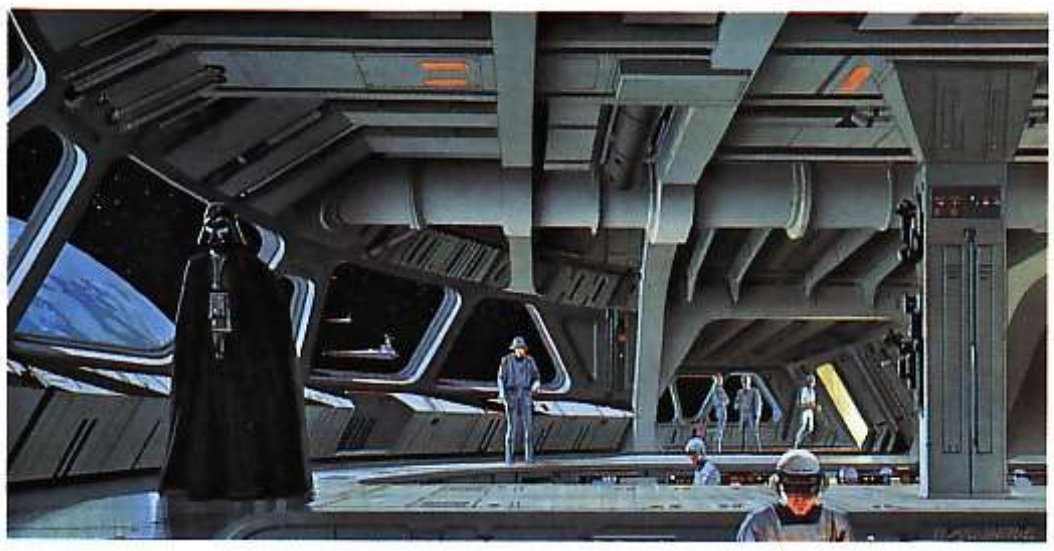
Two-Onebee (2-1B), medical droid,
puppet model, 58 x 30 x 178 cm.

VADER'S STAR DESTROYER

The Imperial Star Destroyer *Executor*, the flagship of Darth Vader, was conceived as eleven times the size of the original Star Destroyer of *Star Wars*. (For a reference, the conning tower that rises from the *Executor* was supposed to be as big as the original Destroyer's conning tower.) The interior action on the *Executor* was often shot as an effect, such as the ship's matte-painted bridge where live action of Vader and his crew were optically composited.

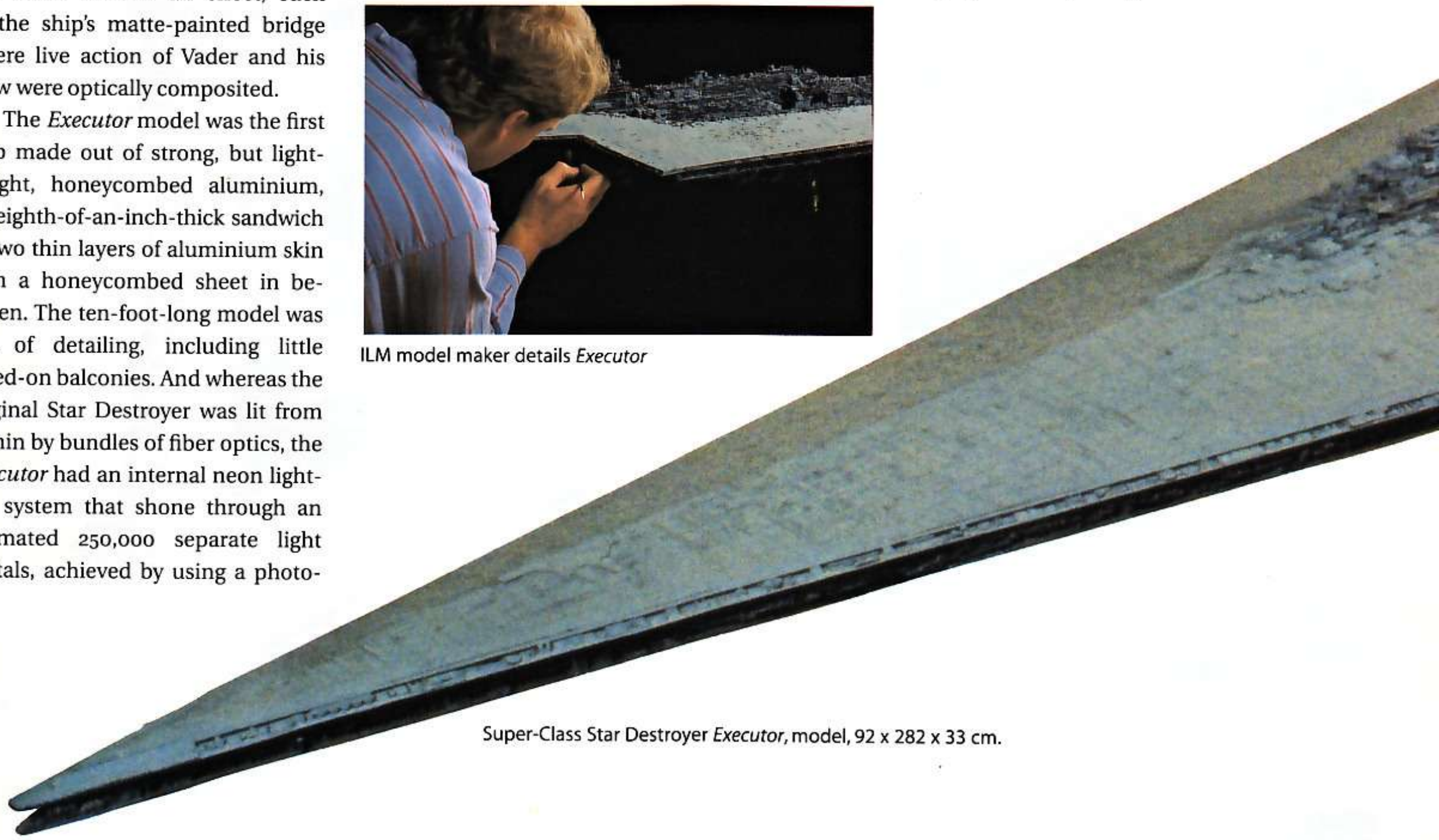
The *Executor* model was the first ship made out of strong, but lightweight, honeycombed aluminium, an eighth-of-an-inch-thick sandwich of two thin layers of aluminium skin with a honeycombed sheet in between. The ten-foot-long model was full of detailing, including little glued-on balconies. And whereas the original Star Destroyer was lit from within by bundles of fiber optics, the *Executor* had an internal neon lighting system that shone through an estimated 250,000 separate light portals, achieved by using a photographic etching process to create pinprick holes through brass plates.

The flagship was originally conceived for use in a few establishing shots, but once the production team saw the completed, ten-foot model, new storyboards were prepared to accommodate additional *Executor* shots.

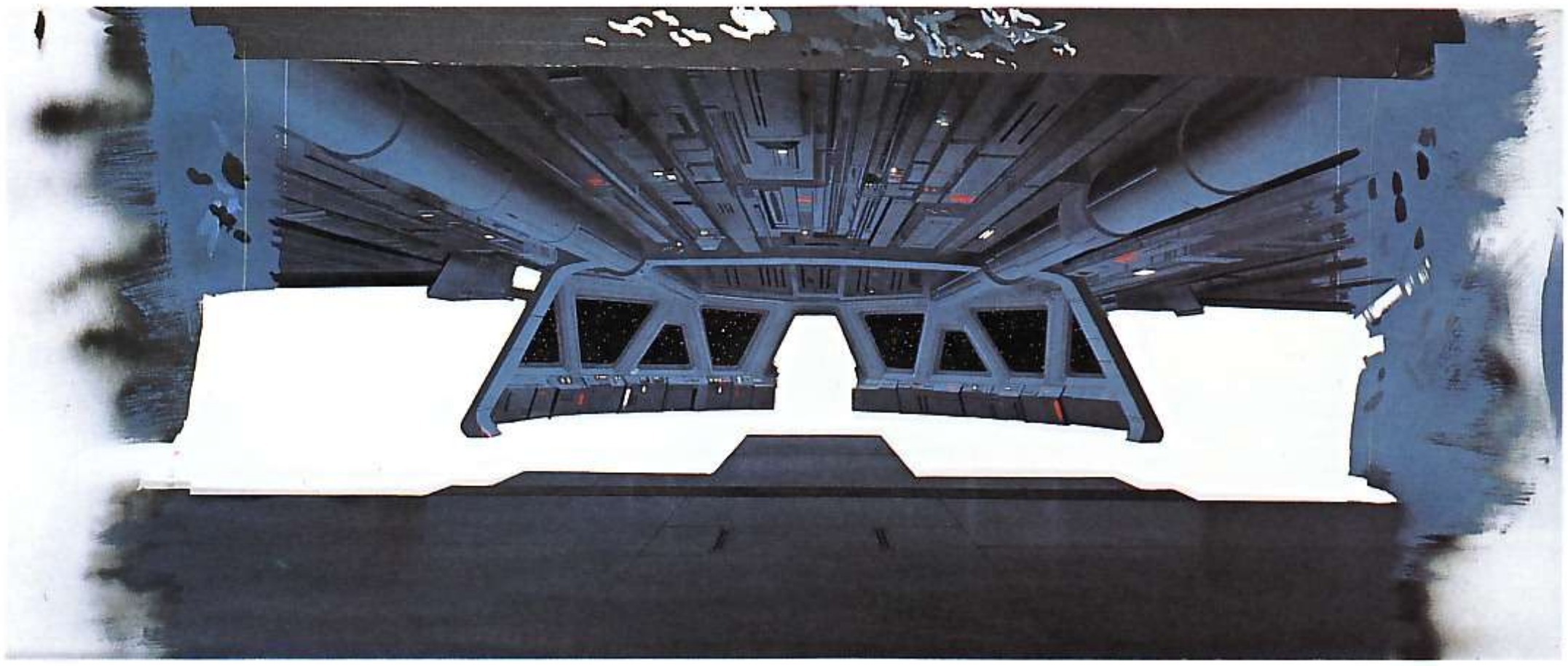


Vader walks the bridge, production painting

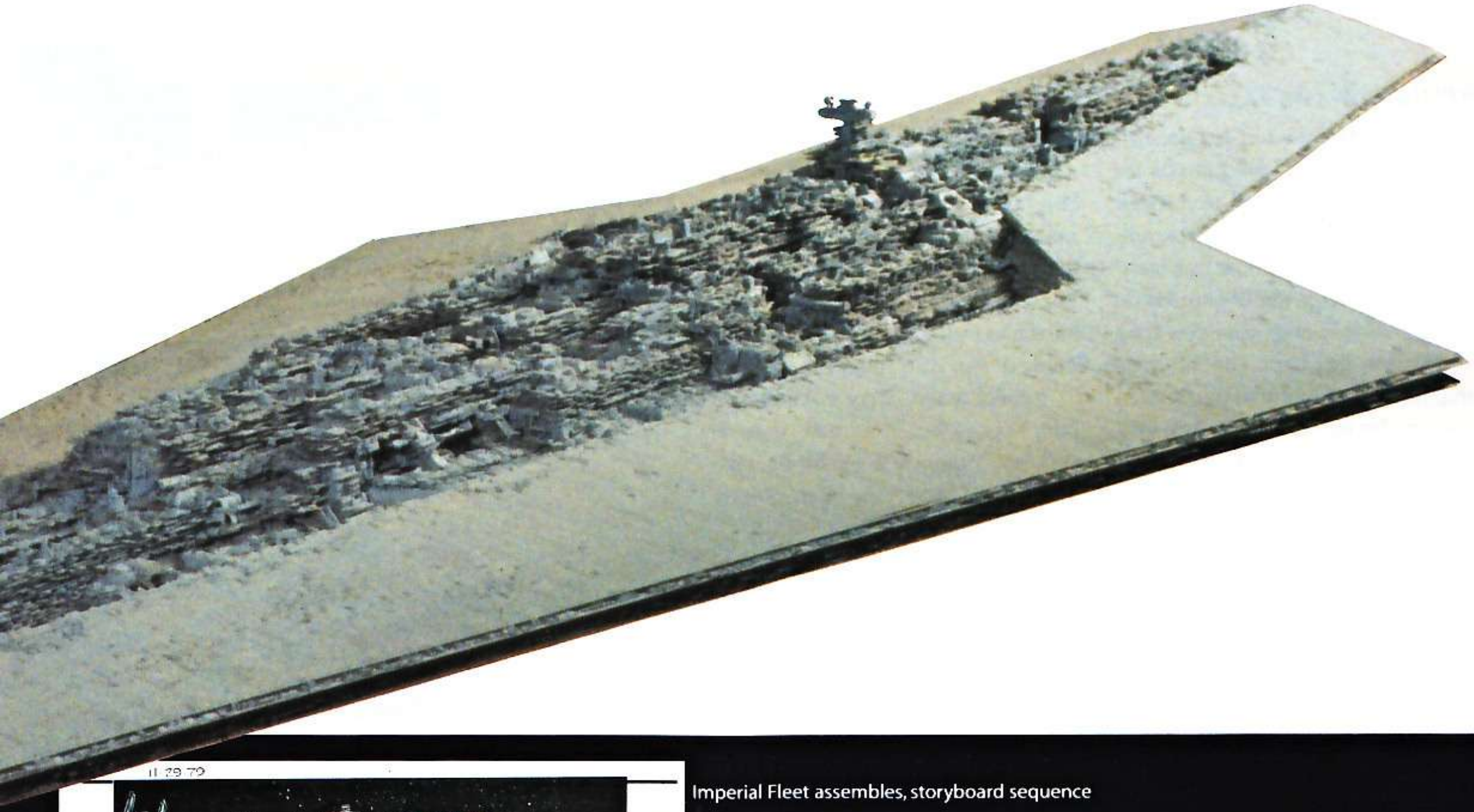
ILM model maker details *Executor*



Super-Class Star Destroyer *Executor*, model, 92 x 282 x 33 cm.



Executor bridge, matte painting, 191 x 84 cm.



Imperial Fleet assembles, storyboard sequence

DESCRIPTION:

EXT. SPACE - IMPERIAL FLEET

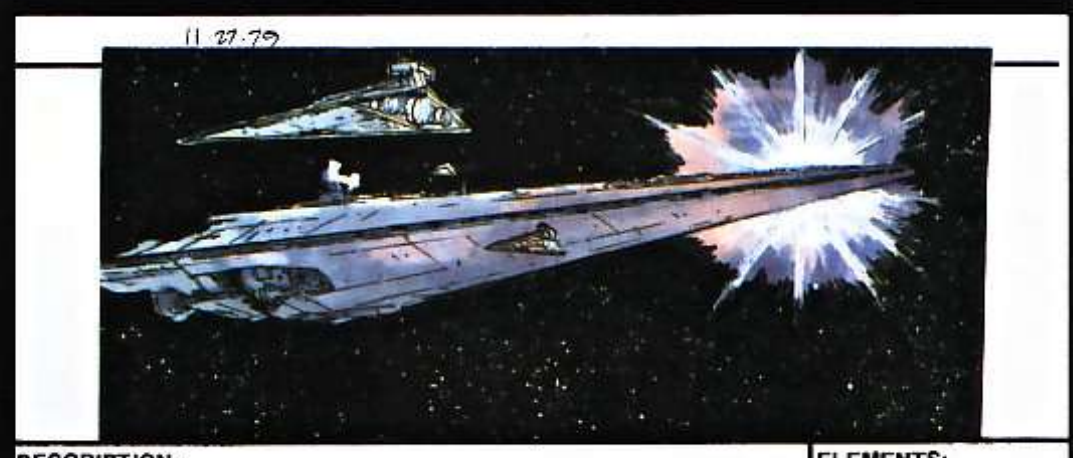
Fleet assembles.

DIALOGUE:

ELEMENTS:

3 Stardestroyers & Lights
3 Tie Ships
Stars

SCENE NO. 54
SHOT NO. VH 1
OF
NOTES
FRAME COUNT 183
ANIMATION:
PROC. PLATE NO.
VADER - HOTH
PAGE 43



DESCRIPTION:

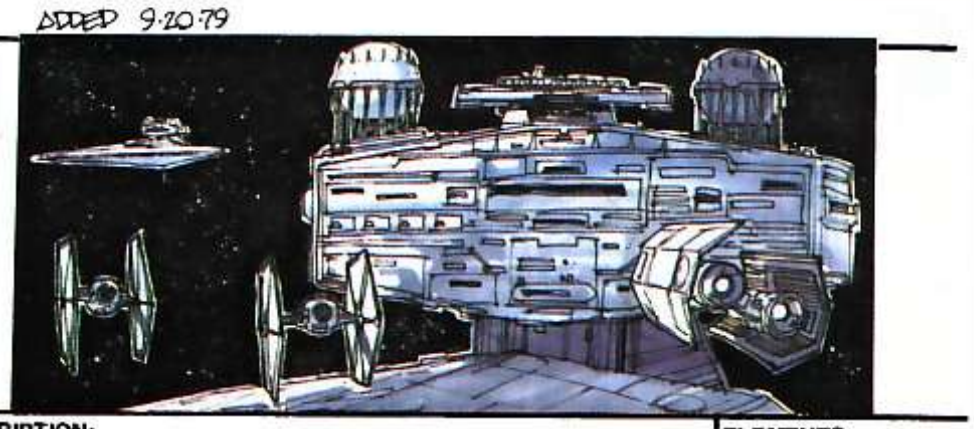
EXT. SPACE - IMPERIAL FLEET.

Vader's huge Stardestroyer eclipses a sun as the fleet assembles.

DIALOGUE:

ELEMENTS:

Vader's Stardestroyer
3 Stardestroyers & Engine
Ties - If Possible
Stars
Sun



DESCRIPTION:

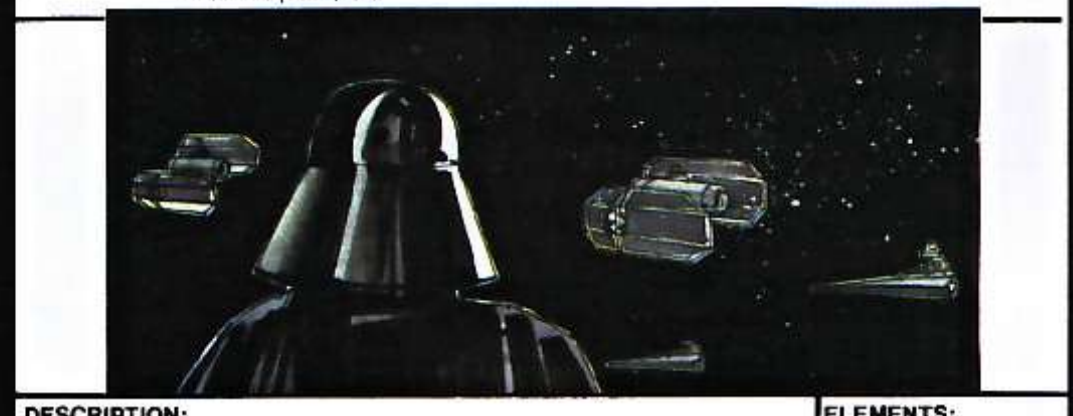
EXT SPACE - IMPERIAL FLEET

Fleet assembles. A giant shadow crosses the conning tower of one of the Stardestroyers.

DIALOGUE:

ELEMENTS:

2 Stardestroyers
3 Tie Ships
Stars



DESCRIPTION:

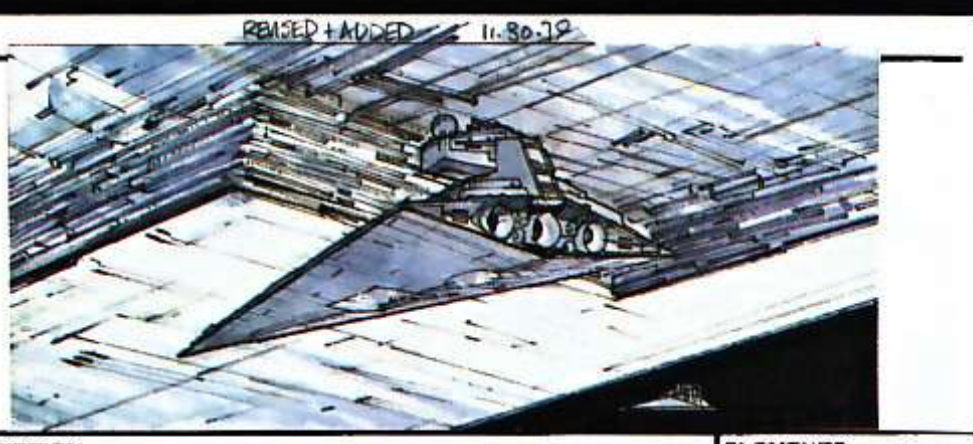
INT. BRIDGE - MAIN CONTROL DECK - VADER'S STARDESTROYER

CU of Vader looking out the window at the Imperial fleet.

DIALOGUE:

ELEMENTS:

Eng. F.G.
Stardestroyer No. 1
Stardestroyer No. 2
Stardestroyer No. 3
Chili Tie No. 1
Chili Tie No. 2



DESCRIPTION:

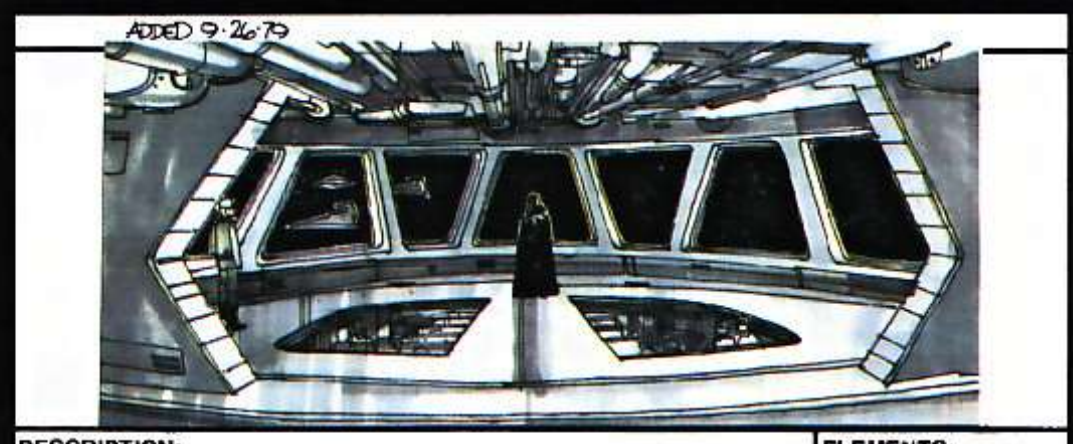
EXT. IMPERIAL FLEET - SPACE

The fleet assembles.

DIALOGUE:

ELEMENTS:

Vader's Stardestroyer & Lights
2 Stardestroyers & Engine
Stars



DESCRIPTION:

INT. BRIDGE - MAIN CONTROL DECK - VADER'S STARDESTROYER

Vader at bridge window.

DIALOGUE:

ELEMENTS:

Stardestroyer No. 1
Stardestroyer No. 2
Stardestroyer No. 3

Matte Painting - Ceiling
Stars

RETURN OF THE FALCON

Han Solo's *Millennium Falcon*, half of which had been built full-size for the first film's live-action sequences, was constructed as a complete, full-scale ship for *Empire*. Built by a manufacturer in Wales, the *Empire Falcon* was a multiton ship sixty feet long and sixteen feet high. The full-scale ship had to be separated into sixteen sections for transportation and final assembly at the *Star Wars* production facility at Elstree Studios outside London, where the principal photography was staged (as was the first episode).

Several days before the *Falcon* made its trip, the soundstage (at which Stanley Kubrick was then shooting *The Shining*) burned during a mysterious fire. Twentieth Century Fox, however, came to the rescue, remodeling the soundstage to even better accommodate the new *Falcon*. The stage, which had previously been known as the "Third Stage," was later dubbed "*Star Wars* Stage."

Model maker Mike Fulmer also built several scaled models, from a two-foot *Falcon* to a miniature several inches long. The tiny *Falcon* would be attached to the ten-foot-long *Executor* model for a shot in which Han Solo, in a daring move to avoid sensor detection, hides his ship on the side of the Imperial Destroyer.

Millennium Falcon in Hothian hangar, production painting

Miniature *Millennium Falcon*, model, 15 x 20 x 3 cm.

Millennium Falcon, scale model,
122 x 173 x 61 cm.

THE IMPERIAL WALKERS

Richard Edlund, visual effects supervisor for *Empire*, once described effects work as a double-edged sword that can cut both ways: the final result has to be perfect because a single mistake can destroy the illusion of the entire shot.

A complex, ten-minute scene of Rebels battling Imperial Walkers (or All Terrain Armored Transport, AT-ATs) on a snowy Hothian battlefield required absolute perfection to maintain its realism. The white, snowy background would be especially unforgiving if multiple-element shots (which often required live action, miniatures, and models) were not perfectly composited in opticals. The *Empire* demands necessitated new technology, so Edlund and his crew developed "the Quad," a breakthrough, computer-driven optical com positing printer with a custom-designed lens capable of producing the sharpest images then possible.

The creation of the Imperial Walkers was the result of innovative ILM preproduction design work. Originally, the Imperial attackers were to take the form of Norwegian army tanks shot on location. But designer Joe Johnston developed the visual look for the walkers as four-legged mechanical monsters that would be created by Jon Berg and Tom St. Amand as puppet models and filmed stop-motion.

The stop-motion work for the walkers required precision detail by the animators. Since the walkers were

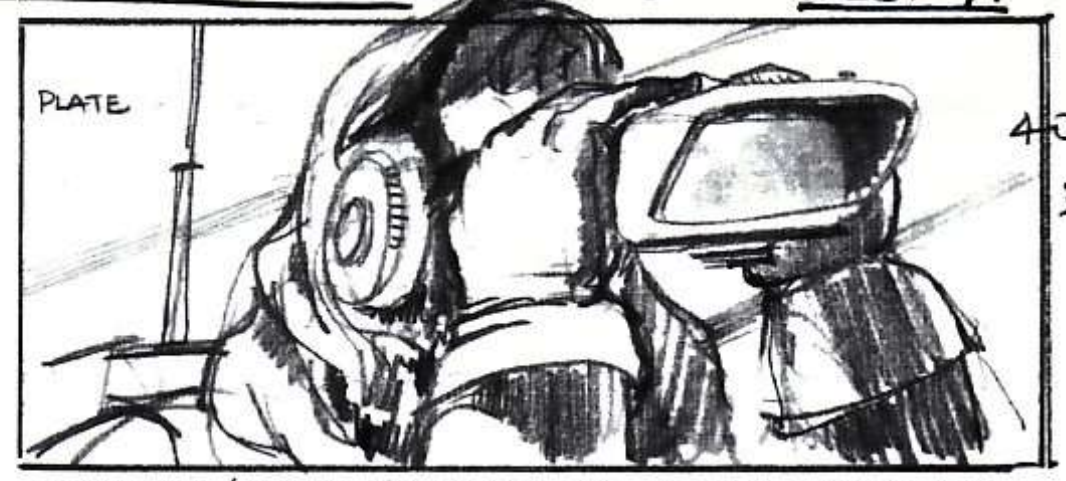
Imperial Walkers attack Tauntaun rider, production painting

Walkers attack, still from film

Stop-motion animation, Jon Berg animating Imperial Walker model from below planet Hoth set, production photo

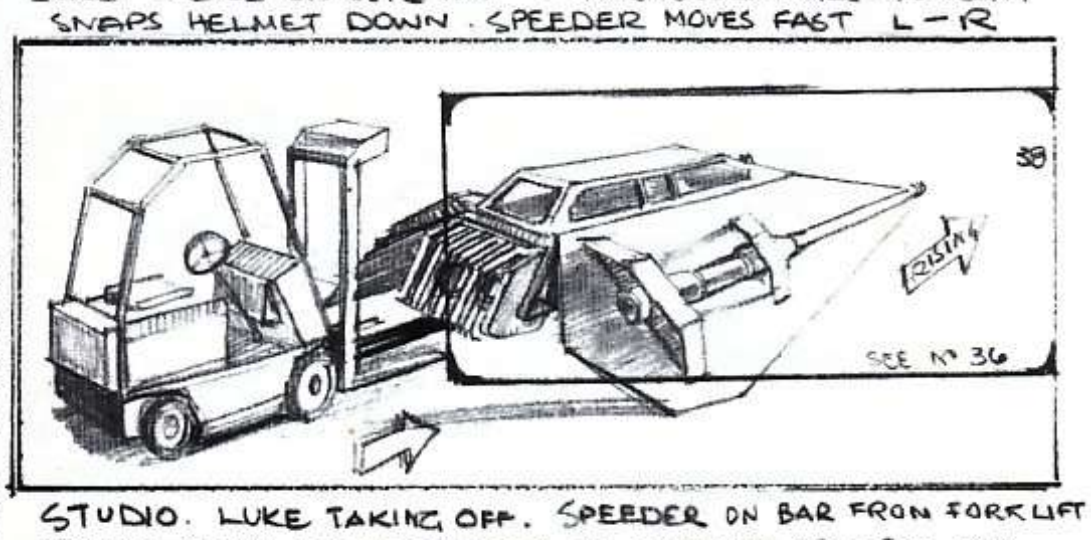
Sc 40. ICE PLAIN BATTLEFIELD P. 34 SHEET 7.

STUDIO. CLOSE ON LUKE SETTING OFF LUKE' WE'RE ON OUR WAY" — ACKNOWLEDGES HIS TEAM SNAPS HELMET DOWN. SPEEDER MOVES FAST L-R

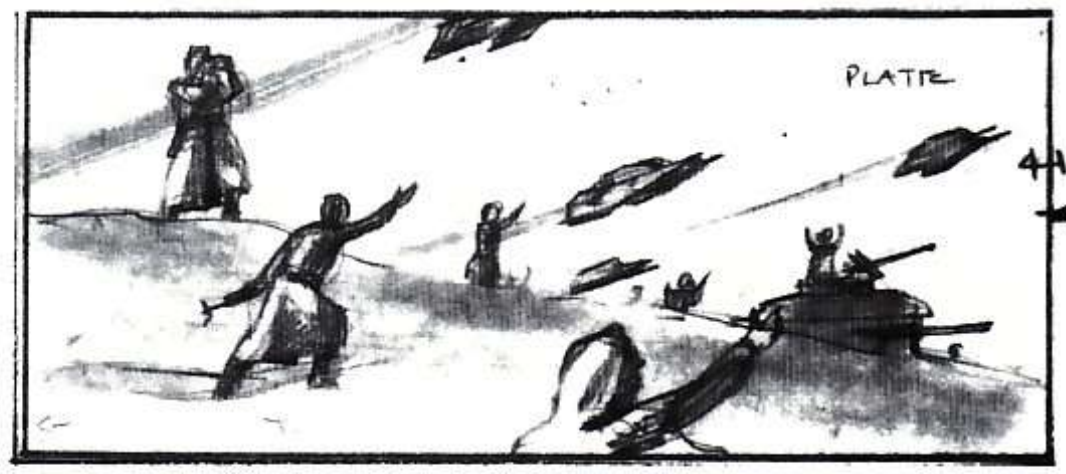


STUDIO / BLUE BACKING TO MATCH FOLLOWING SHOT. LIEUT. RAISES ELECTROBINOCULARS

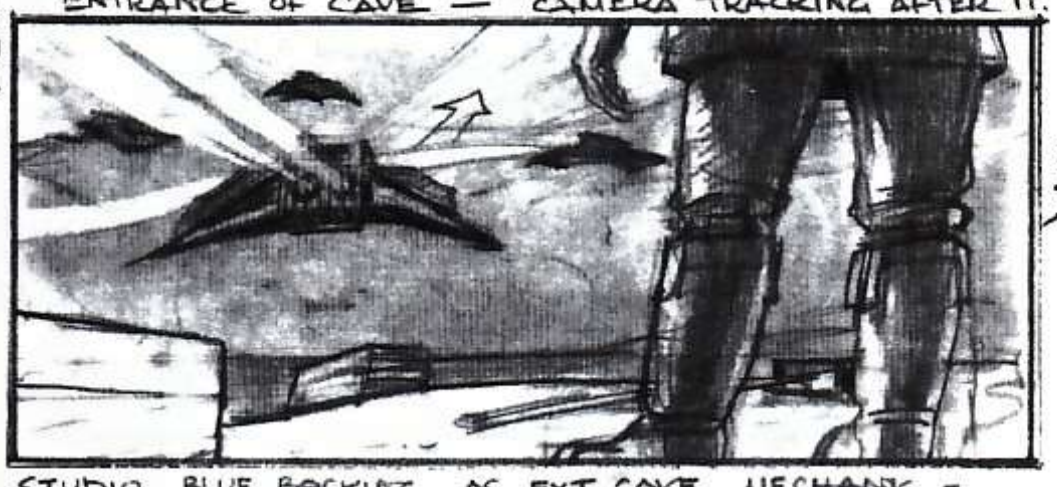
REVISED RUNNING ORDER 4 AUG 78



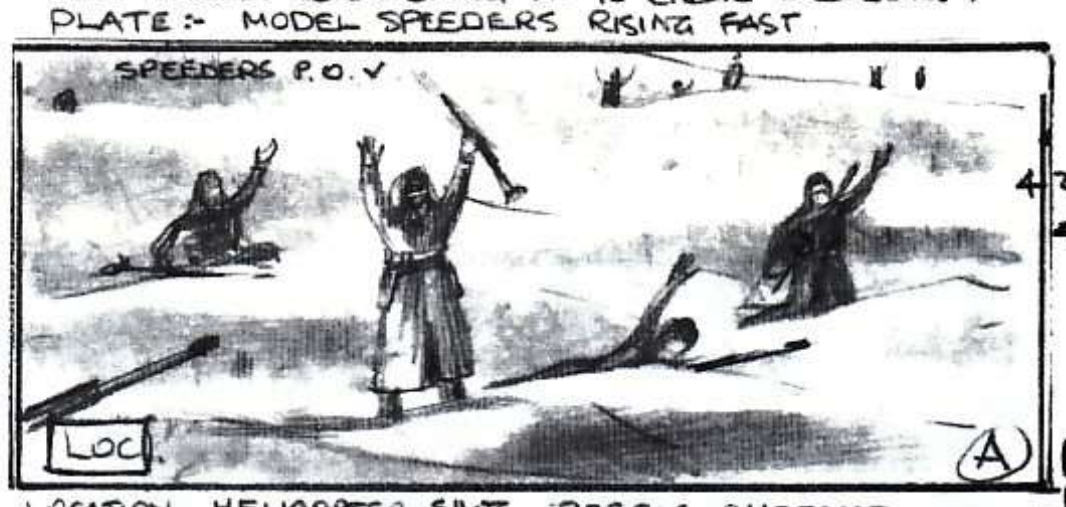
STUDIO. LUKE TAKING OFF. SPEEDER ON BAR FROM FORKLIFT TRUCK. WHICH RAISES SPEEDER AS IT TRACKS TOWARDS THE ENTRANCE OF CAVE — CAMERA TRACKING AFTER IT.



STUDIO. BLUE BACKING F/G SNOW BANK / GUN TOWER PLUS REBELS SCRAMBLING UP TO CHEER SPEEDERS. PLATE :- MODEL SPEEDERS RISING FAST



STUDIO. BLUE BACKING. AS EXT CAVE. MECHANIC - F/G LITTER, STUDIO./— PLATE = MODEL SPEEDERS BACKING OF ICE PLAIN —/EXHAUST ?)



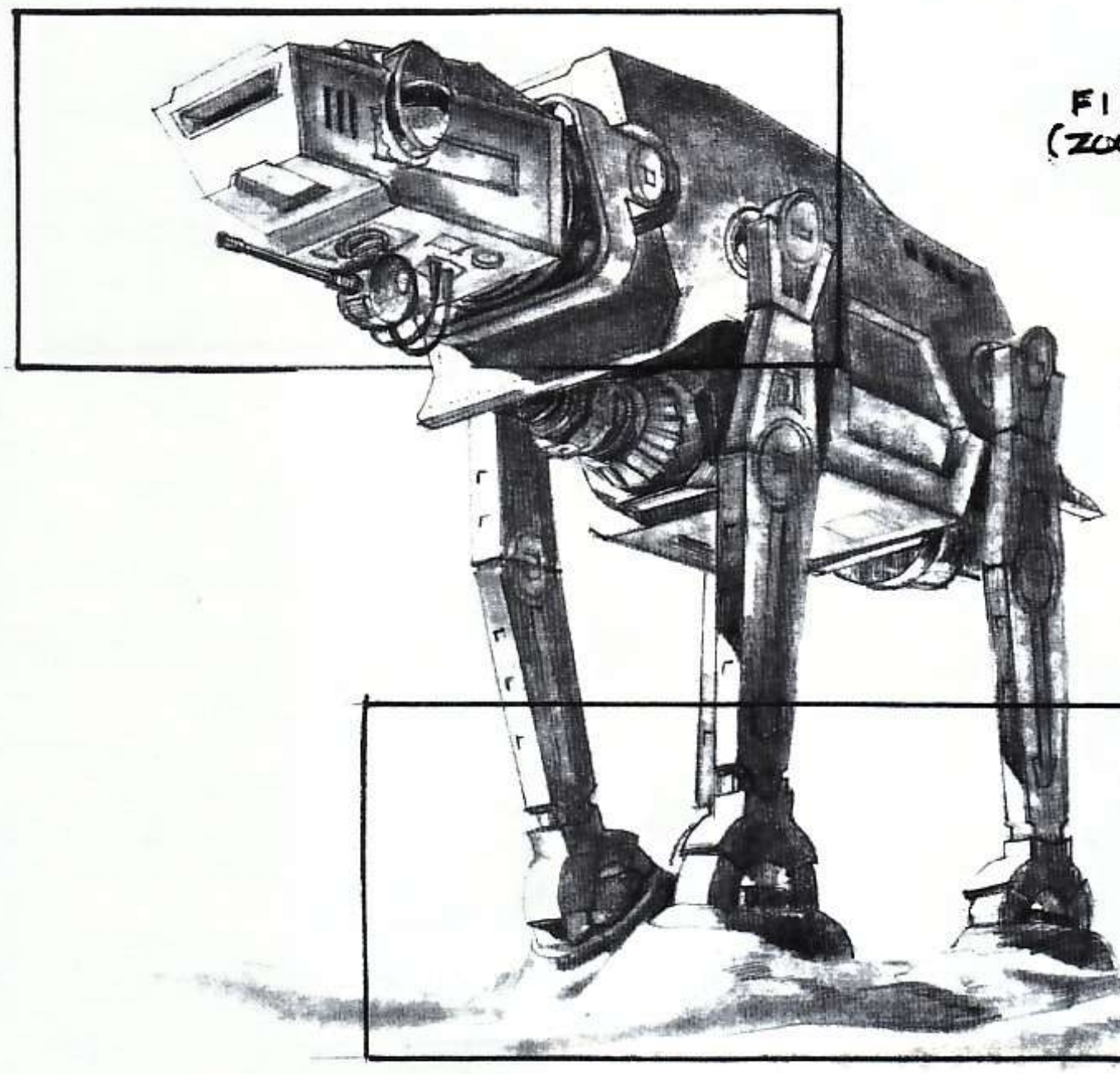
LOCATION HELICOPTER SHOT - REBELS CHEERING. — CAMERA UNDER CRANK + SKIP FRAME CUTTING TO GIVE SPEEDERS MAXIMUM ACCELERATION AND

IVOR

Ice plain battlefield, storyboards

Sc 44. INT IMPERIAL WALKER. P. 35-36. SHEET 1.

REVISED RUNNING ORDER. 11. AUG 78



FINISH (ZOOMING IN)

QUICK PAN UP.

START

Sc 44. ALTERNATIVE START. BEGIN CLOSE ON FEET OF WALKER MODEL / PAN UP QUICKLY TO HEAD, SHOOTING UP, TO ESTABLISH INT. / OR, BEGIN →

IVOR

giant metallic machines equipped with laser weapons and metal feet capable of crushing anything in their lumbering paths, the animators had to give weight to their puppets.

The Imperial Walkers were animated on a special miniature ILM set complete with a painted, cloudy blue sky backing and a battlefield dressed with a baking soda snowfield. In order not to disturb the baking soda effect, key animator Jon Berg had to do his work perched on supports or from trapdoors built into the set. The time-consuming process required Berg and other animators to place steel pointers around an object to mark its starting position. After moving the animated parts to a new position the artist would remove the pointers, and the crew would determine if the snowfield had been disturbed. An animation video recorder also tracked the frame-by-frame

Rebel Speeder attacks Imperial Walker, production painting

Rebel Snowspeeder and Imperial Walkers (AT-ATs),
models, left: 12 x 19 x 4 cm.;
middle: 24 x 53 x 48 cm.;
right: 2 x 6 x 5 cm.

Imperial Walkers (AT-ATs), models, 24 x 56 x 48 cm.

Imperial Walker (AT-AT), model, 61 x 163 x 107 cm.

Luke in flight gear, puppet, 11 x 33 x 11 cm.

Fallen Imperial Walker (with Rebel Speeders), production painting

Rebel Snowspeeder, model, 47 x 55 x 15 cm.

Rebel Snowspeeder, model, 46 x 53 x 15 cm.

Luke Skywalker (Mark Hamill) ready for Snowspeeder action

Imperial Troops, production illustration

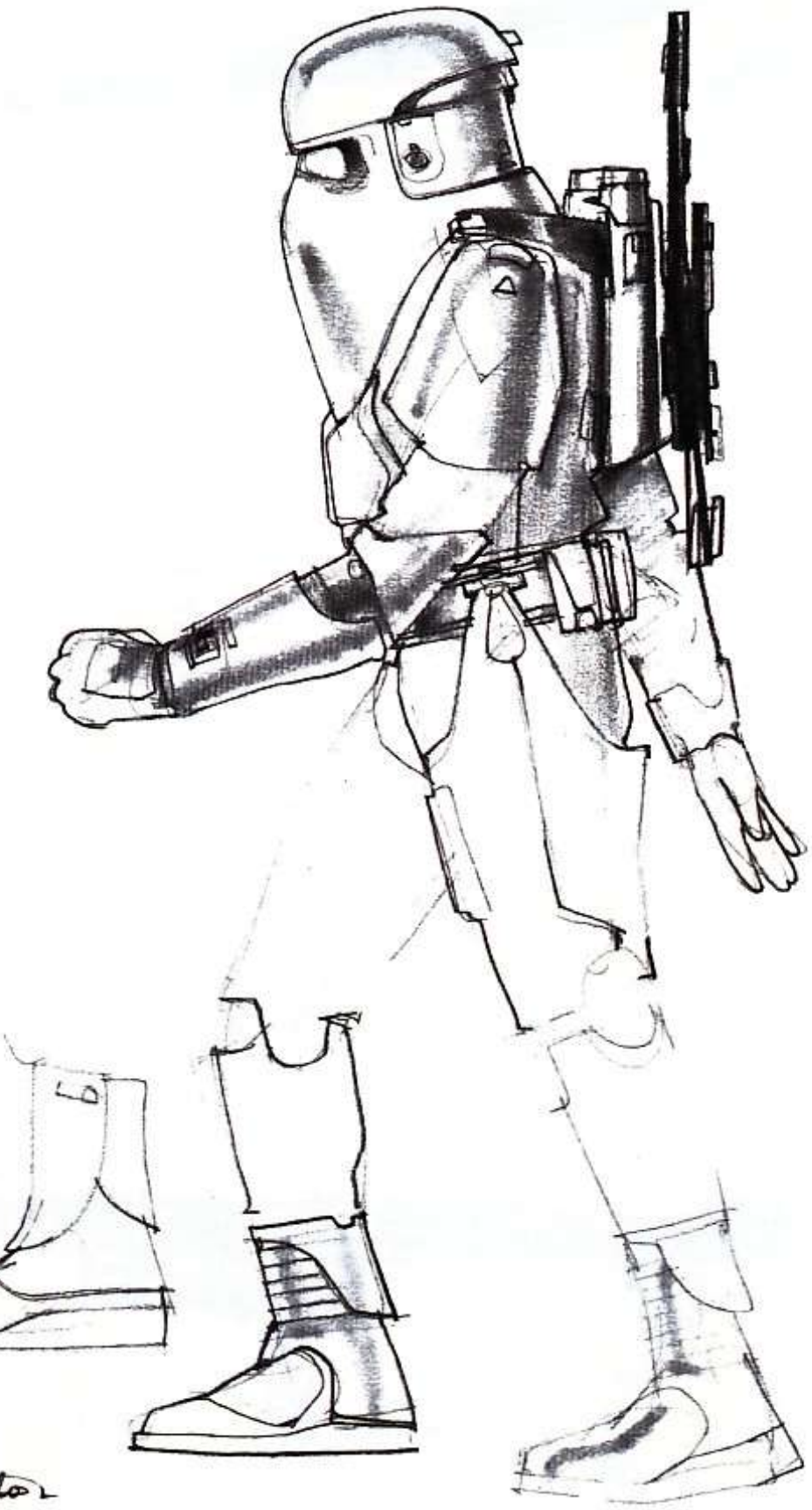
Rebel Snowspeeder (large scale with puppet), model, 71 x 81 x 20 cm.

Imperial Walker (AT-AT), early concept design

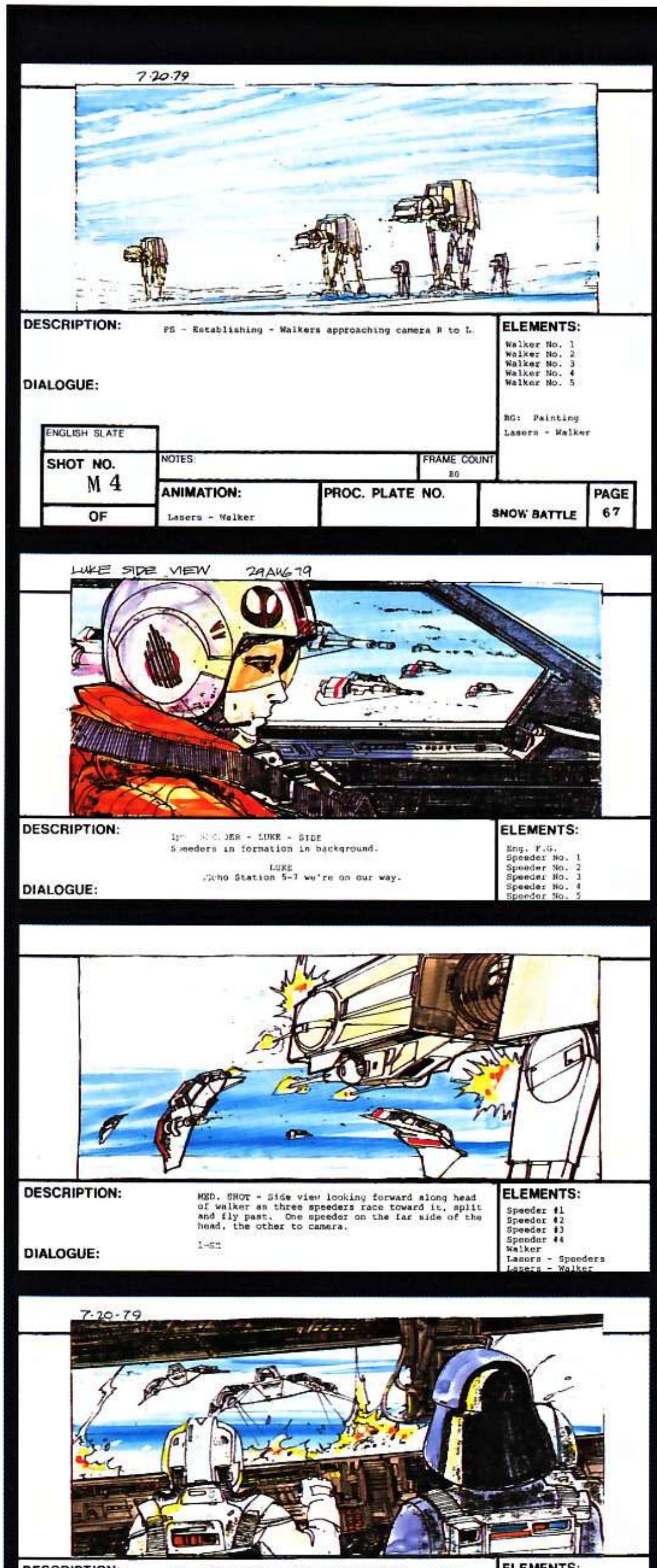
progress so the crew could check if their work was translating into realistic movement when filmed out. When it was decided the scene was ready for film, the motion-control camera would expose a single frame of film, a process repeated twenty-three additional times to produce one second of screentime. Additional effects, such as frame-by-frame bolts of walker fire, would be added later in the creative process. The stop-motion animation and filming for the walkers required a fifteen-month work schedule.

Storyboards were key to plotting all the animation, live action, and effects for the battle sequence. The sequence boarded here, in which a Rebel speeder wraps a cable around the mechanical legs of a walker, was particularly complex, requiring intercutting from live-action views of the speeder cockpits (with additional elements composited in the window) to detailed looks at the stop-motion animation.

The boards for this sequence are masterpieces of storyboard art. The storyboard team for *Empire* took six months to go from draft images to finished boards. More than a mere guide, storyboards are a literal blueprint for how a scene should look.

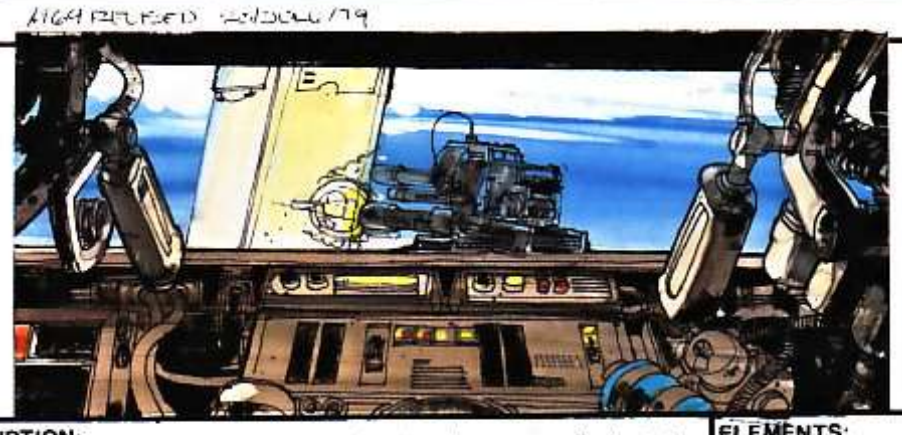


Imperial Snowtrooper, production sketch



Darth Vader and Snowtroopers, still from film

Rebel Snowspeeder trips up Imperial Walker, storyboard sequence



DESCRIPTION: INT. COCKPIT - GUNNER'S POV. Harpoon rope flashes out toward walker legs.

DIALOGUE:

ELEMENTS:
Eng. F.G.
Walker Leg
Harpoon & Cable EFX

B.G.: (T.B.D.)

DESCRIPTION: INT. COCKPIT - WEDGE - FRONT. Walker legs go by.

WEDGE
One more pass, come on.

DIALOGUE:

ELEMENTS:
Eng. F.G.
Walker legs

B.G.: (T.B.D.)

DESCRIPTION: MEDIUM FULL SHOT - Harpoon and cable over camera and impacts on giant foot.

DIALOGUE:

ELEMENTS:
Walker Foot
Harpoon & Cable

B.G.: (T.B.D.)

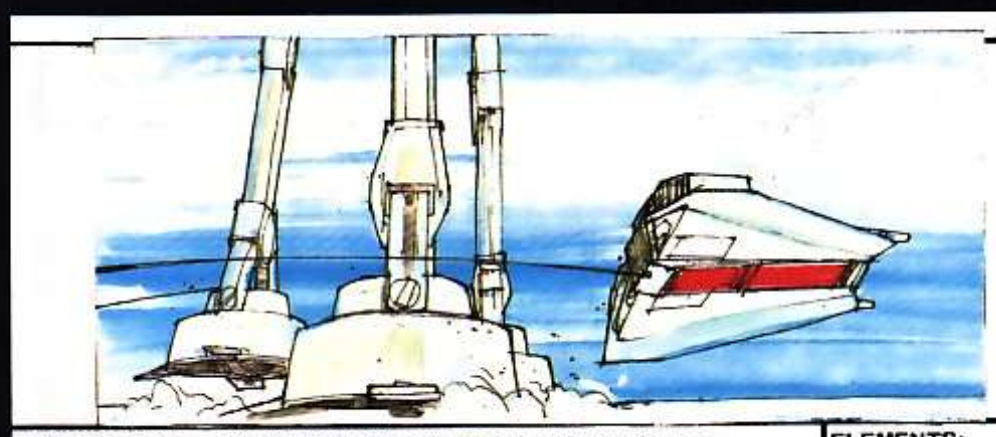
DESCRIPTION: CU CABLE RELEASE on back of the speeder as it snaps loose and the cable drops away.

DIALOGUE:

ELEMENTS:
Eng. F.G.

(OR)

Miniature Speeder cable release



DESCRIPTION: FULL SHOT SPEEDER as it races L to R around one of the giant walker feet, trailing the cable behind it. The speeder continues around the back foot going R to L. Truck with the walker No. 3.

DIALOGUE:

ELEMENTS:
Speeder w/ cable
Walker #3 Legs

Shadow

B.G.: (T.B.D.)

DESCRIPTION: EXT BATTLEFIELD - HOTH

MED SHOT of the tangled legs and feet of Walker No. 3 coming to camera. The monster begins to stumble.

DIALOGUE:

ELEMENTS:
Walker #3 Legs
Speeder
Speeder cable

B.G.: (T.B.D.)

DESCRIPTION: HIGH OVERHEAD MOVING SHOT of speeder as it circles the walker moving around the tail end. A second speeder passes in the foreground with the cable in tow.

DIALOGUE:

ELEMENTS:
Walker #3
Speeder w/ cable
Speeder #2
Shadow

B.G.: (T.B.D.)

DESCRIPTION: EXT BATTLEFIELD - HOTH

EXTREME LONG SHOT OF WALKER NO. 3 through the legs of a foreground walker. The giant Imperial assault machine stumbles and starts to fall to the ground. Side angle roving right to left.

DIALOGUE:

ELEMENTS:
Walker #3 w/ cable
Walker Legs - F.G.

Shadow

B.G.: (T.B.D.)

EMPIRE COMPOSITES

Empire required 400 to 500 optical composites, as compared to 380 effects shots for *Star Wars*. To handle the production pressures, ILM developed new optical compositing printers (such as the Quad) capable of creating the dreamed-of effects.

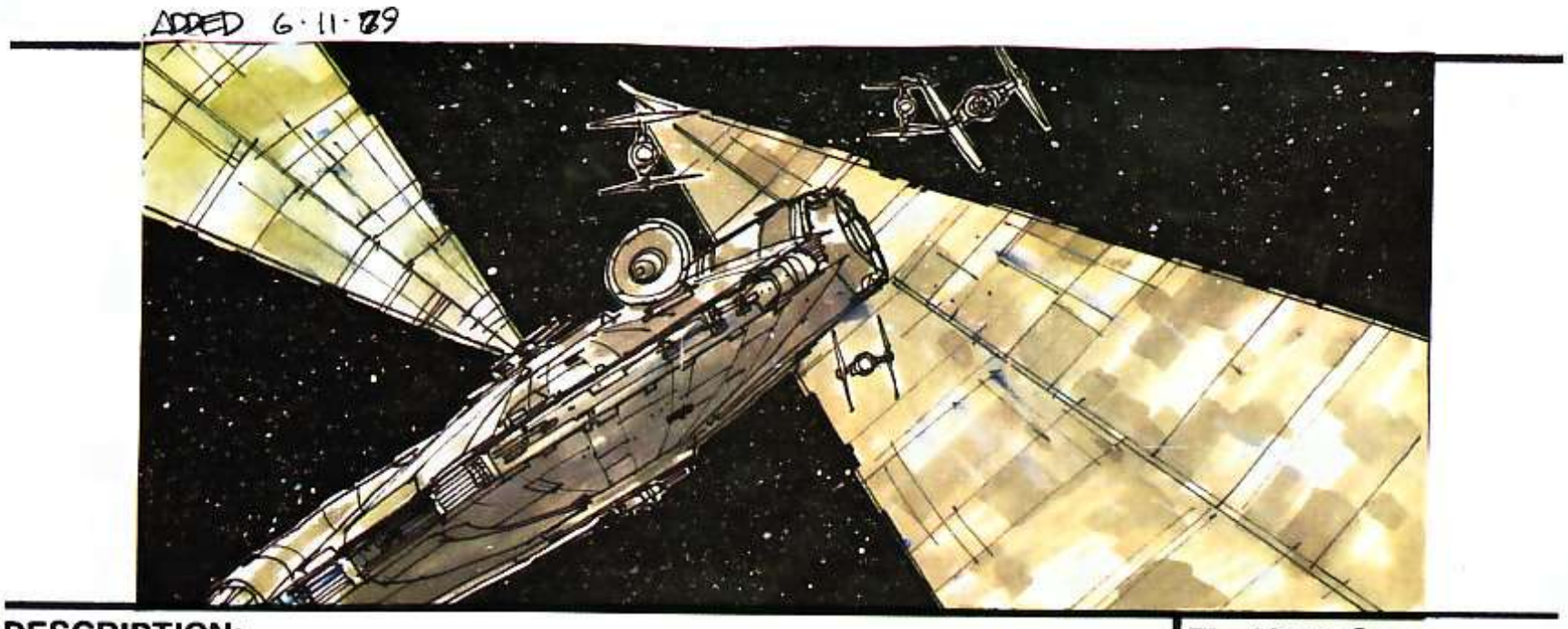
Optical printers, developed during the twenties, allow for separately filmed elements to be rephotographed and combined on one strip of negative film. The design of a basic printer consists of one or more projectors and lamphouses facing a recording (or "taking") camera loaded with negative film. The elements already recorded on exposed film can then be projected into the eye of the taking lens.

In the case of the Quad, four projectors were built into the printer (although two of the projectors would be removed years later, cannibalized to provide parts for another printer). The Quad was also equipped with a cubic beam splitter, a light reflector that allowed the camera to record two separate images simultaneously.

The Quad was valuable when compositing a scene in which the *Millennium Falcon*, four Imperial TIE fighters, and an eight-foot Star Destroyer model nearly collide. (In addition to the eight-foot Destroyer, the model shop created a fourteen-inch miniature and scale detail of the Destroyer conning tower measuring ten feet tall by fifteen feet across.) Although a mere three seconds on screen, the shot, even with the high-tech Quad, required film to be processed ninety-five times through the printer before a final picture was achieved.

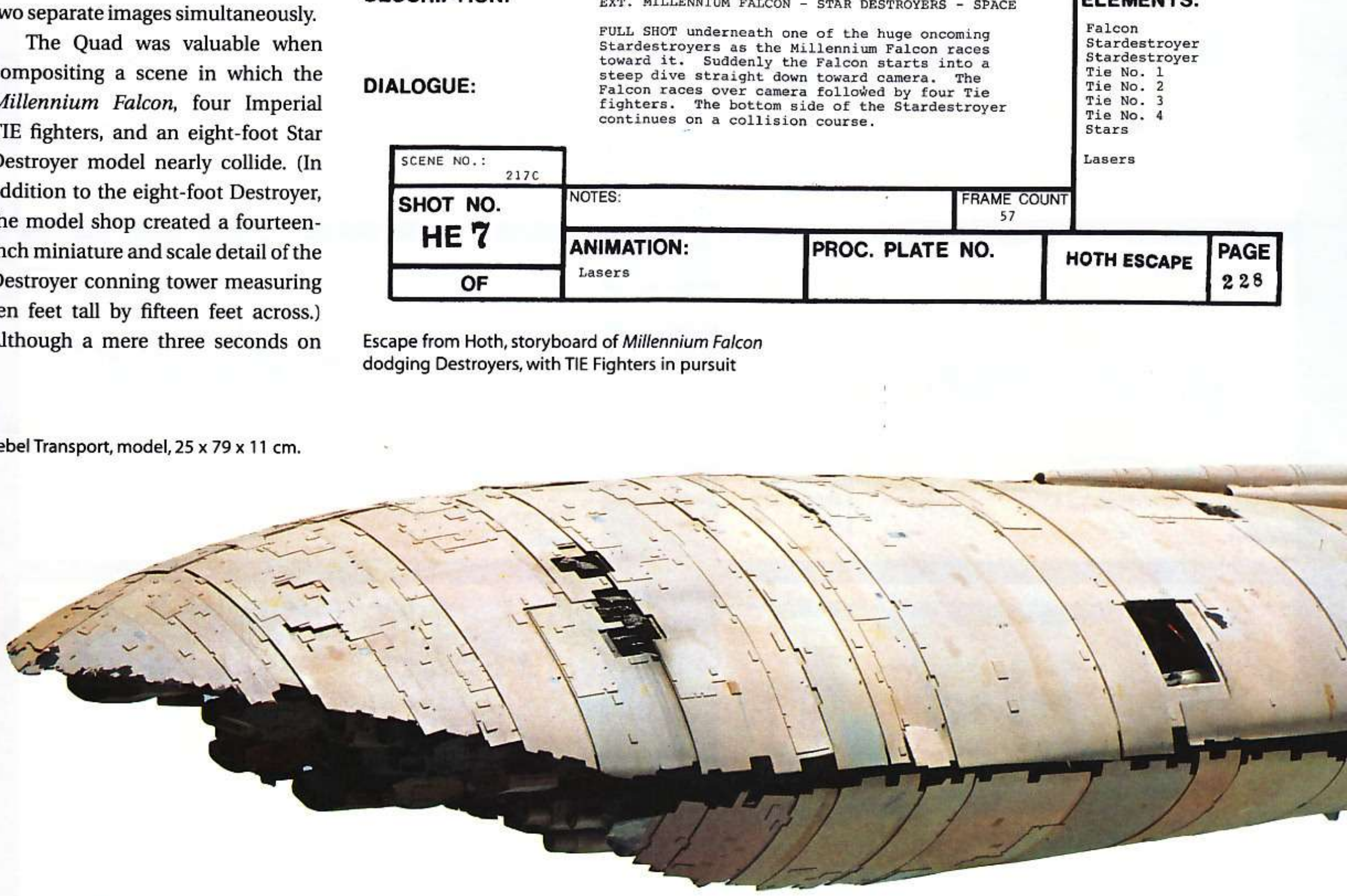
And when space in the *Star Wars* universe became particularly crowded, distant ship elements were sometimes created as miniature photographs pasted to glass programmed to move in front of a bluescreen.

Imperial Troop Scouts, production painting



Escape from Hoth, storyboard of *Millennium Falcon* dodging Destroyers, with TIE Fighters in pursuit

Rebel Transport, model, 25 x 79 x 11 cm.



Imperial Star Destroyer, model, 137 x 259 x 71 cm.

Imperial Star Destroyer in action, still from film

YODA AND THE SECRETS OF THE FORCE

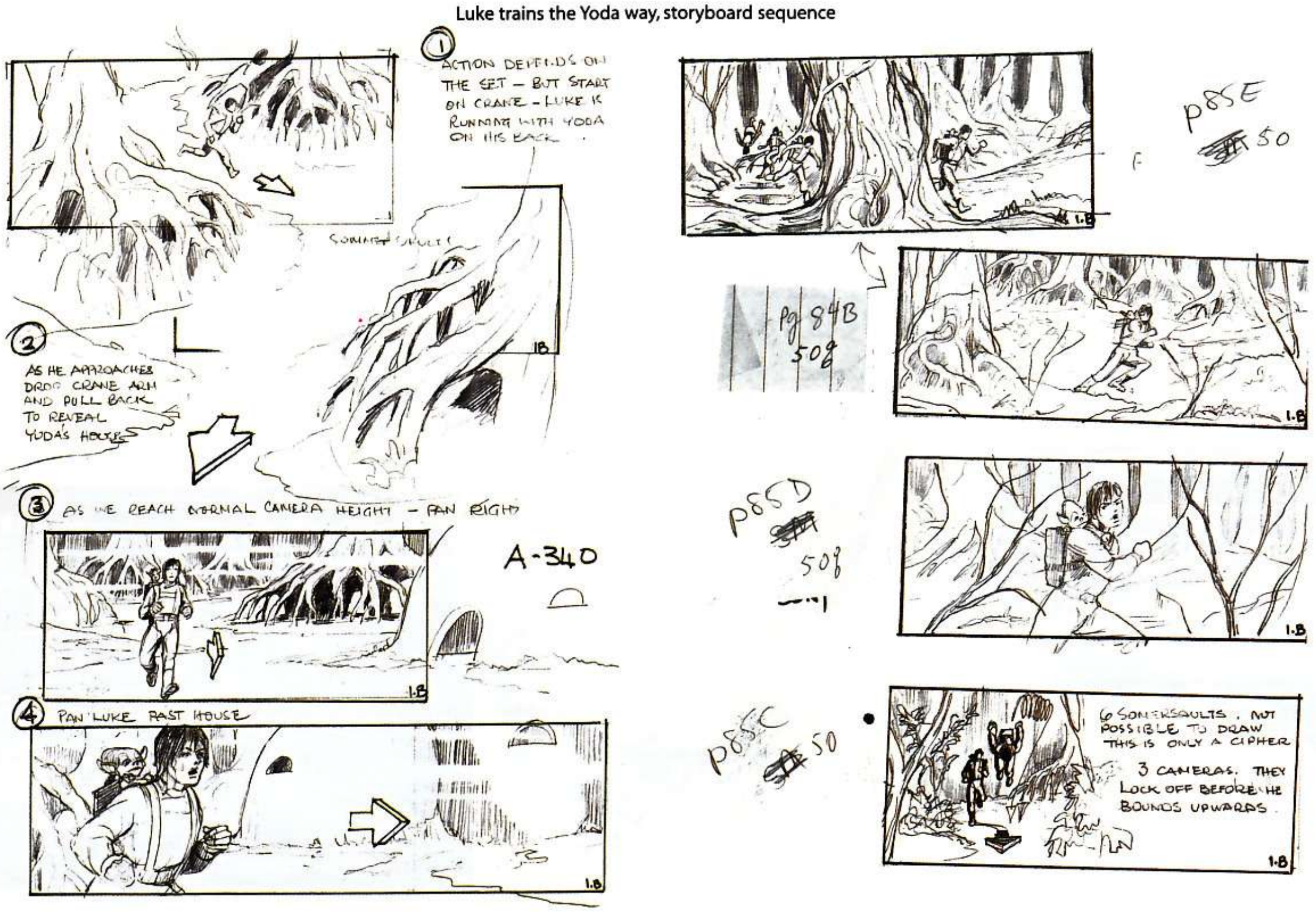
One of the most compelling ideas of the *Star Wars* series is the notion of the Force, the cosmic life energy mastered by the fabled Jedi Knights. As with the rest of the mythic underpinnings of the series, the Force can be recognized in other cultures, particularly in the Chinese concept of the universal energy force of Chi.

Young Luke Skywalker, eager to master the mysteries of the Force, is visited by the spirit of Obi-Wan, who tells him to journey to the uncharted planet of Dagobah and learn its secrets from Yoda, the Jedi Master who had been his own teacher. Luke crash lands in a swamp on the mysterious planet and encounters a small, green-skinned creature dressed in rags. Having imagined his Jedi mentor of more stalwart appearance, Luke is shocked when the wizened figure reveals himself to be Yoda, a Jedi trainer for eight hundred years.

Although the Dagobah swampland was originally planned as a location shoot, it was ultimately decided to recreate Yoda's world on soundstages at Elstree Studios. In the conceptual phase, Ralph McQuarrie designed an eerie environment, emphasizing the giant banyan trees, with their exposed root systems reaching down to the eroded soil, which are common in swamplands worldwide.

Luke and Artoo on planet Dagobah, production painting (above), and still from film (below)

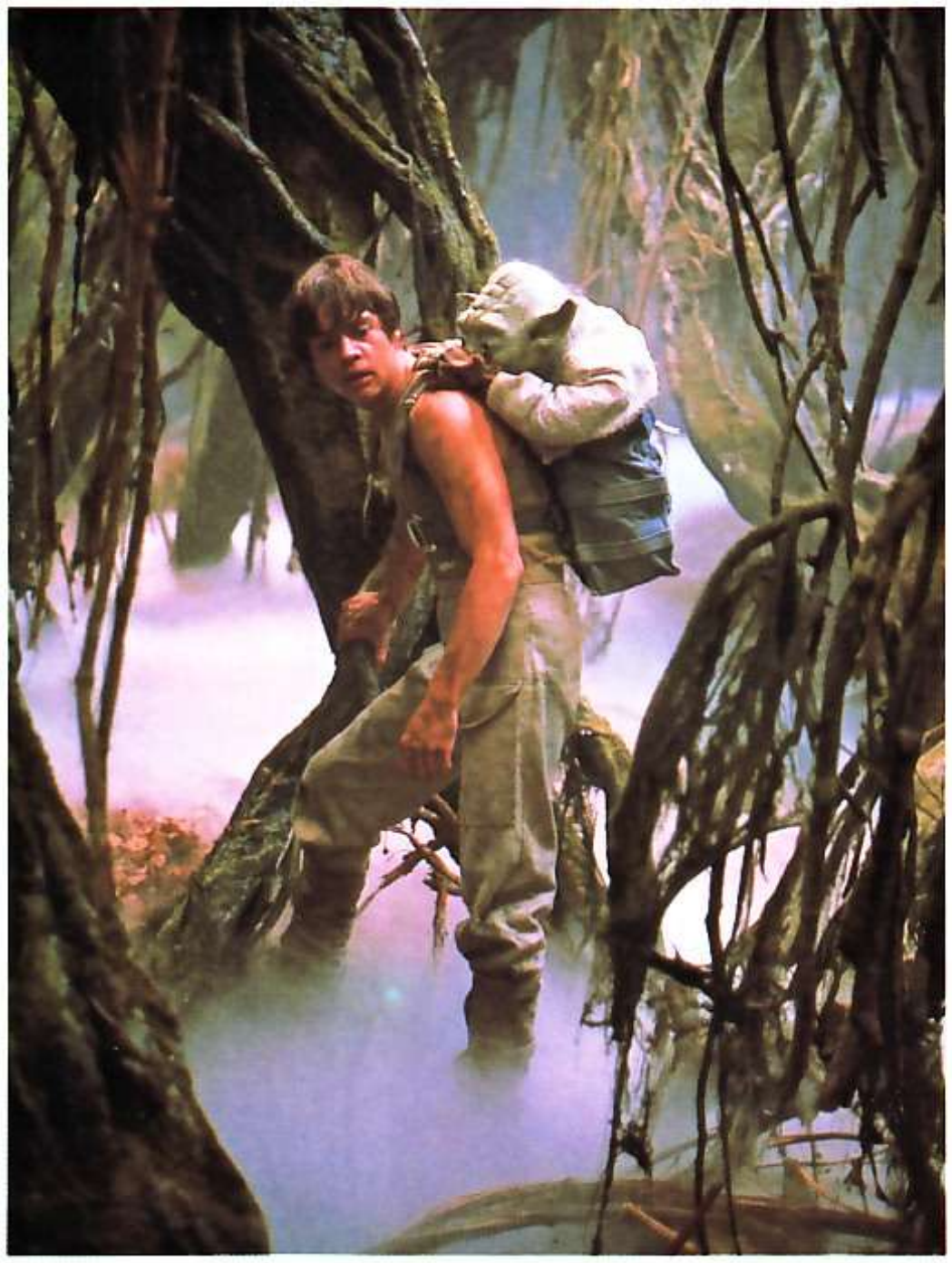
Luke trains the Yoda way, storyboard sequence



The final set, which required the work of several hundred skilled technicians, was built on platforms raised more than three feet off the stage floor. As with many set-ups, the structure was built in sections that could be arranged as needed for filming. Trees forty feet high and ten feet in circumference were formed out of tubular steel, shaped with wire mesh, and finished with plaster and paint. A three-foot-deep lagoon was built into the set in which a full-scale replica of Luke's crashed X-wing, complete with a forty-foot wingspan, was placed. Final touches included truckloads of vines gleaned from the local countryside to dress the set.

Yoda himself came to life only after a long series of design-stage evolutions. The first concept sketches

Luke and Yoda in the Dagobah Swamp, production painting (above), and still from film (below)



Rendezvous with destiny, production painting (Luke departs to rescue his friends as Yoda and the ghost of Obi-Wan look on)

ranged from snow-bearded Santa Claus-ish figures to perky elves. The look of the final puppet, as sculpted by Stuart Freeborn, captured both the sage bearing and quirky sense of humor of the character. It was, however, puppet master Frank Oz (who had animated many of the late Jim Henson's Muppet creations) who brought Yoda to life, usually working the character from underneath the stage through hidden openings in the set. Complicated mechanisms within the skull of the Yoda puppet allowed Oz to do everything from curl the Jedi Master's lip to furrow his eyebrow.

Luke and Yoda, production painting

Yoda, concept designs

Yoda, puppet, 38 x 38 x 62 cm.

CLOUD CITY

When the *Falcon* flies down into one huge asteroid cave, a giant space slug nearly swallows the ship in a gulp.

The slug itself was a glorified hand puppet that fit over the arm of creature maker and stop-motion animator Phil Tippett. Working within an asteroid set, Tippett could move the head around while gripping an internal trigger that could cause the mouth to snap open and close.

The Cloud City of Bespin, a trading port and a neutral colony floating above the clouds was conjured up with matte painting magic. "George thought of Cloud City as a kind of Flash Gordon city floating in the sky on a platter," says artist Ralph McQuarrie, who created a series of landing platform matte paintings for the film. "I had free rein and I gave it an aircraft carrier look, streamlined with decks. When I work I mentally walk through an environment, building the thing up in my mind and with doodles, sketches, and paintings."

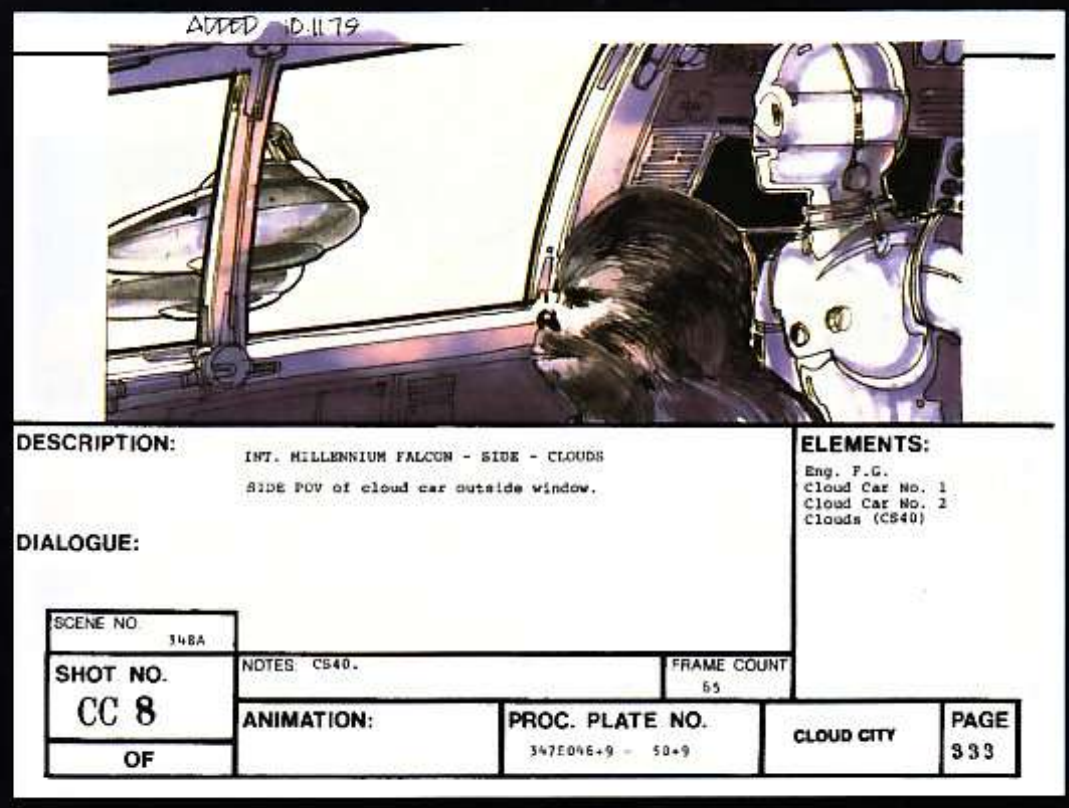
The Cloud City matte paintings composited such live-action ele-

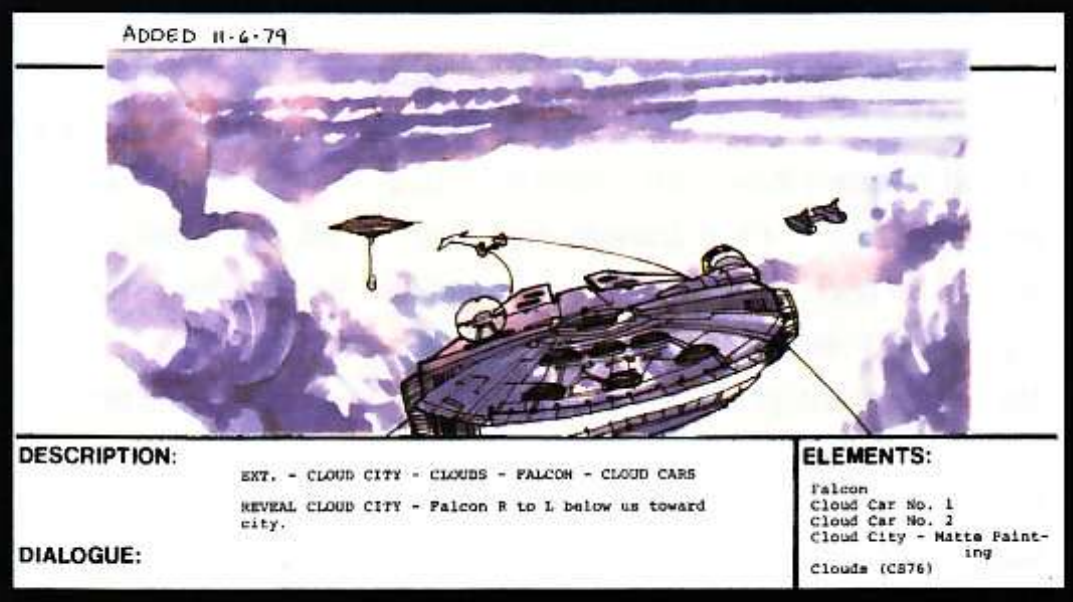
Millennium Falcon escapes Space Slug, production painting (top) and production illustration (directly below)

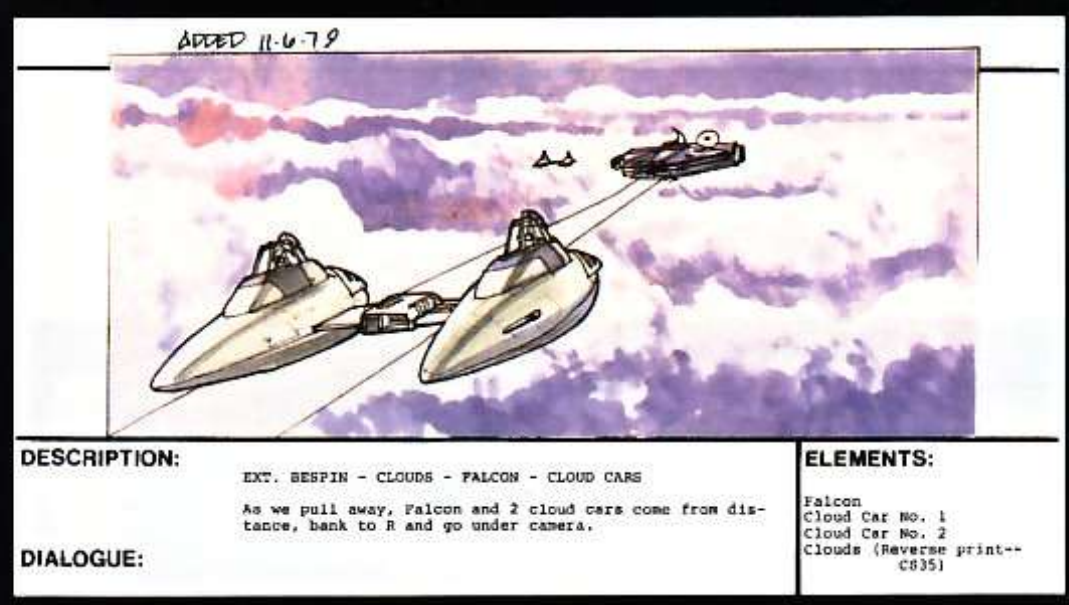
Space Slug, puppet, 28 x 79 x 28 cm.

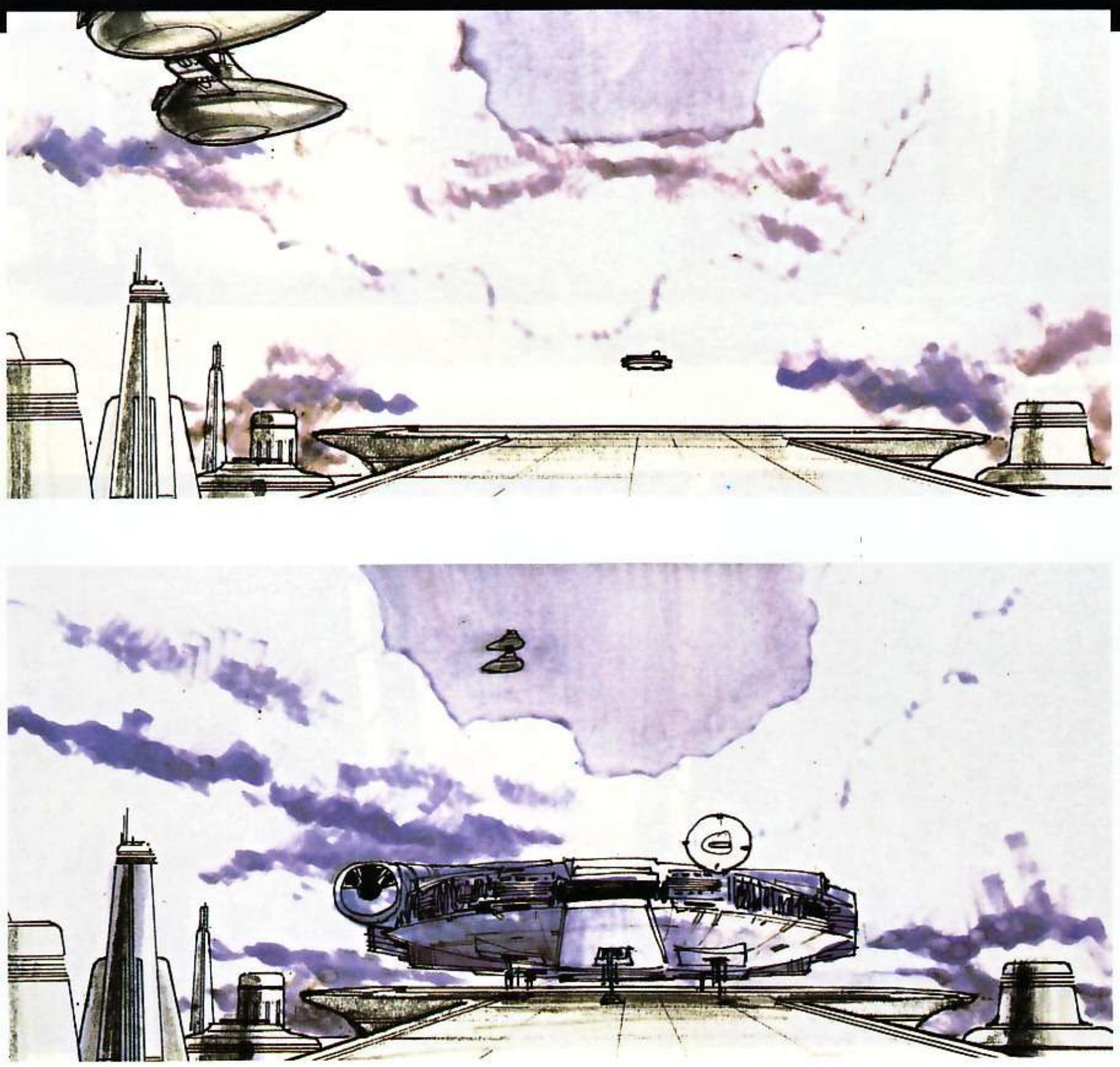
Imperial TIE Bomber, model, 22 x 19 x 14 cm.

Millennium Falcon approaches Cloud City of Bespin, storyboard sequence









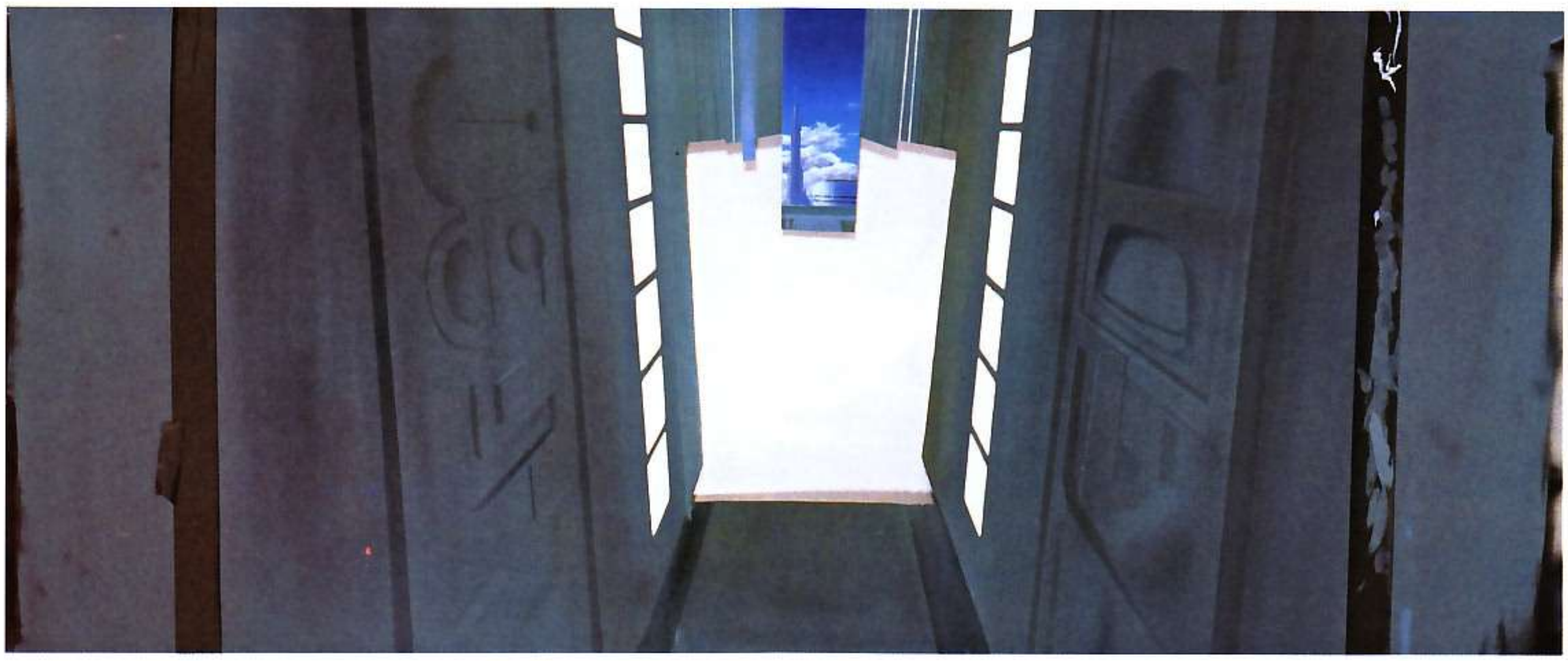
Millennium Falcon landing, storyboards

ments as Lando and his men greeting Solo on the landing platform, Princess Leia gazing out the window of a building, and Luke Skywalker and Artoo moving down an interior hallway in search of their friends. All live-action elements were combined with paintings as in-camera composites with a front-projection matte painting and compositing system built by Richard Edlund. (The upper left-hand note, "105 mm," in the painting of the landing platform at twilight, refers to the millimeter lens used by the compositing system to project the live action. Also, the middle painting features a painted *Falcon* roof, which artist McQuarrie felt reflected the dusky lighting conditions better than the stage element of Solo's ship.)

But our heroes have been tracked by the bounty hunter Boba Fett, who alerts Darth Vader to the whereabouts of his enemies and a deadly trap is sprung.

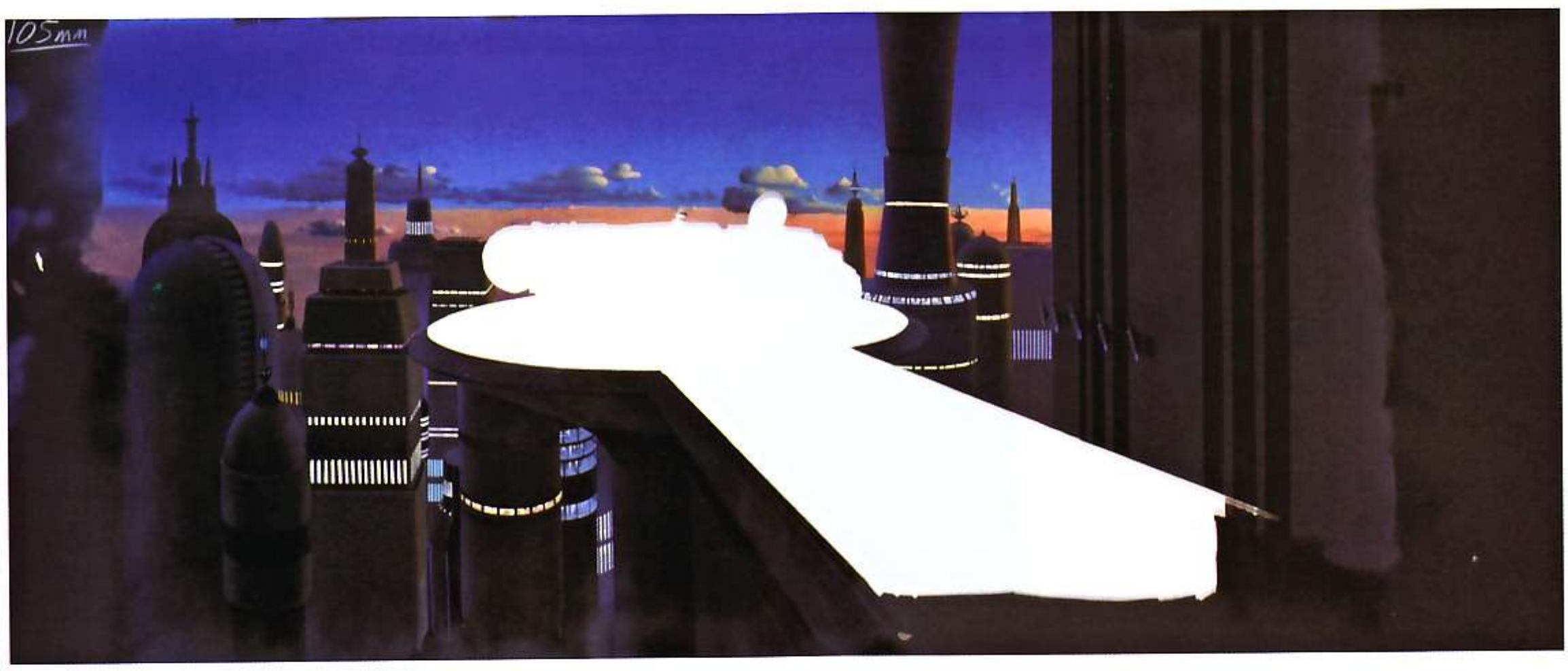
Cloud City cars, production painting

Cloud City skyline, matte painting (detail for compositing of Cloud Car flyby), 191 x 84 cm.

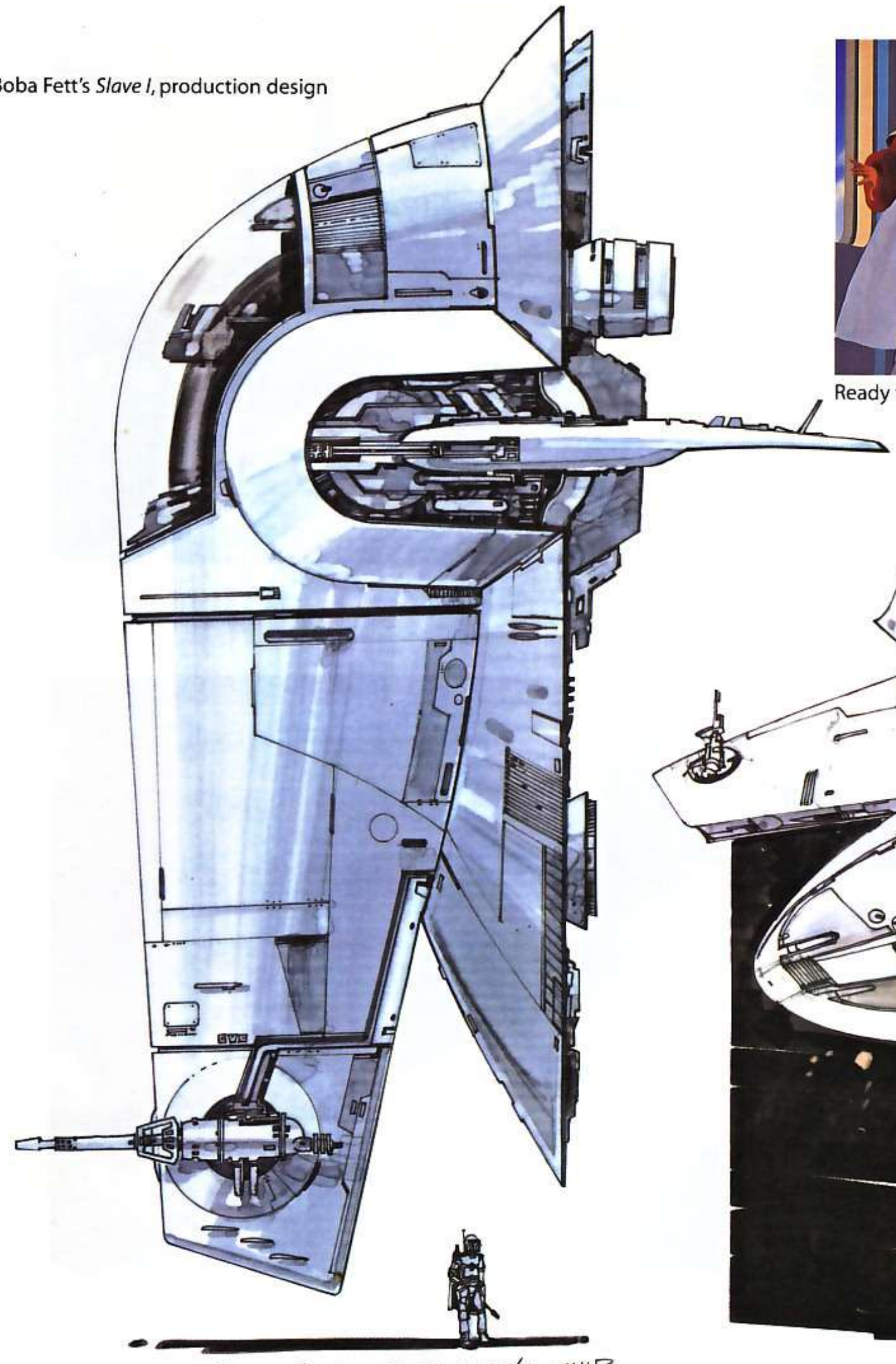


Cloud City hallway, matte painting, 191 x 84 cm.

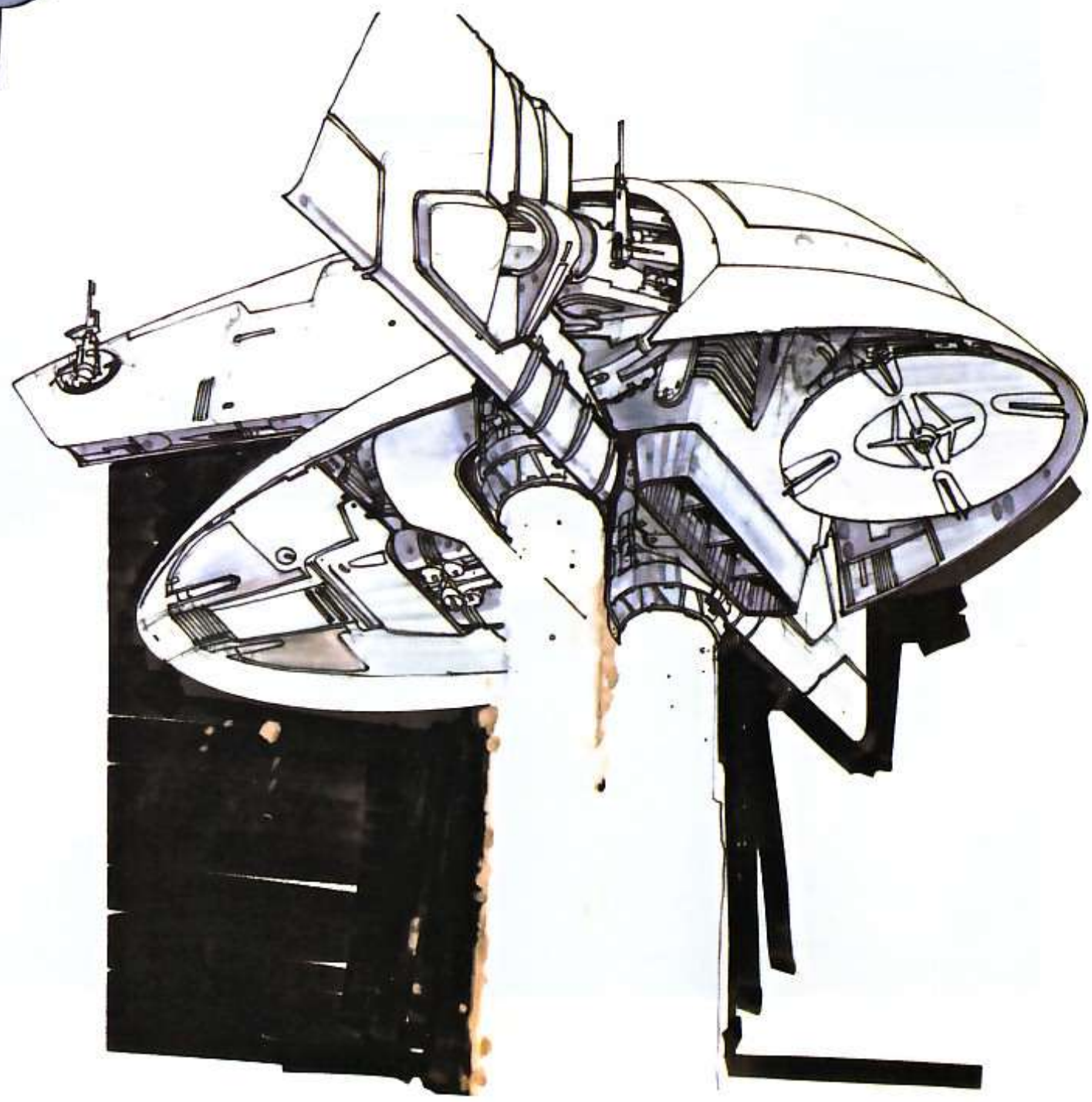
Cloud City landing platform, matte paintings, 191 x 84 cm.

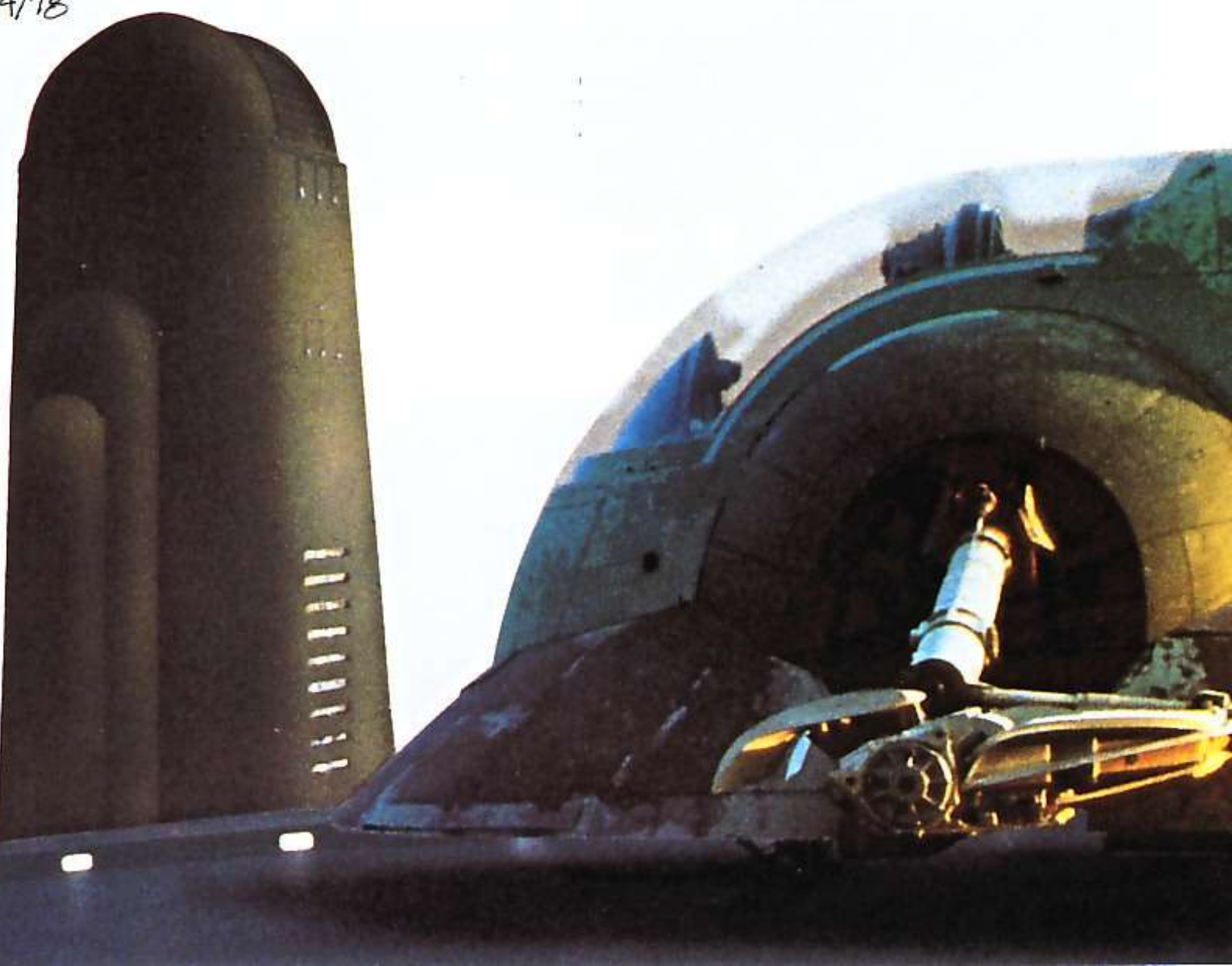


Boba Fett's *Slave I*, production design



Ready for battle, production painting

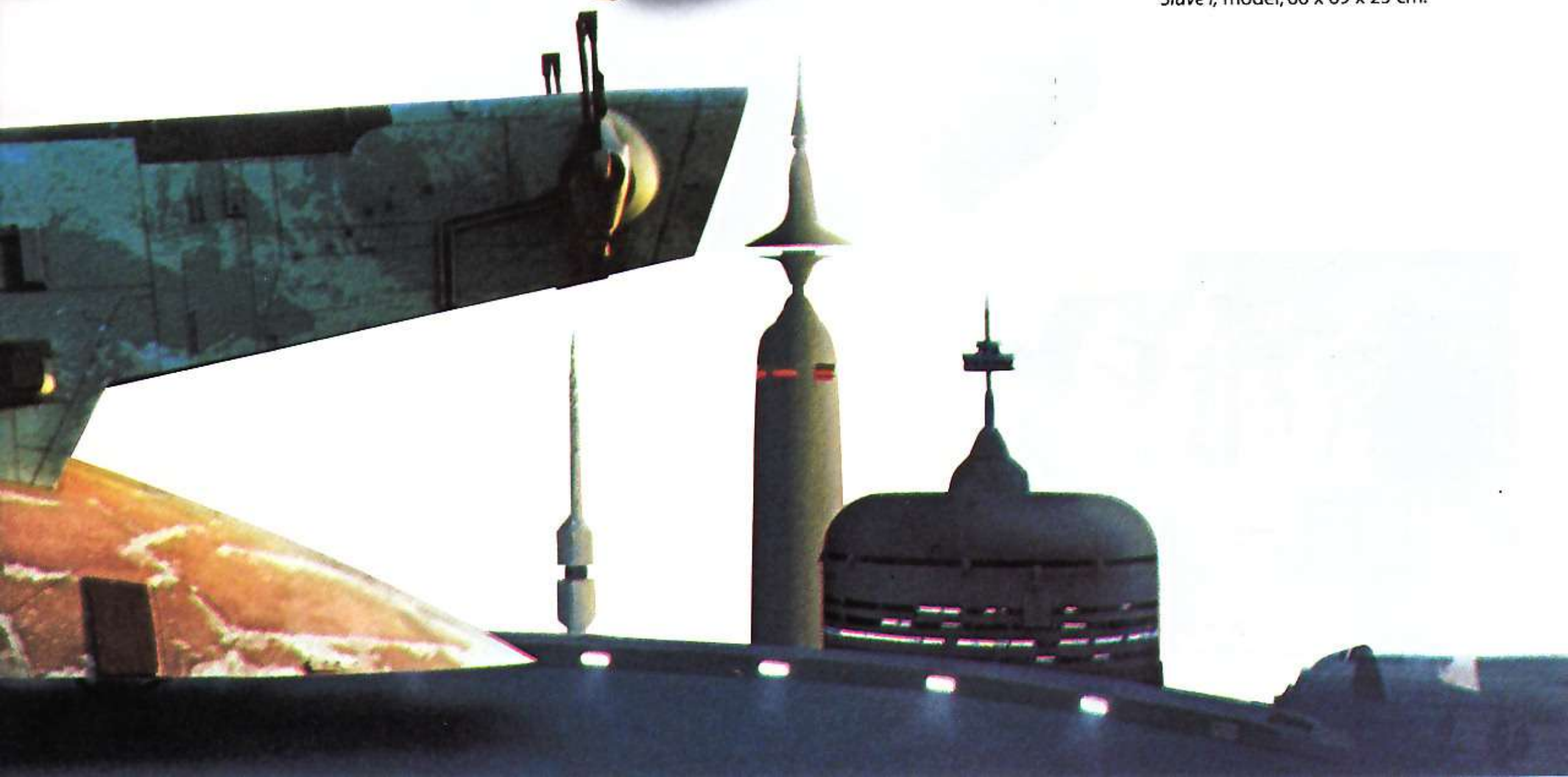


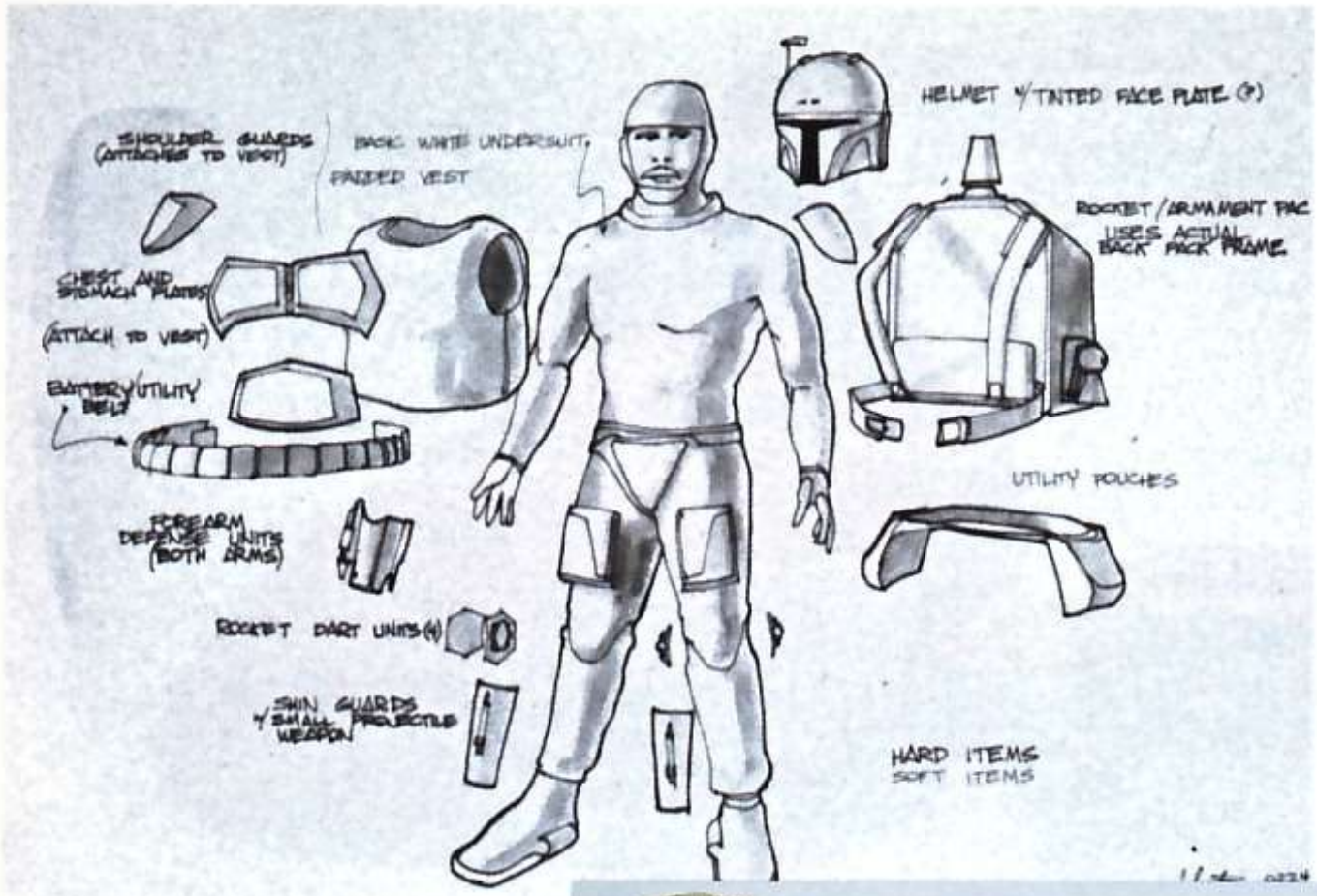


Boba Fett's ship on Cloud City, matte painting, 191 x 84 cm.

Bespin Cloud car, model, 47 x 43 x 18 cm.

Slave I, model, 66 x 69 x 25 cm.





Boba Fett, costume design

Darth Vader awaits, production painting

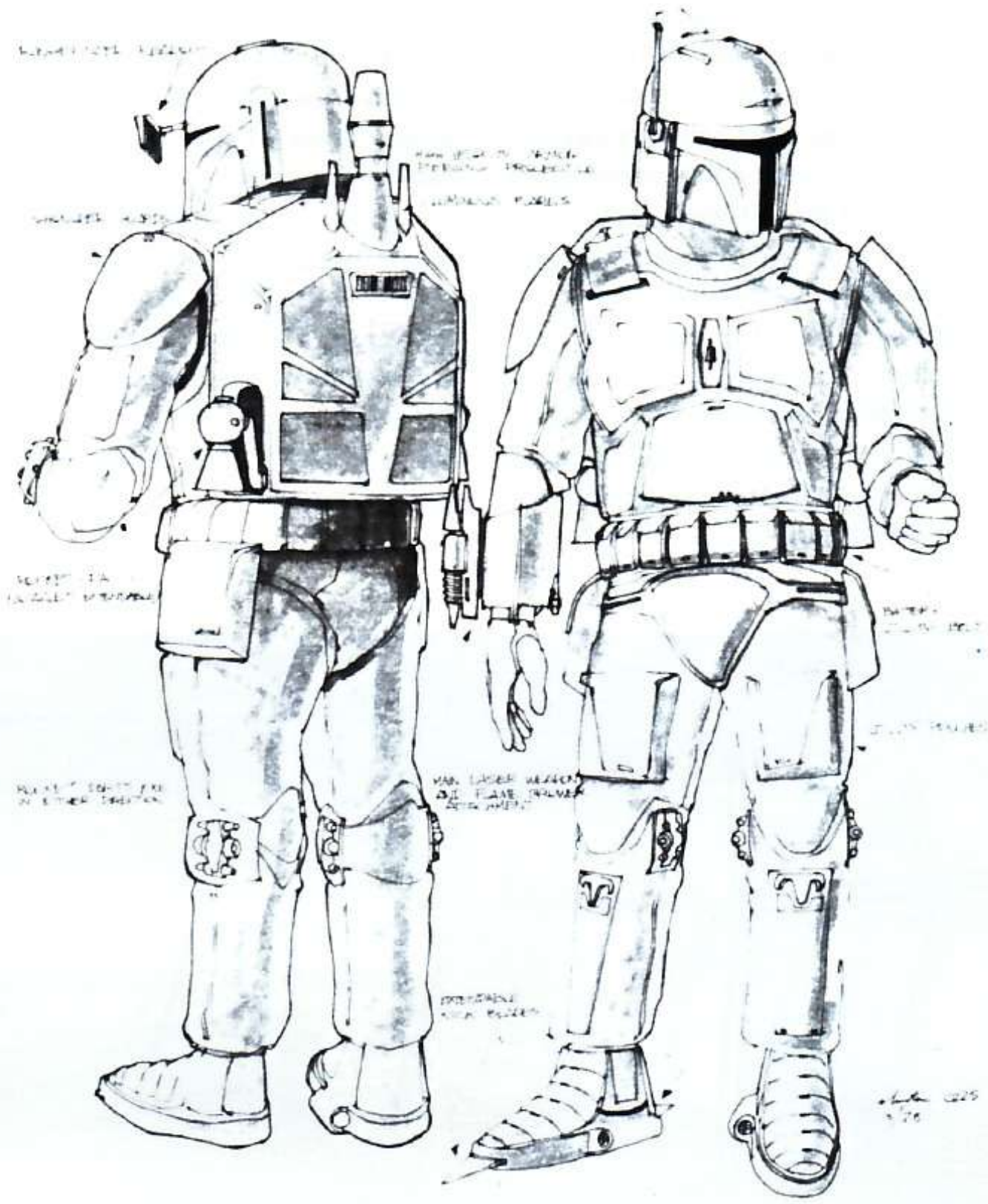
Boba Fett's helmet, costume headgear, 38 x 38 x 53 cm

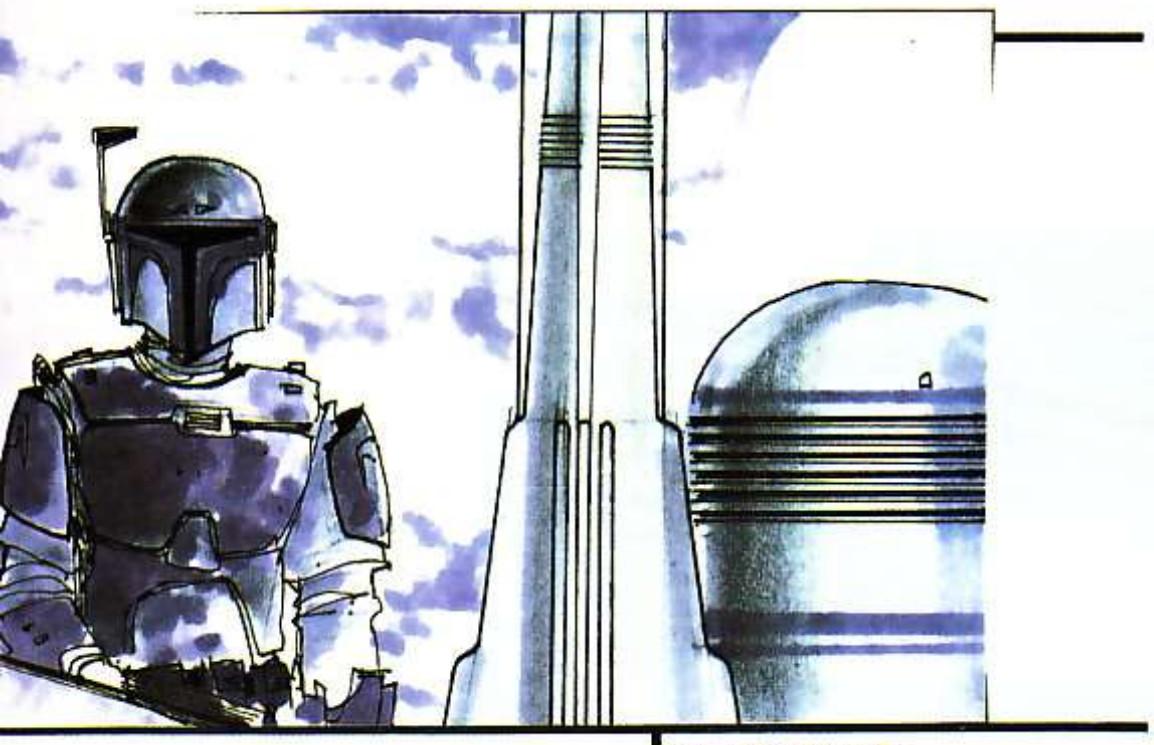
Vader enlists bounty hunters, still from film

Boba Fett, character sketch

Prisoner Han Solo, production painting

Boba Fett, costume design





LATFORM - CLOUD CITY

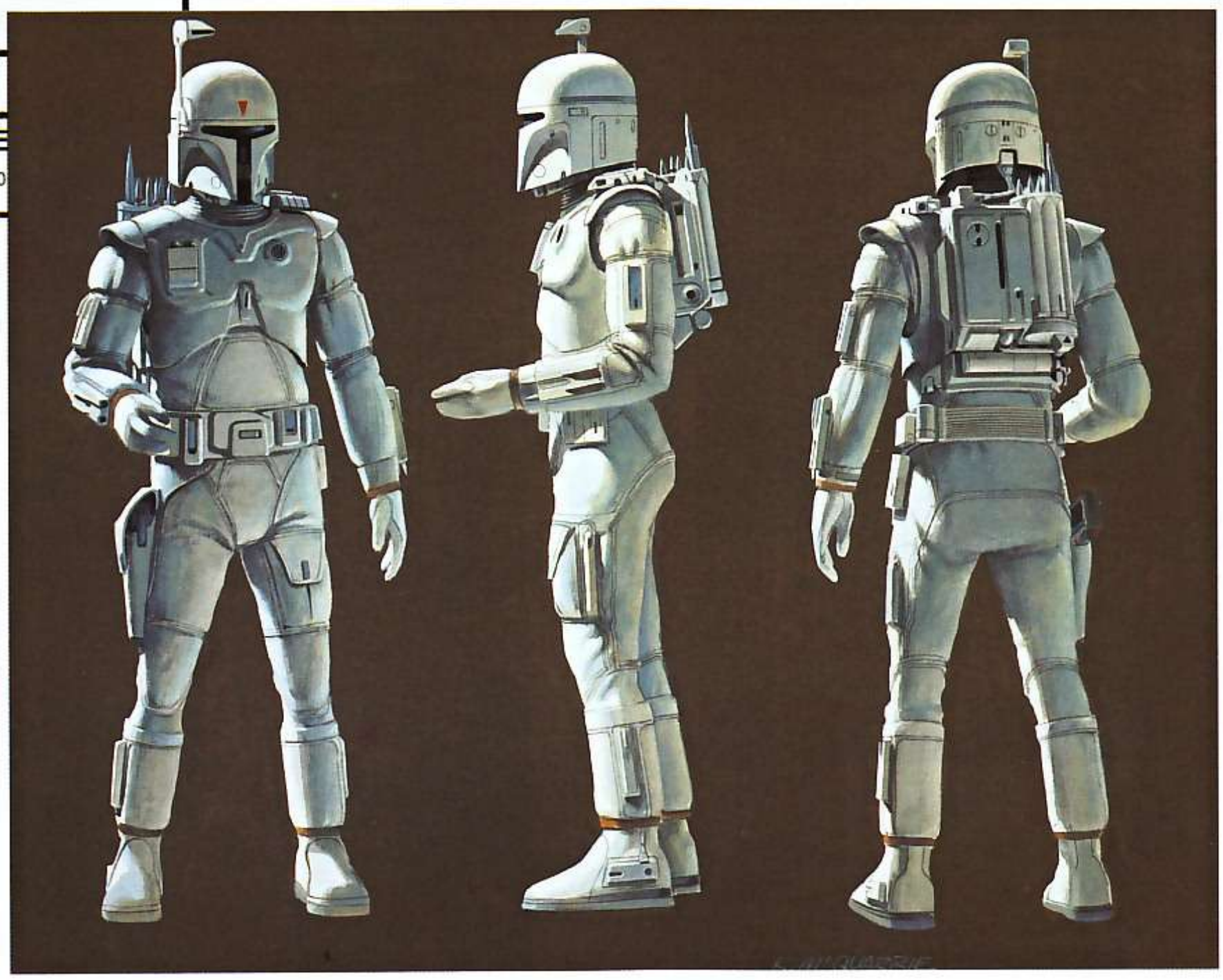
Solo's coffin going up ramp to
in b.g.

ELEMENTS:

English Plate
Clouds & City - Matte
Painting

Boba Fett at landing platform, storyboard

PROC. PLATE
X387A013+5 - 0



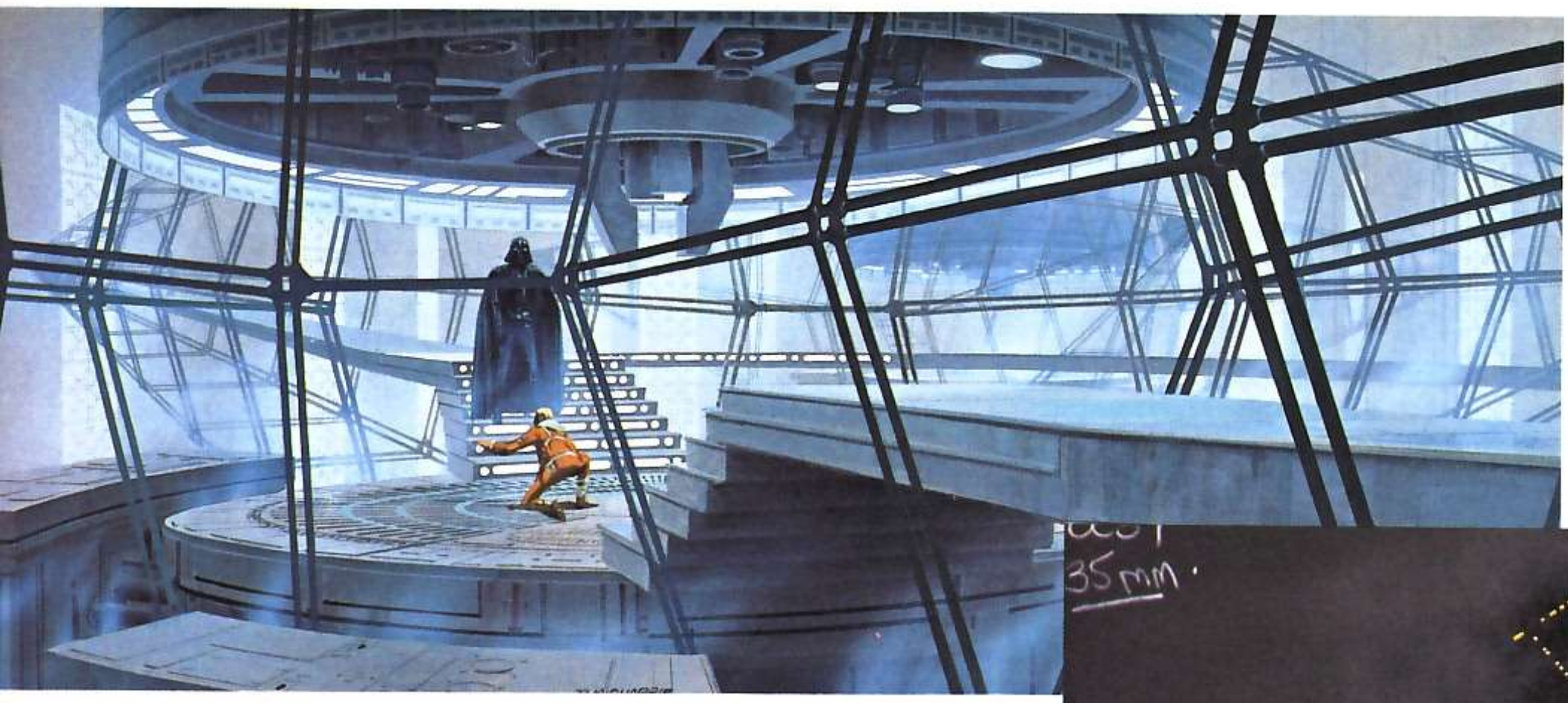
Boba Fett, production illustration

VADER'S VICTORY

Matte paintings played an important role in the creation of the pivotal scene of the movie, the dramatic battle between Vader and Skywalker on a gantry bridging the reactor shaft of Cloud City. The core, with its vertiginous drop, was realized as a matte painting, while the actors were composited with ILM's front-projection system. The glowing and striking lightsabers were created as separately filmed animation elements and composited with separate front-projection passes.

When the vanquished Luke Skywalker learns that Darth Vader is his father, he relinquishes his hold on the platform rather than accept Vader's entreaties to join the cause of the Empire. Luke is in freefall, sucked into a shaft leading to an exhaust port on the underside of the floating city. He hangs wearily onto a fragile, antenna-like device until his miraculous rescue by the escaping *Falcon* piloted by Leia, Lando, and Chewbacca.

Luke and Darth Vader battle in Cloud City core, production painting

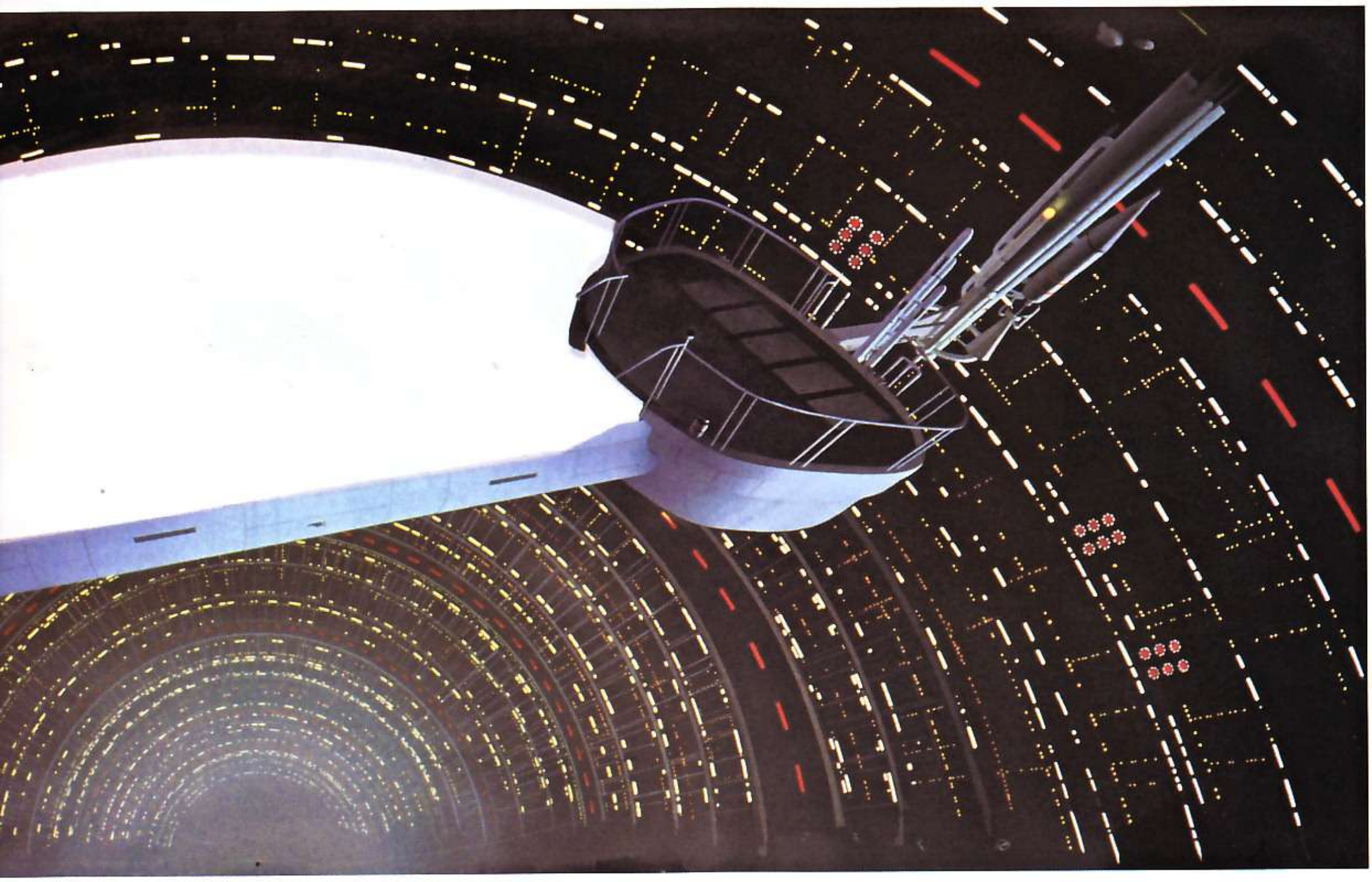


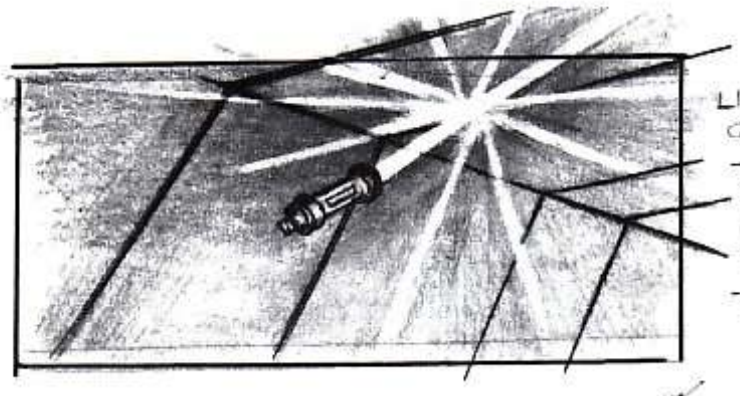
Luke faces Darth Vader, production painting, and still from film

Luke and Darth Vader, concept sketches for battle sequence

Darth Vader entreats Luke to join the Imperial cause, still from film

Cloud City core vane platform, matte painting, 191 x 84 cm.



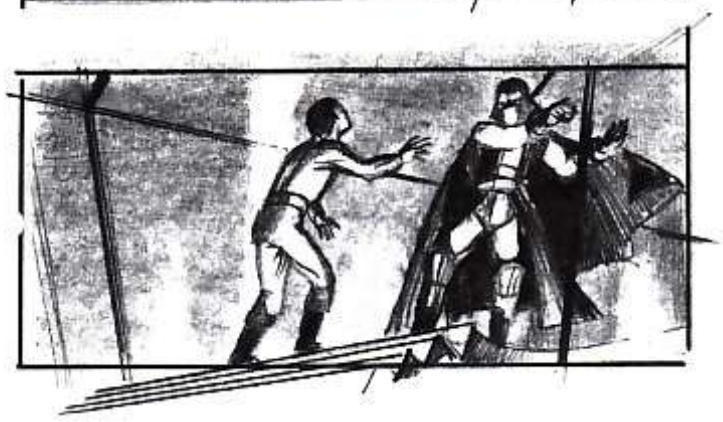


12

LUKES LAZER SWORD GOES SAILING AWAY — POSSIBLY, IT COULD CUT ONE OF THE MANY STAY WIRES

TO BE WORKED OUT

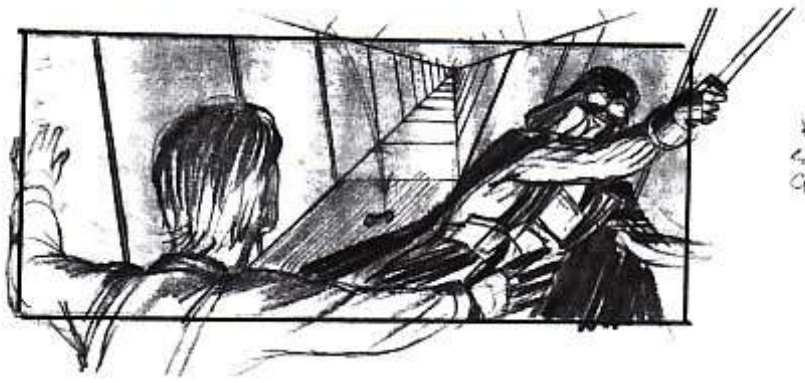
S. 391



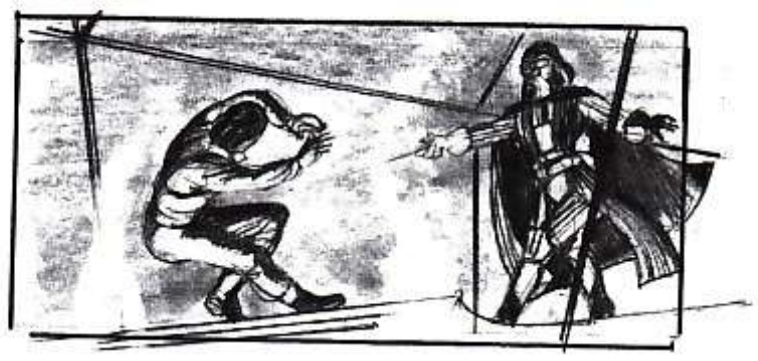
STUNT DOUBLE FOR LUKE

LUKE' DEF

↓

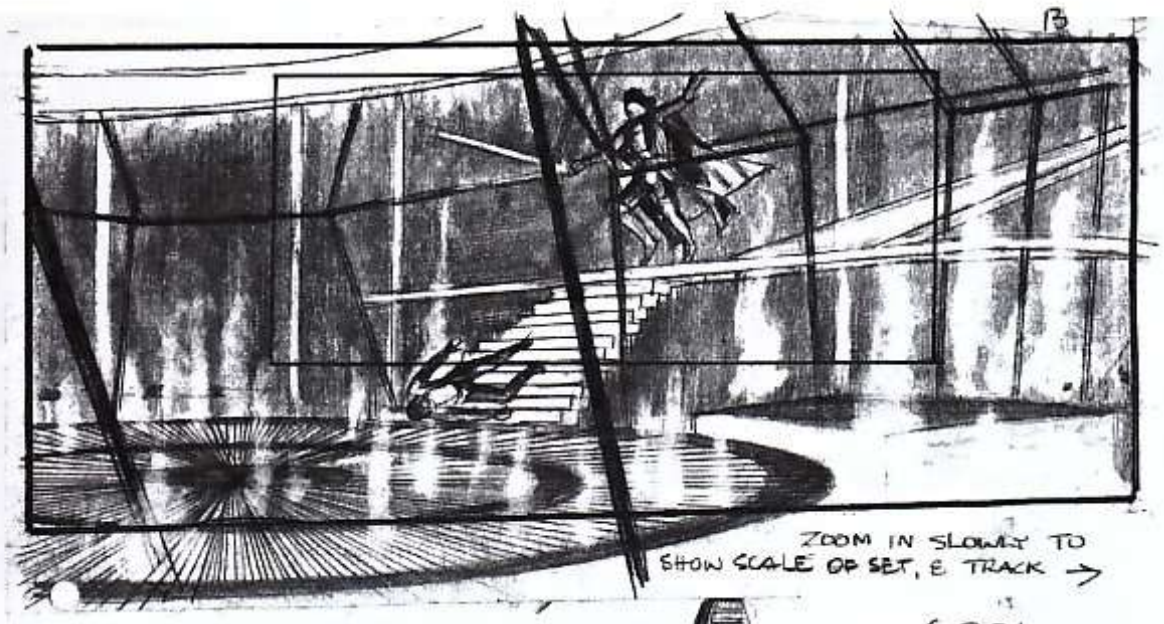


HILT LAND IN SUSPENDED GANTRY



V LUNGES. LUKE LEAPS BACK & FALLS

↓

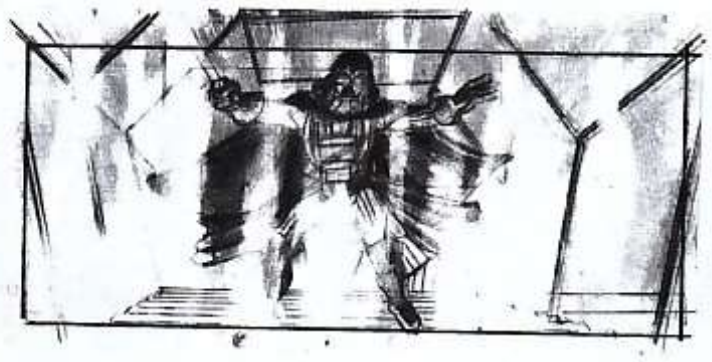


ZOOM IN SLOWLY TO SHOW SCALE OF SET, & TRACK →

S. 391

CUT TO LUKE LANDING

FAST CUT



IMMEDIATELY VADER TAKES OFF AS A HUGE JET OF STEAM SPURTS UP — HE SAILS THROUGH LIKE SATAN IN THE CLOUDS

↓

U. 391

MORE EQUIPMENT FLIES AT LUKE GLANCING OFF HIM UNTIL A LARGE PIECE HITS HIM AND CRASHES THROUGH THE WINDOW - CAUSING A WHIRLWIND SUCTION THAT DRAGS LUKE BUT WINDOW IS ANGLED TO REDUCE THE COLOUR OF THE TOFFEE GLASS. CUT AS 'GLASS' GOES.

NEW ANGLE WITH TOFFEE GLAS REPLACED BY PRE-CUT CLEAR PLASTIC.

STUNT MAN DOUBLE RUNS AT WINDOW & DIVES SIDEWAYS OUT TO BOXES.

CLOSE ON VADER HURRYING TO WINDOW & LOOKING DOWN.

WIND BLOWING UP

LUKE DOWN HORIZONAL

398. BOXES & DEBRIS BLOWING UP PAST CAMERA

VADERS P.O.V. OF LUKE HANGING FROM THE GANTRY OVER THE NEUCLEAR REACTOR FURNACE A MILE BELOW.

WIND DIES - BOXES ETC FALL BACK DOWN SHAFT.

GO BACK TO PREVIOUS CUT. VADER EXITS L-R.

33/34

WIND CHANGED BOXES ETC DROP THROUGH FRAME

T.M SHOT

OWING TO PLATE LUKE DOESNT RISE BUT ROLLS TO SAFETY GETS HIS BREATH — SEES THE SWORD HANDLE (OUT OF SHOT & CRAWLS TO GET IT L-R

CUT

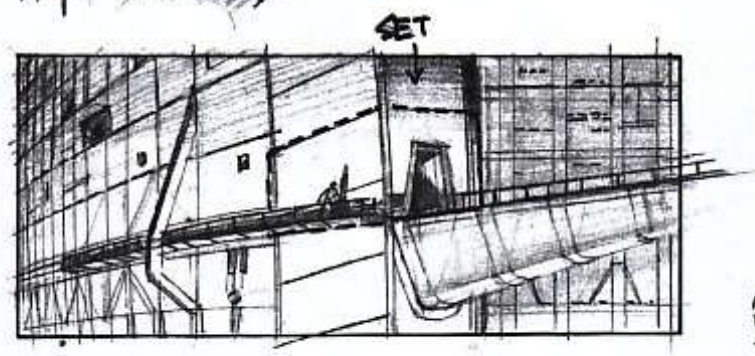
LIGHTING SOURCE IS IN REACTOR BELOW THE GANTRY

LUKE REACHES FOR HOLSTER KNEELS TO RISE

STILL EXHAUSTED

↓

EITHER PULL BACK & TILT UP OR IF IN CUTS — PICK HIM UP RISING INTO FRAME



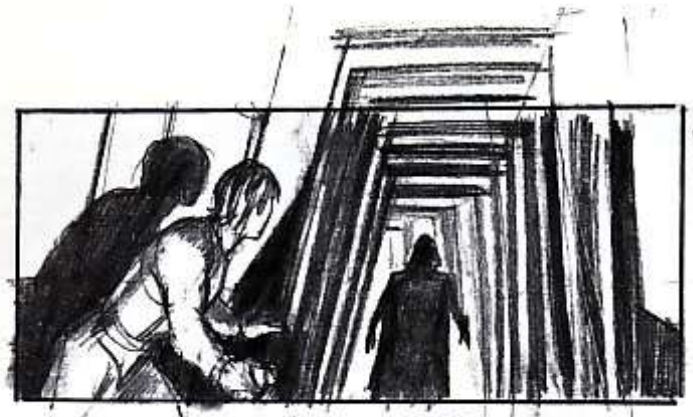
MATTE SHOT.

STUDIO BUILD -SEE DOTTED LINE AS DOOR

OPTICAL REDUCTION & DRAW IN MATTE TO WHATEVER ANGLE IS ON NEG.

ACTION. LUKE MOVES UNSTEADILY TO FIND AN ENTRANCE

(35)



LUKE

DIRECT STUDIO

398

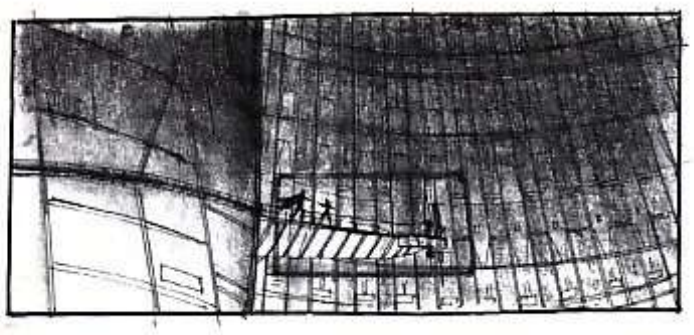
" IT IS USELESS TO RESIST

LUKE BACKS AWAY L-R.

398

END DIALOGUE

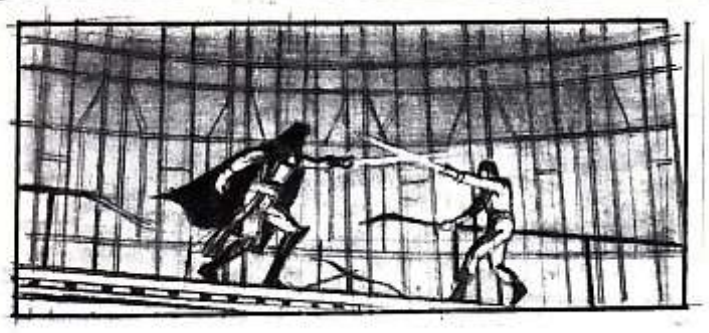
398



SPECTACULAR MATTE SHOT TO SHOW THE END OF LUKE ABILITY TO RETREAT

T.M SHOT – SEE MY PROJECTION CAMERA @ 4'6" 30 MM LENS. 18° TILT. — AS FOR STAGE 1.

END SC 398

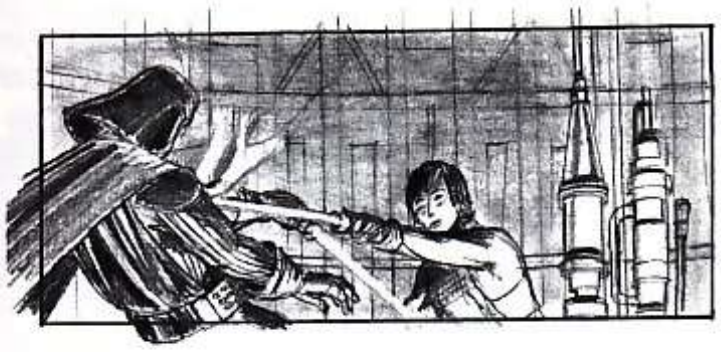


CUT IN CLOSE STUDIO PAINTED BACKING. BUILT F/G GANTRY WITH BREAK AWAY RAIL AS VADER DESTROY LUKES HAND HOLDS.

DIRECT STUDIO

DIALOGUE X-2

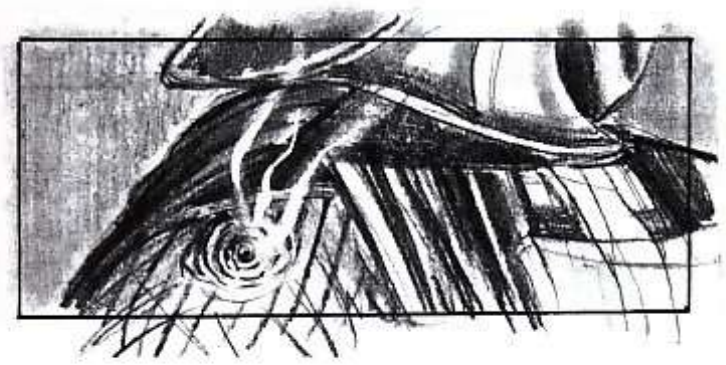
36



LUKE MANAGES TO GET OVER VADERS GUARD SMOKE RISES.

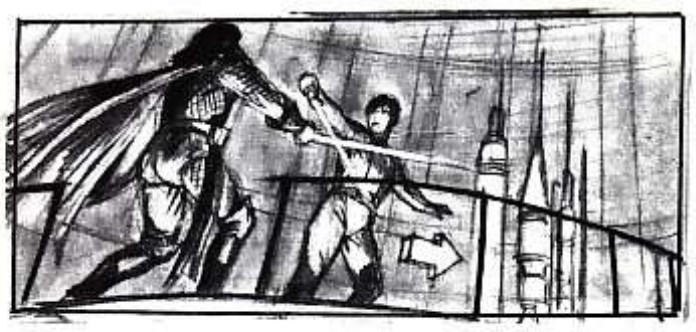
DIRECT STUDIO.

400



C.U. OF HEAT BLISTER ON VADER ARMOUR

TILT UP TO FULL HEAD FOR LINE "DONT LET YOURSELF BE DESTROYED AS OBI WAN DID"

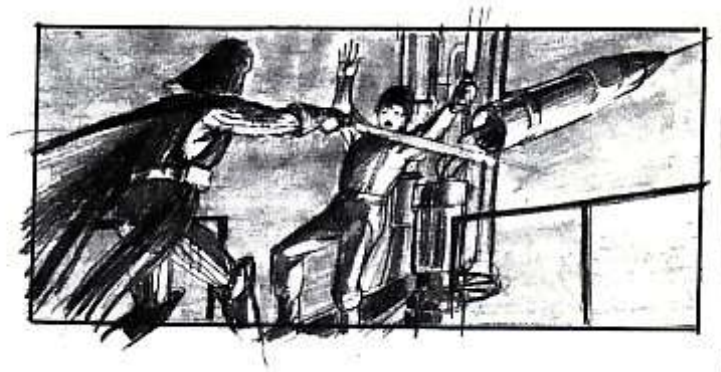


VADER

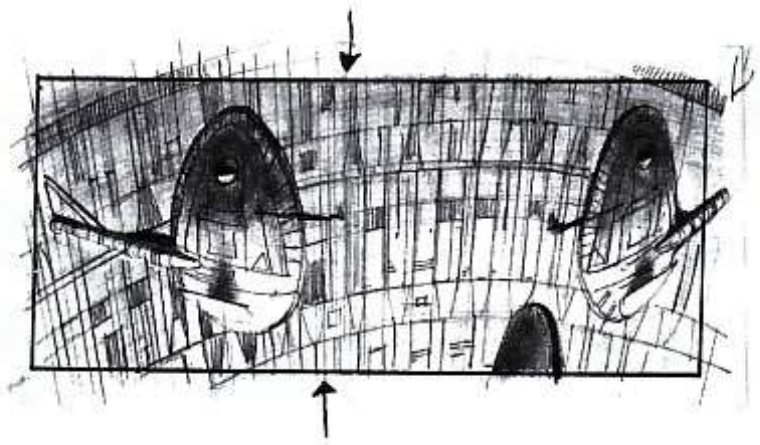
" DONT LET YOURSELF BE DESTROYED AS OBI WAN DID."

HE ATTACKS AGAIN FORCING LUKE BACK ACROSS THE LAST PLATFORM.

" CALM, STAY CALM



VADERS LAZER SWORD CLEAVES SHEER THROUGH A HUGE PIECE OF EQUIPMENT. IT FALLS DOWN THE SHAFT



MODEL SHOT

LONG SHOT OF REACTOR SHAFT

LUKE & VADER ARE NOW AT THE EXTREME TIP OF THE VAST POD. WE CAN JUST CATCH THE TURNING GLINT OF THE SHINING METAL AS IT FALLS —

POSSIBLE EASE IN OF CAMERA.

ANIMATE TWIRLING METAL PIECE

The battle of Luke and Darth Vader, storyboard sequence

39-40

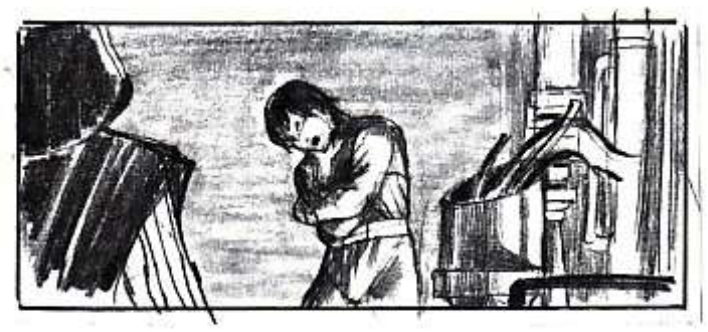
AFTER 400

LUKE MOVES FORWARD TO RENEW THE FIGHT

400

1

1

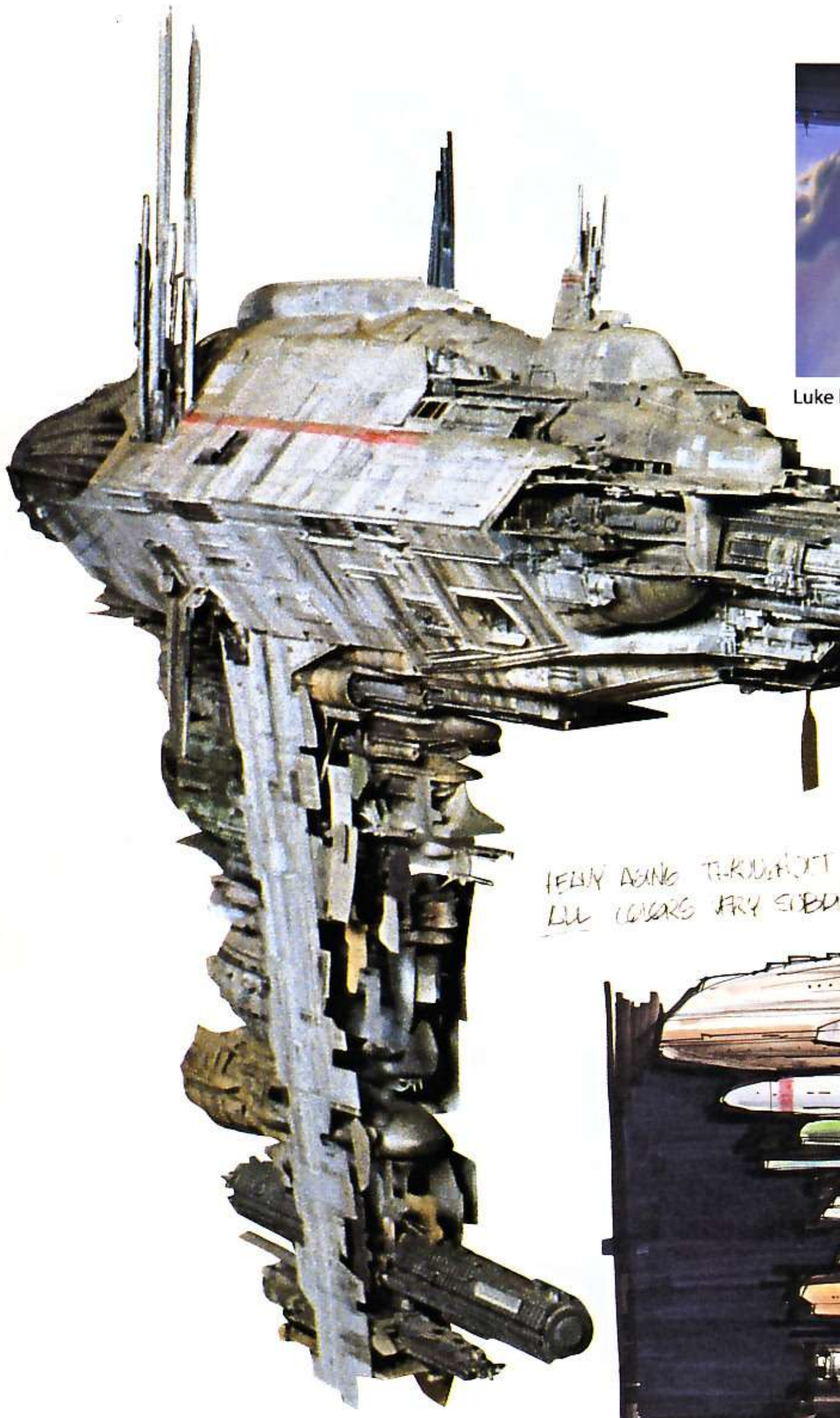


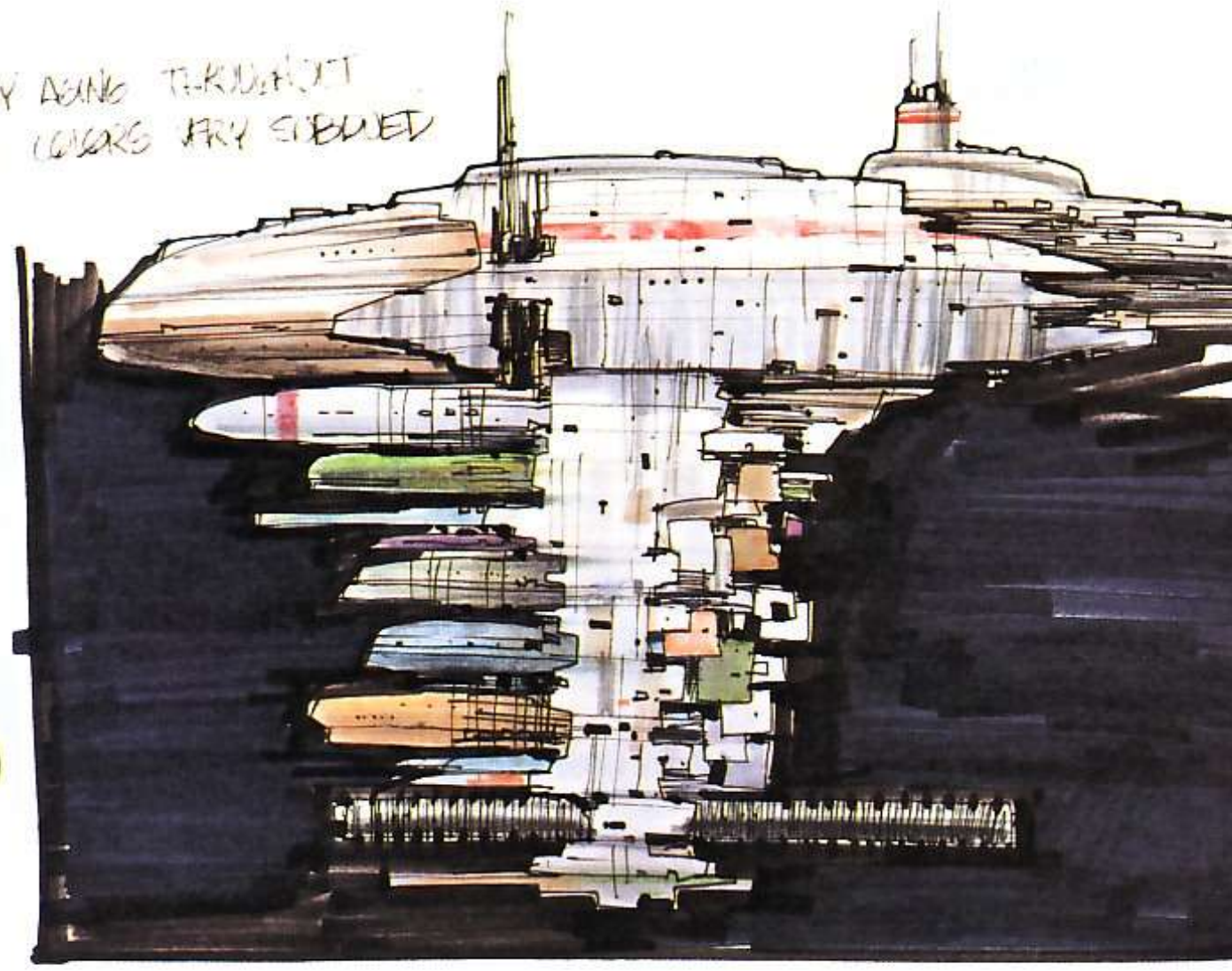
LUKE ATTACKS AGAIN BUT IS CUT. HE REELS BACK IN SHOCK AND PAIN

LUKE IN TRENDOUS PAIN

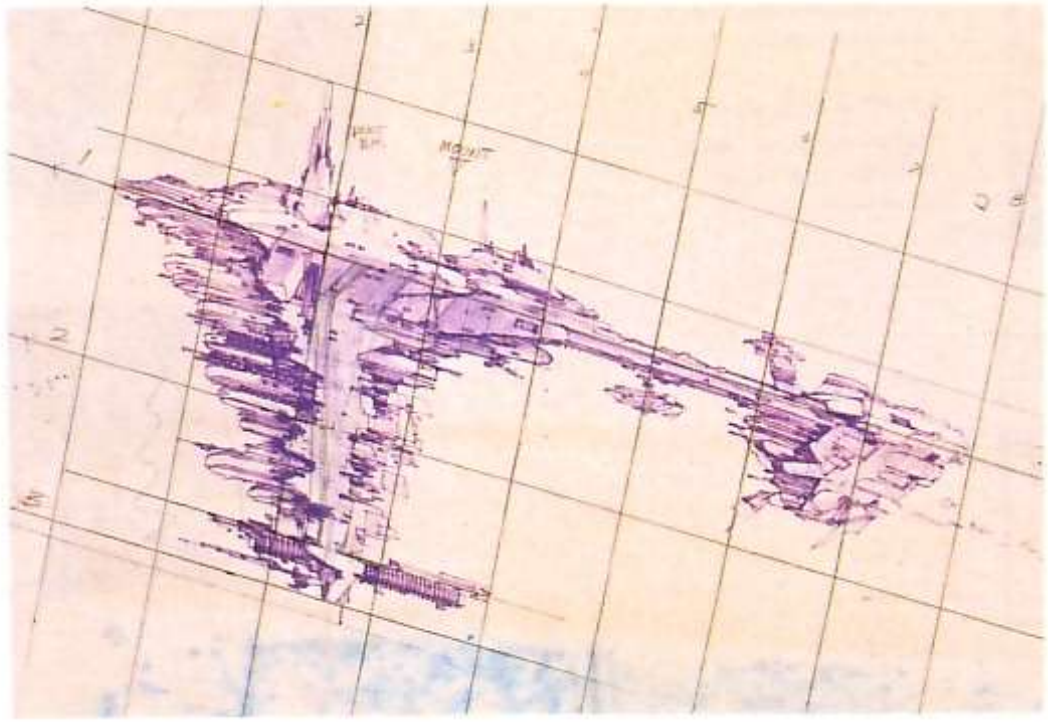
"NO. —
NO. —
NO. —
NO —
NO. "

Luke hangs on, production painting





Rebel Medical Frigate Star Cruiser, concept sketch

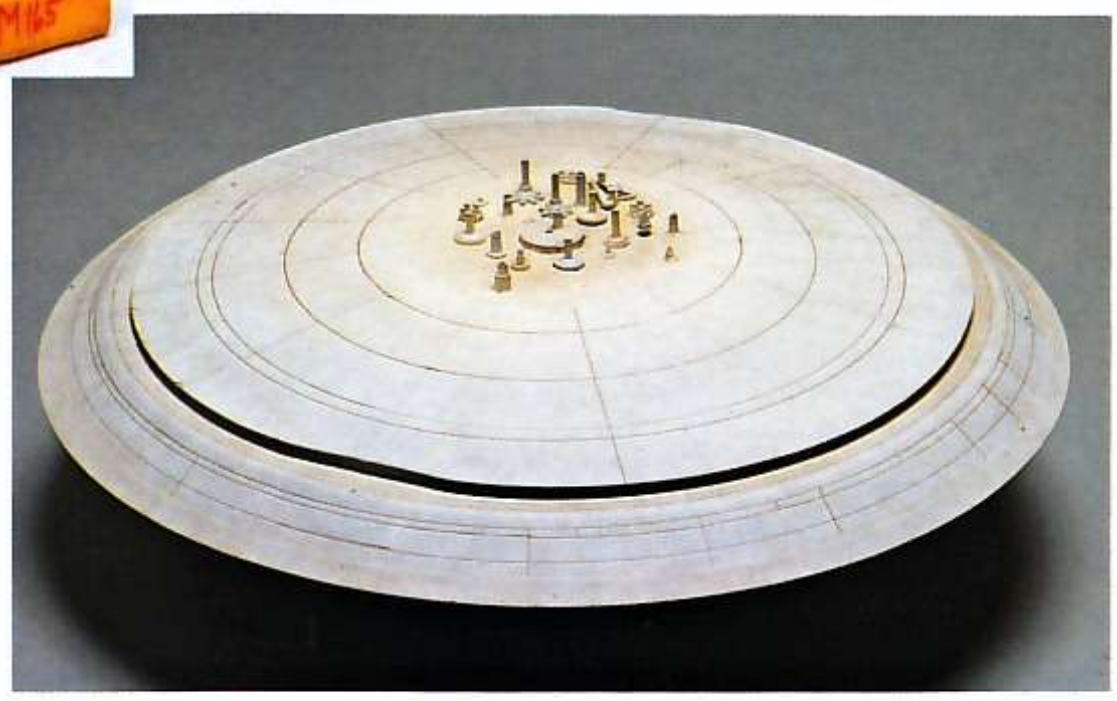


Rebel Medical Frigate Star Cruiser, model, 50 x 247 x 99 cm.

Healing, production painting
(Luke attended by Leia,
medical droid, R2-D2, and C-3PO)

Luke hanging from Cloud City,
puppet with model, 14 x 22 x 38 cm.

Luke and Leia, production paintings



Cloud City, prototype, 44 x 44 x 16 cm.

Cloud City core vane platform, prototype, 31 x 88 x 33 cm.

VICTORY FOR THE FORCE

RETURN OF THE JEDI

(Lucasfilm/20th Century Fox) 1983

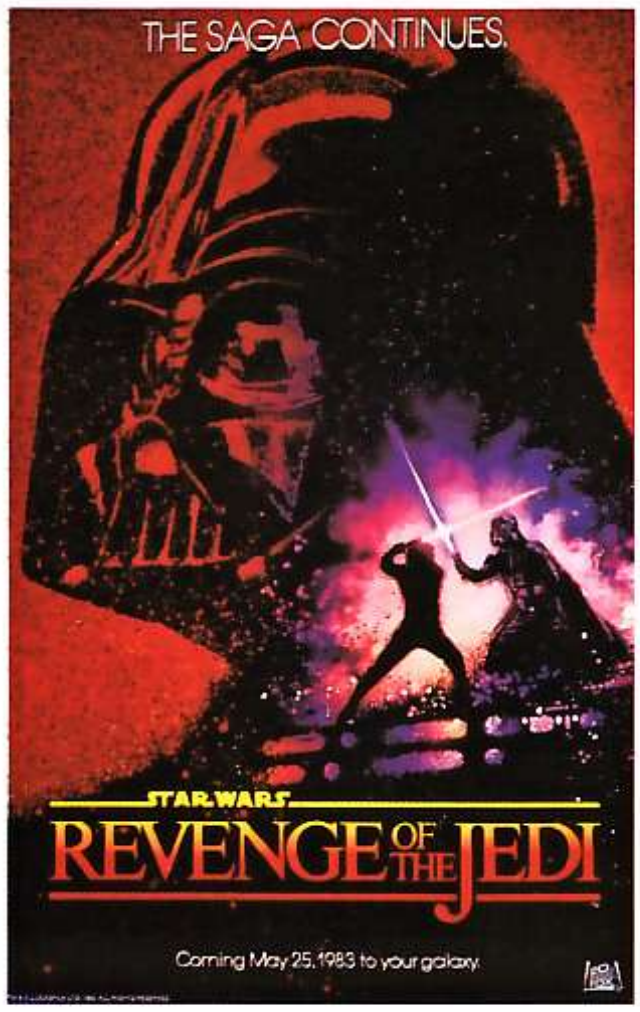
BLUE HARVEST

The third chapter in the *Star Wars* saga was originally titled *Revenge of the Jedi.* Upon reflection Lucas decided that vengeance was not a particularly noble aspiration for a true Jedi Knight and the movie was retitled *Return of the Jedi.* (Another poster for the film, in which two hands hold high a Jedi lightsaber, was drawn from photographs of George Lucas himself holding a lightsaber.)

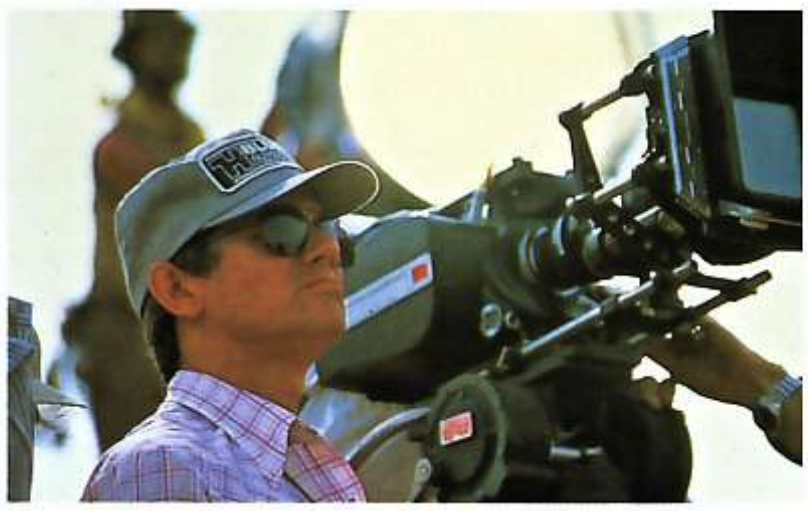
For *Jedi* the production goal, as dictated by Lucas, was to combine the experiences of the first two installments into one supreme production. The model making alone had increased by increments throughout the trilogy, from 50 models for *Star Wars* and 100 models for *Empire* to 150 models for *Jedi.* "I think George Lucas really feared that one of the sequels would not be compared favorably with the original," observes Lorne Peterson, "so he realized he had to up the ante each time."

With an underground fan market for pirated *Star Wars* video, scripts, and memorabilia—much less the inquiring minds of the media—secrecy on the production was vital. For location work in Yuma, Arizona, the production (with new director Richard Marquand on board) practiced a little of what is known in magician's circles as misdirection, using as cover the title of a fictious production, *Blue Harvest* ("Horror Beyond Imagination").

The security concerns were even extended to ILM, where the plot of the movie was not disclosed, so effects scenes were created without the artists knowing how their work fit into the entire film. As it was, the effects house, with two Academy Awards for visual effects and one Special Achievement award under its belt, had no time for intrigues. They were not only going about the business of topping themselves but had to deliver some five hundred separate effects shots.



Revenge of the Jedi, pre-release poster, 69 x 104 cm.



Director Richard Marquand with *Blue Harvest* cap

BLUE HARVEST

BLUE HARVEST

HORROR BEYOND IMAGINATION

Blue Harvest logo

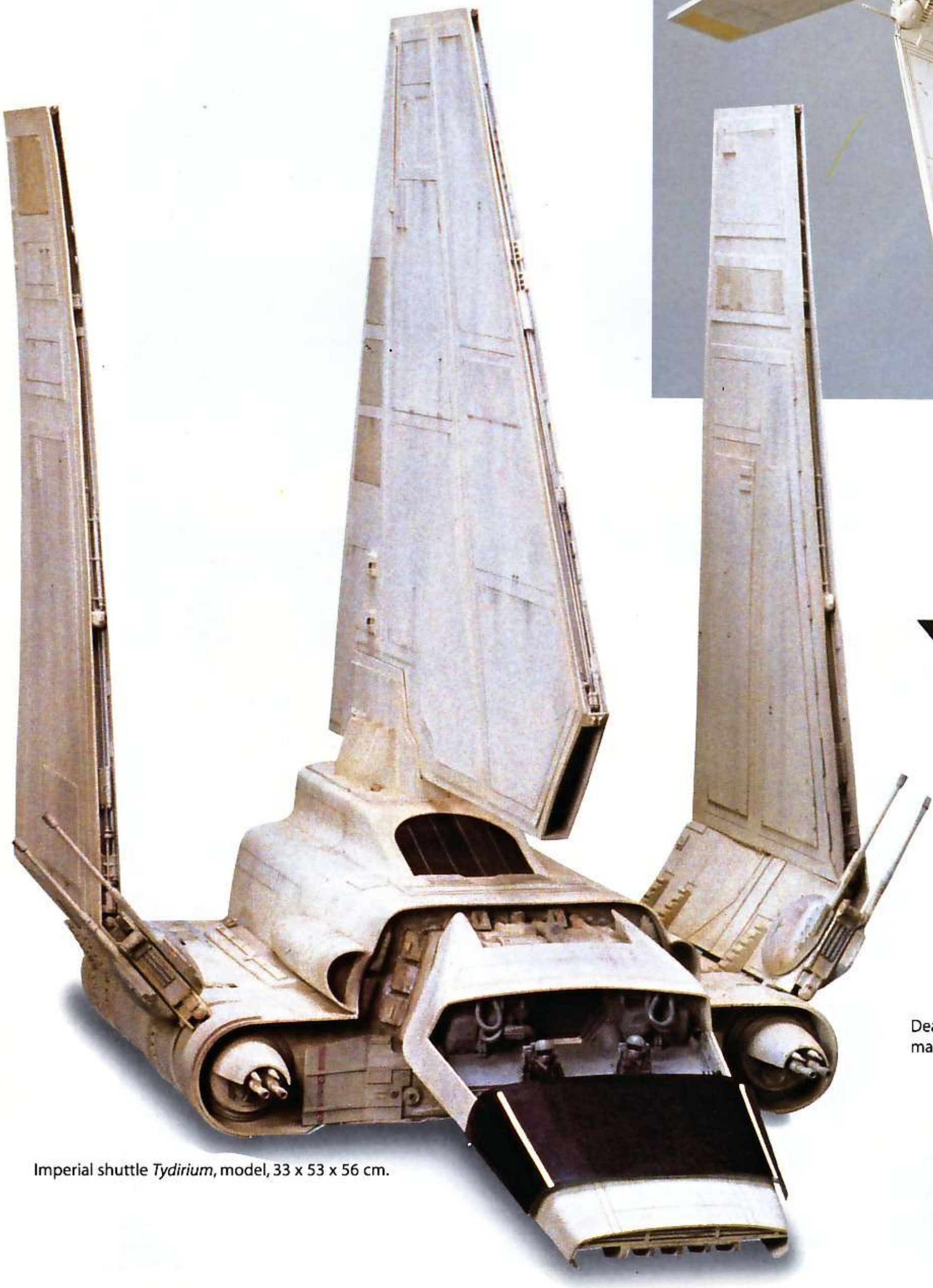
Return of the Jedi, release poster, 69 x 104 cm.

DOCK OF THE BAY

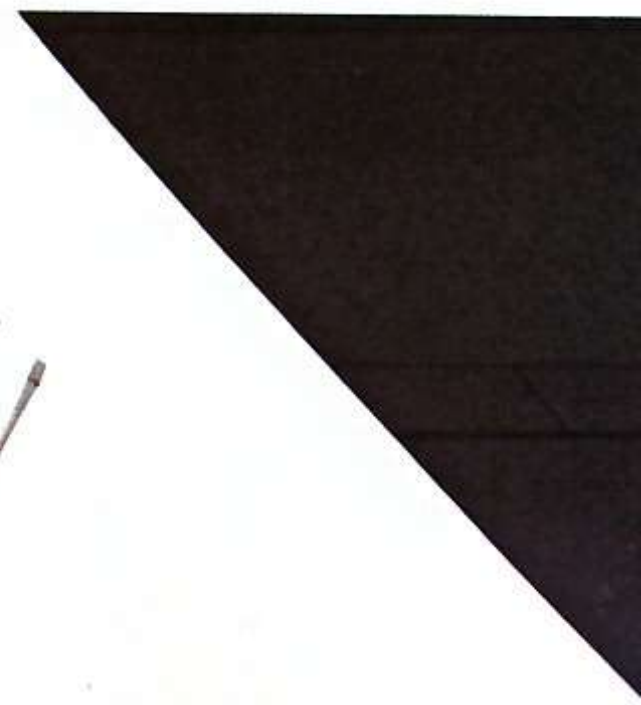
As with the previous two installments, much of *Jedi* was filmed at Elstree Studios in England, but as with the Imperial base, matte painting magic would extend the environment. For an interior painting of the Imperial docking bay painter Frank Ordaz had to match the shiny source reflections of the soundstage's black linoleum floor with a separate glare painting that was double-exposed into the final shot. (Some visual gags are included in the paintings, such as the TransAmerica Pyramid building visible to the extreme left of the middle section of the "Death Star Trench Docking Bays" painting.)

The *Star Wars* Death Star had been a matte painting, which limited the camera moves. For *Jedi* the new under-construction citadel of the Empire would be created as a model.

Imperial shuttle *Tydirium*, model, 28 x 30 x 18 cm.



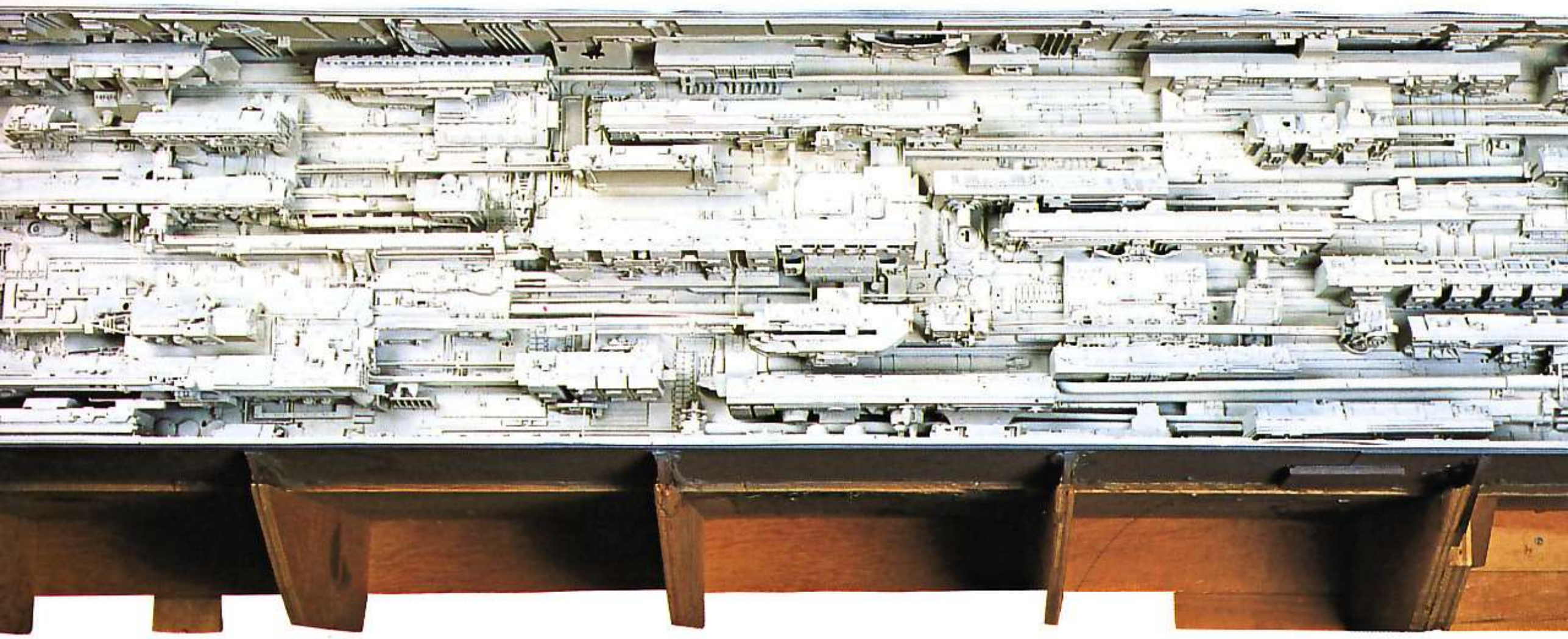
Imperial shuttle *Tydirium*, model, 33 x 53 x 56 cm.



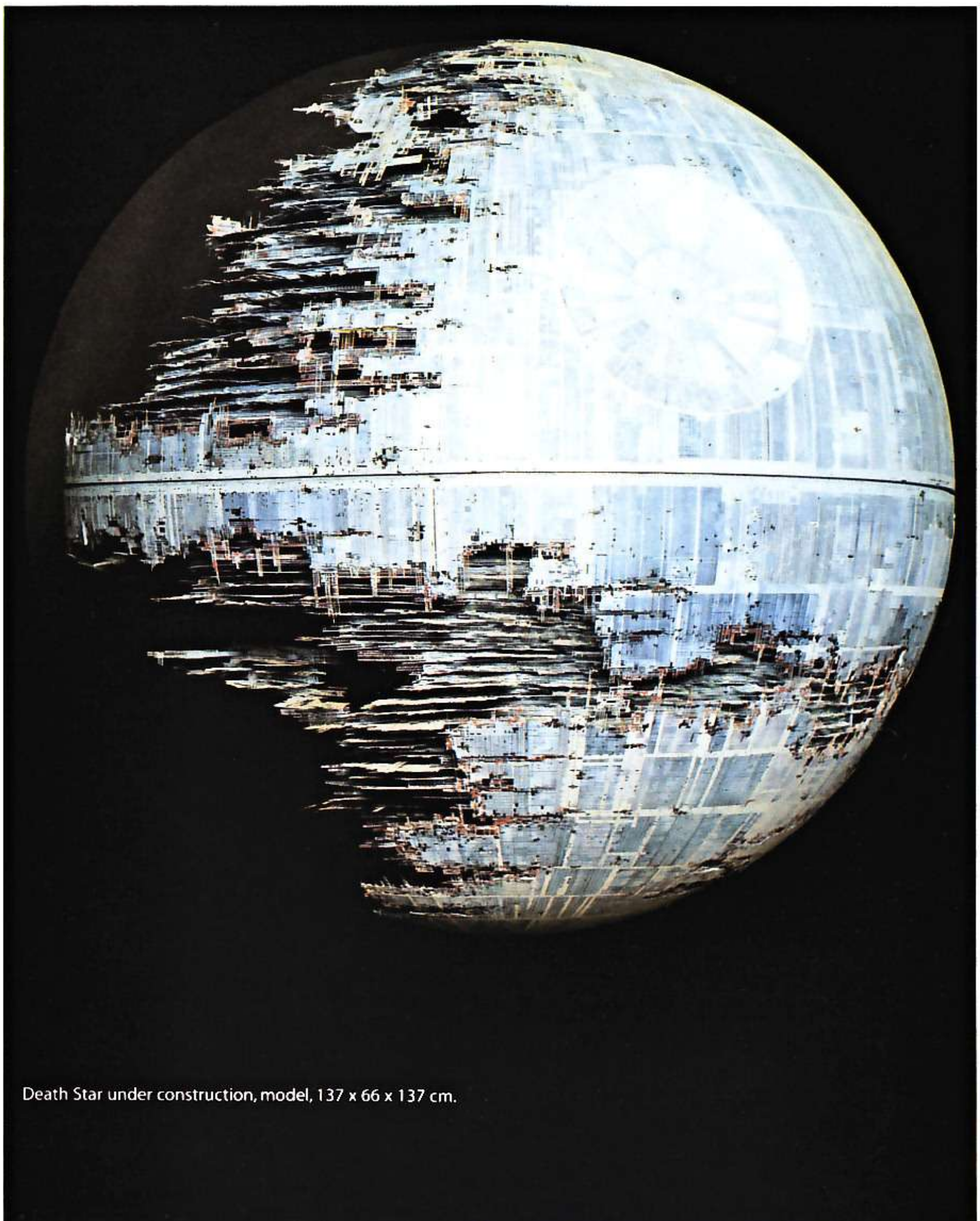
Death Star trench docking bay port, matte painting, 212 x 122 cm.

Imperial docking bay, matte painting, 191 x 84 cm.

T-16 Skyhopper, prop, 43 x 17 x 42 cm.

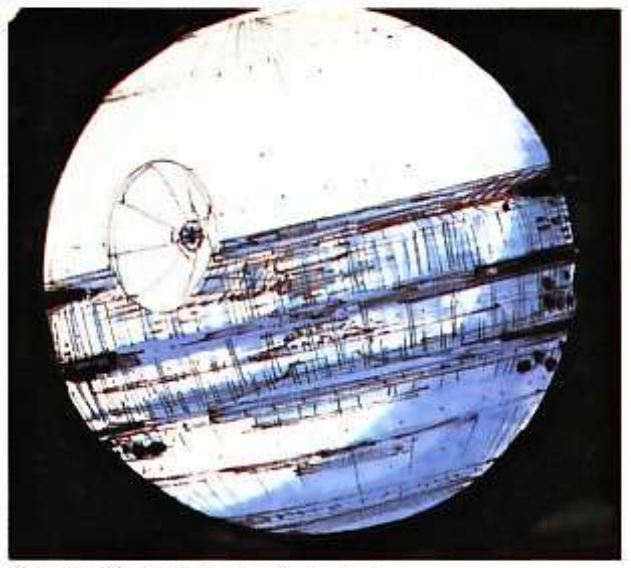


Star Destroyer, model (side detail), 325 x 76 x 61 cm.

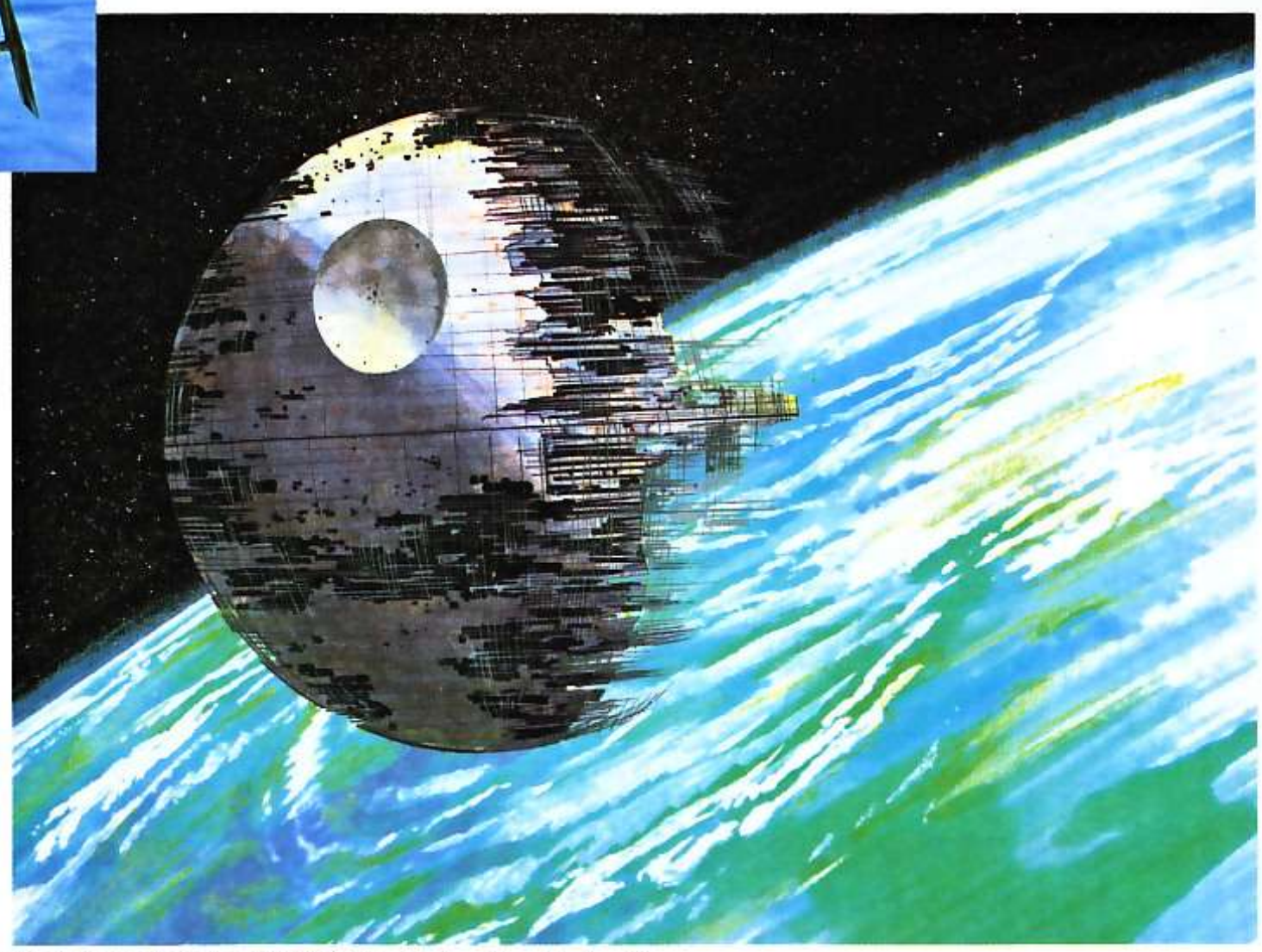


Death Star under construction, model, 137 x 66 x 137 cm.

Death Star under construction (with Star Destroyer and TIE Fighters), still from film

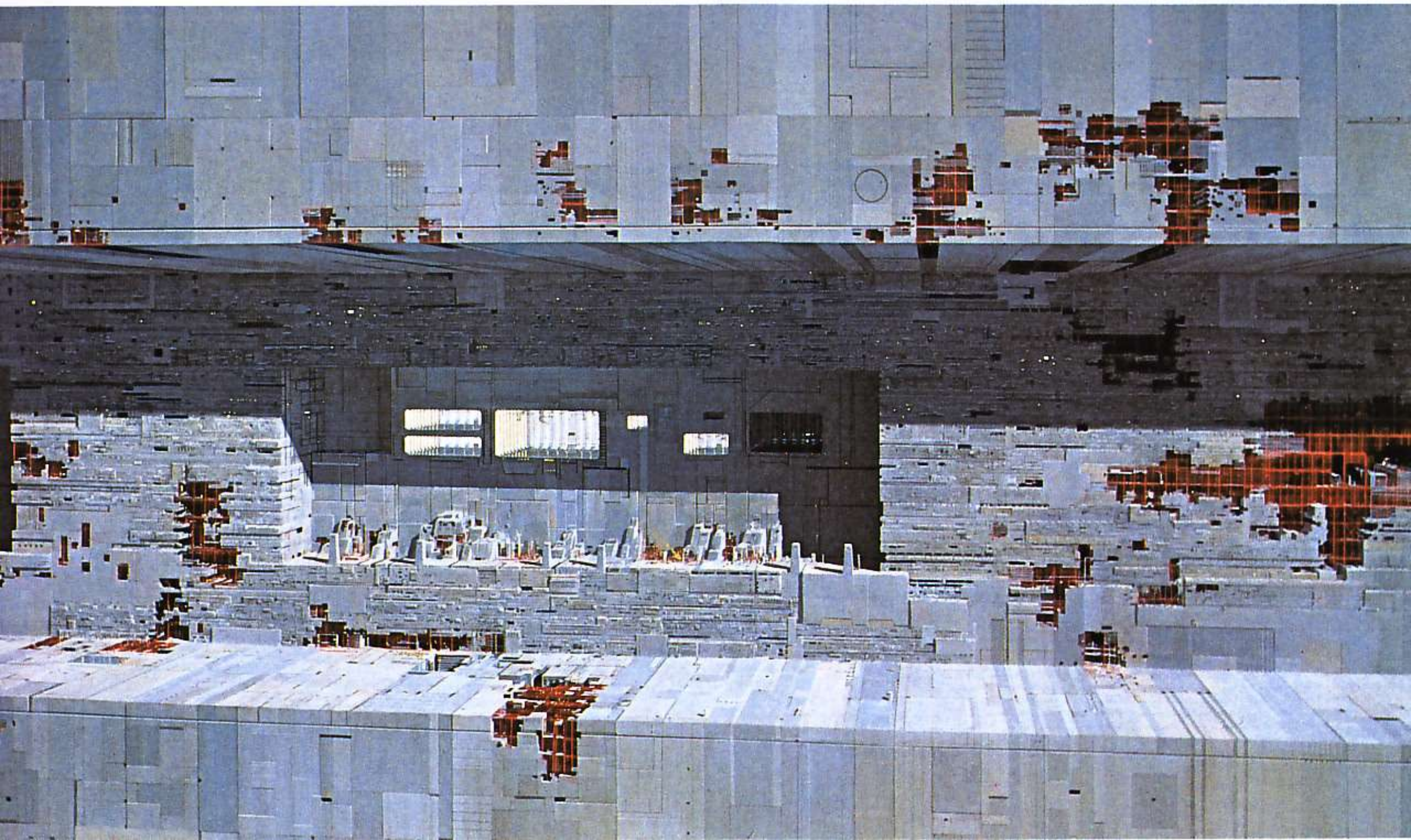


Death Star, concept sketch

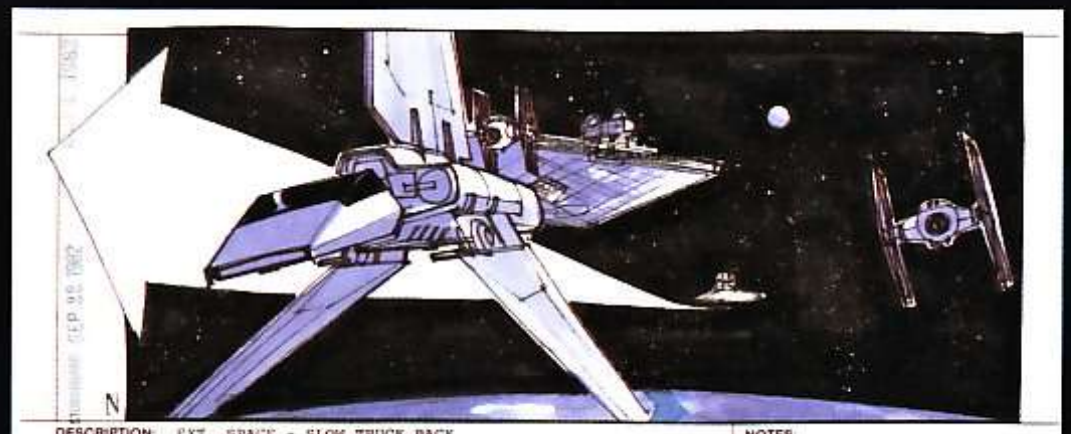


Death Star under construction, production illustration

Death Star trench docking bays, matte painting, 244 x 122 cm.



Shuttle docks with Death Star, storyboard sequence



DESCRIPTION: EXT. SPACE - SLOW TRUCK BACK

REVERSE of OP 1. Shuttle coming toward camera with escort of two TIEs. Shuttle gains through shot & exits frame L, ROARING by camera. Stardestroyers & planet Endor in background.

NOTES:

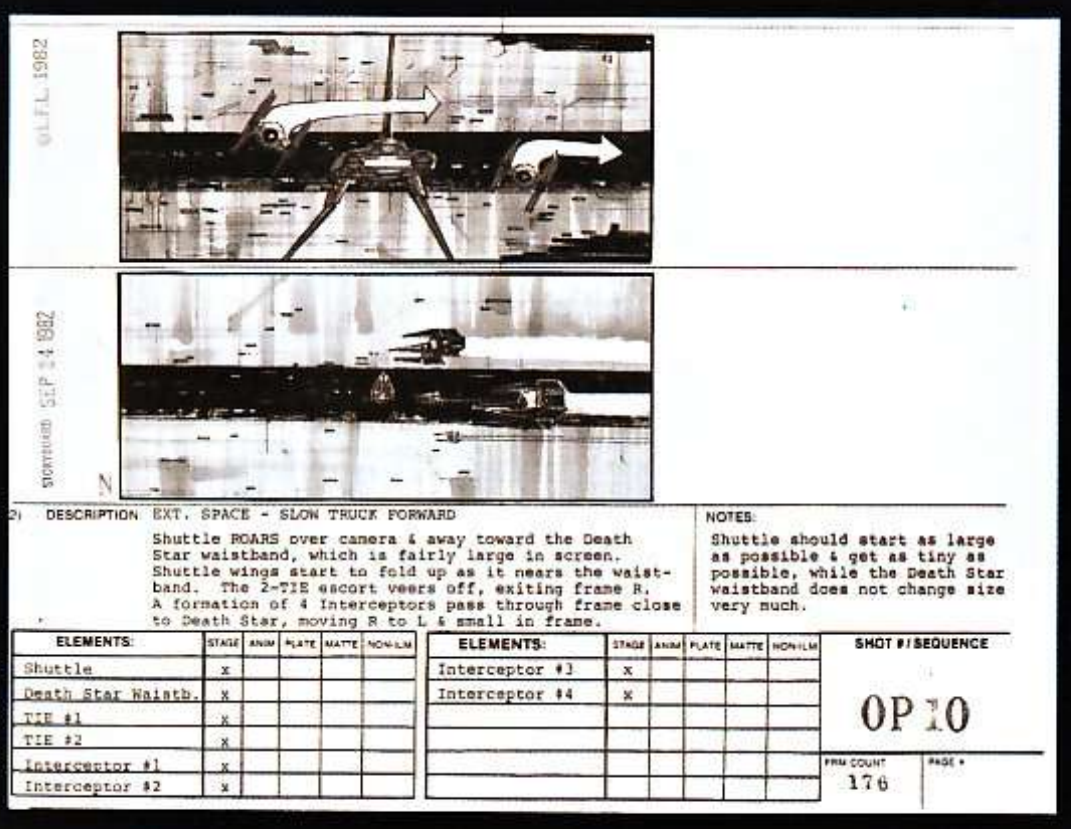
Shot should look like VM except closer if possible.

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Shuttle	x				
TIE #1	x				
TIE #2	x				
Stardestroyer #1	x				
Stardestroyer #2	x				
Planet Endor	x				
Endor (moon)				x	
Stars	x				

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM

SHOT # / SEQUENCE: OP 2

FRM COUNT: 86 PAGE #:



DESCRIPTION: EXT. SPACE - SLOW TRUCK FORWARD

Shuttle ROARS over camera & away toward the Death Star waistband, which is fairly large in screen. Shuttle wings start to fold up as it nears the waistband. The 2-TIE escort veers off, exiting frame R. A formation of 4 Interceptors pass through frame close to Death Star, moving R to L & small in frame.

NOTES:

Shuttle should start as large as possible & get as tiny as possible, while the Death Star waistband does not change size very much.

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Shuttle	x				
Death Star Waistb.	x				
TIE #1	x				
TIE #2	x				
Interceptor #1	x				
Interceptor #2	x				

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Interceptor #3	x				
Interceptor #4	x				

SHOT # / SEQUENCE: OP 10

FRM COUNT: 176 PAGE #:

DESCRIPTION:

The Shuttle is moving in slowly on the Death Star; Death Star should drift in slightly from R with slight rotation. By end, it should have travelled down 2 fields & across 4 fields.

NOTES:

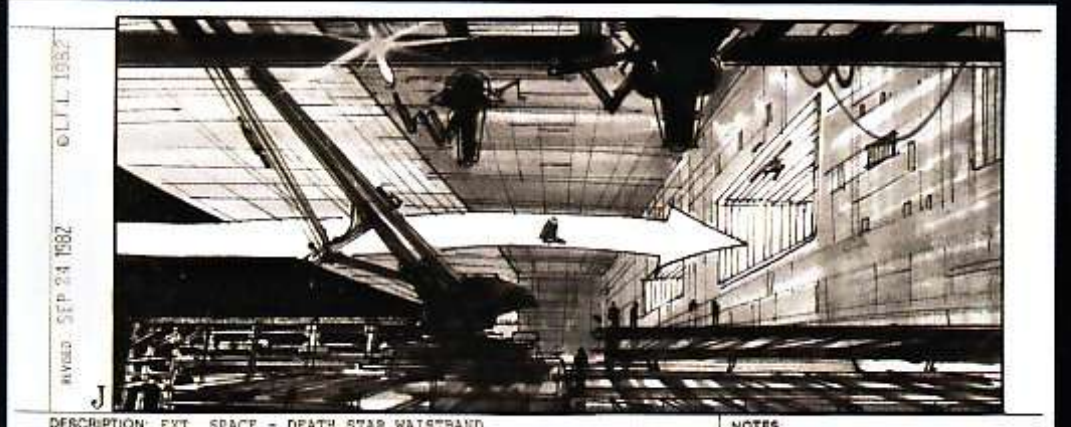
Blow up plate: bring frame line in one field all the way around.

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Shuttle Pilots			x		
Death Star	x				
Stars	x				

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM

SHOT # / SEQUENCE: OP 3

FRM COUNT: PAGE #:



DESCRIPTION: EXT. SPACE - DEATH STAR WAISTBAND

Vader's Shuttle moves across the screen L to R toward the smaller, upper docking bay of the Death Star. In the foreground are some welders. The Shuttle is tiny in relation to the vast Death Star waistband.

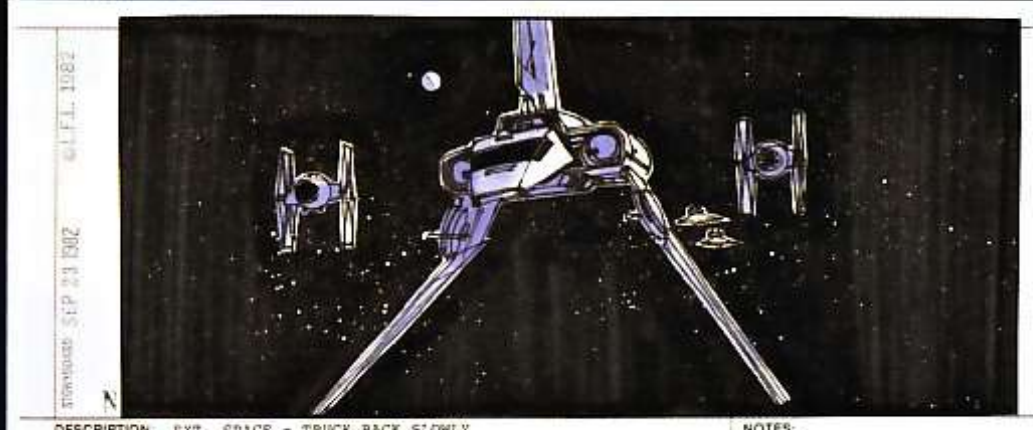
NOTES:

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Waistband/Stars				x	
Shuttle				x	
Welders	x				

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM

SHOT # / SEQUENCE: OP 11

FRM COUNT: 139 PAGE #:



DESCRIPTION: EXT. SPACE - TRUCK BACK SLOWLY

The Shuttle and its escort of 2 TIEs move toward camera, gaining through shot & exiting frame over camera BIG. Stardestroyers & the planet Endor are in the background.

NOTES:

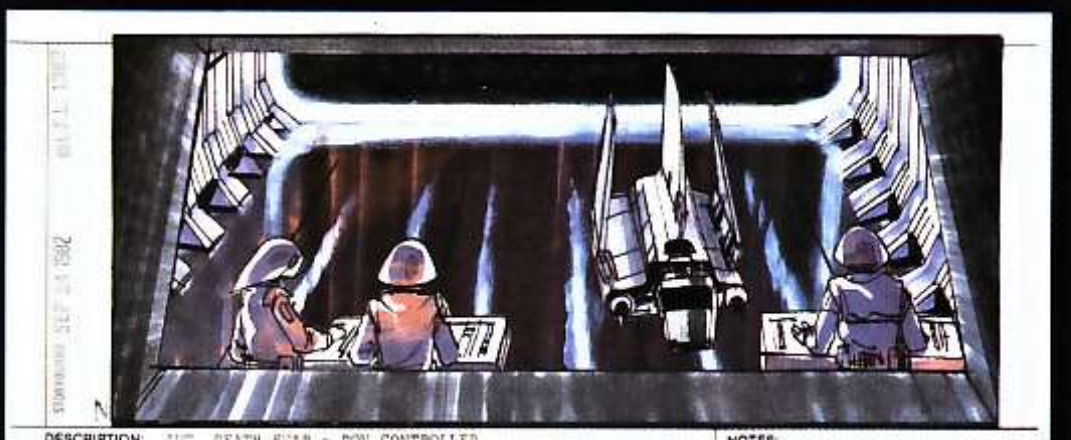
This shot can be just like the VM.

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Shuttle	x				
TIE #1	x				
TIE #2	x				
Stardestroyer #1	x				
Stardestroyer #2	x				
Planet Endor	x				
Stars	x				

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM

SHOT # / SEQUENCE: OP 8

FRM COUNT: 81 PAGE #:



DESCRIPTION: INT. DEATH STAR - POV CONTROLLER

In the foreground are some Imperial Troopers working at a control Board. Beyond is the Docking Bay. The Shuttle flies into the Docking Bay & lands.

NOTES:

As in VM. People should be smaller than they are in VM.

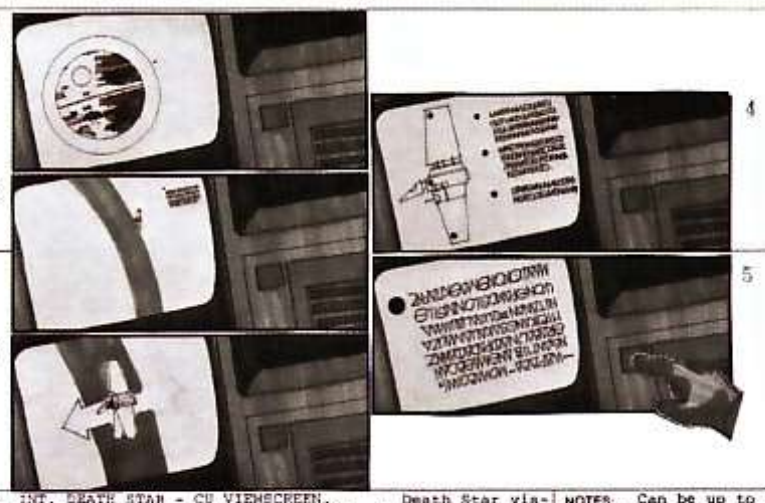
In extreme FG is the Controller's window frame.

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
FG Troopers			x		
Docking Bay-pntg.	x				
Shuttle	x				
Stars	x				
Ex. FG Window	x				

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM

SHOT # / SEQUENCE: OP 12

FRM COUNT: 80 PAGE #:



DESCRIPTION: INT. DEATH STAR - CU VIEWSCREEN. Death Star visible in full with grid around it (no scan line). Speck in upper R corner is moving across R to L. Speck meets line of grid; ZOOM IN to speck & grid line. Grid line breaks & speck (now Shuttle) goes thru force field. 1 small dot on tip of Shuttle wing lites up; at same time, paragraph of foreign language appears in upper R of screen. Another small dot on Shuttle; another on screen until 3 total. Hand pushes button; one of the paragraphs fills screen.

NOTES:

Can be up to twice as long as given here. No matter what length, dots start appearing 25% into shot. Do NOT have to be fully zoomed in for dots to appear. Sync with hand.

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Shuttle Dashboard			x		
CAX - Death Star					x
Writing - anim					x

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM

SHOT # / SEQUENCE: OP 9

FRM COUNT: PAGE #:

JEDI CREATURES

While the creatures of the cantina scene in *Star Wars* were memorable, Lucas felt they lacked a truly unearthly quality. *Jedi*, for sheer number and variety of alien creatures, would be remembered as the monster movie of the series.

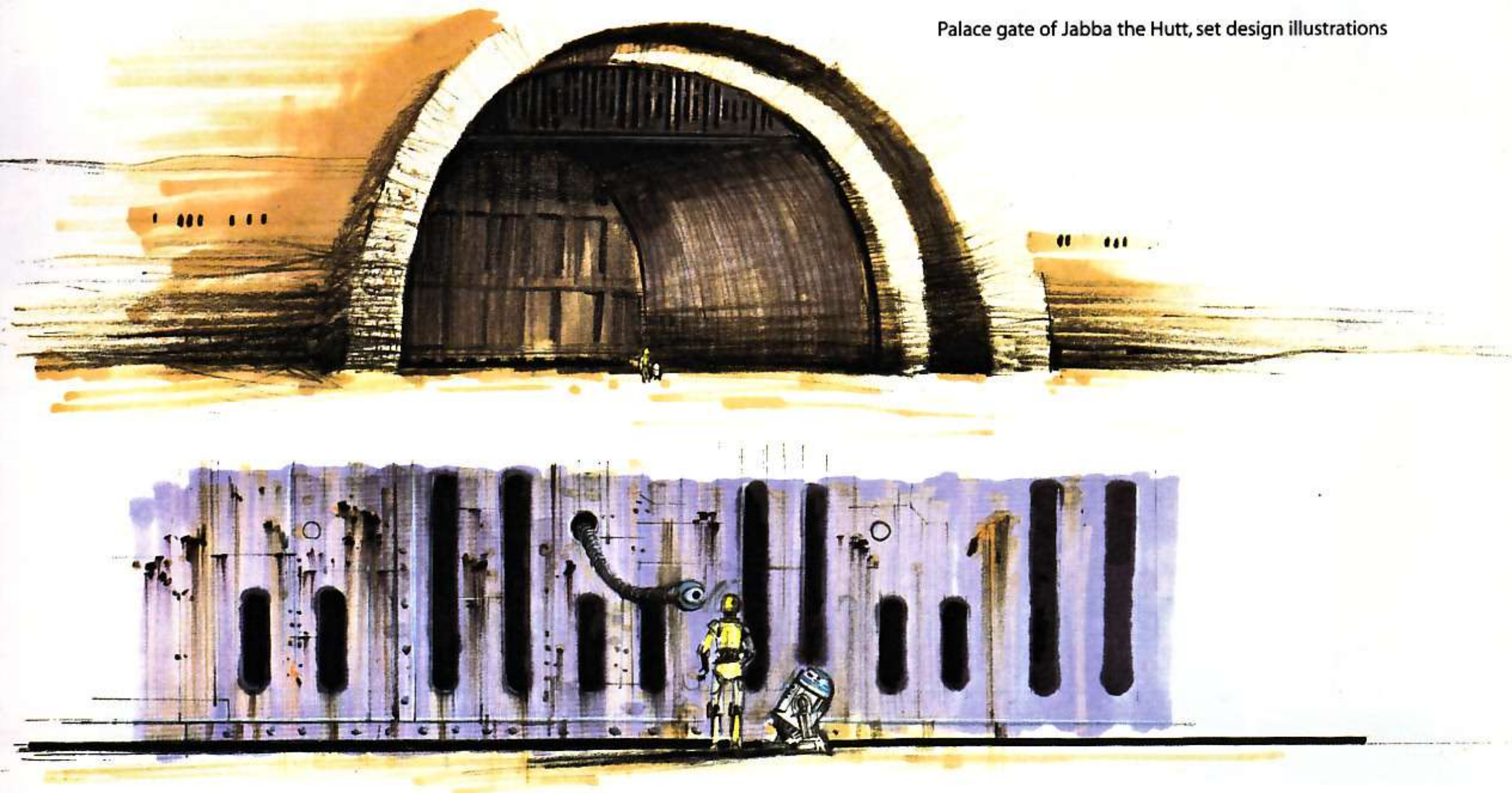
Creature Design Supervisor Phil Tippett and his team set up an entire creature bay and were developing creatures six months before the script was locked down. For eight months they developed designs for the strange denizens who formed the entourage of the gangster Jabba the Hutt (whose palace was created as a matte painting, with the droids composited as an in-camera, latent image effect). The crew gave nicknames to their works in progress (including "Woof," "Quee Quay," "Droopy McCool," "Apple Slug," "Hole in the Head," and "Ree-Yees." The names "Klaatu" and "Barada" paid homage to the alien characters of the classic *The Day The Earth Stood Still.*) They evolved from design sketches to three-dimensional prototypes to final effects (which varied from costumes for actors to flip-on masks and articulated puppets).

Jabba, who held Princess Leia prisoner, would emerge as a major character in the film. Since Jabba required physical interaction with real actors, the debauched creature (inspired in part by Sydney Greenstreet's sinister role as Casper Gutman in *The Maltese Falcon*), was built as a full-scale, articulated, foam latex creature by a team headed by Stuart Freeborn. Hidden cables in the giant Jabba allowed as many as ten off-camera puppeteers to work the various articulate functions that brought the creature to life.

Palace gate of Jabba the Hutt, production painting

C-3PO and R2-D2 approach Jabba's palace, still from film

Palace gate of Jabba the Hutt, set design illustrations



Gamorrean Guard (nicknamed "Pig Guard"),
full head mask, 35 x 38 x 52 cm.

In the custody of the Gamorrean Guard, production painting

Gamorrean Guard, production illustration

© L.F.L. 1981

15 x 22 x 14 cm.

19 x 22 x 25 cm.

Gamorrean Guard prototypes,

15 x 22 x 24 cm.

Road Creature, model, 76 x 56 x 41 cm.

Amanaman, prototype,
43 x 20 x 64 cm.

Rancor, prototype,
22 x 30 x 29 cm.

Barada, prototype,
15 x 9 x 30 cm.

Nikto, prototype,
10 x 22 x 29 cm.

Bib Fortuna, prototype,
14 x 21 x 30 cm.

Bib Fortuna, prototy
10 x 10 x 20 cm.

Salacious Crumb, puppet, 25 x 81 x 25 cm.

Rock Wart (nicknamed "Rock Alien"), puppet, 51 x 33 x 76 cm.

Ephant Mon (nicknamed "Elephant Man"), prototype, 20 x 25 x 33 cm.

Apple Slug, prototype, 14 x 13 x 12 cm.;

Queen Quay (nicknamed "Weequay"), prototype, 9 x 20 x 20 cm.

Pote Snitkin (nicknamed "Snit Plotkin") prototype, 35 x 29 x 6 cm.

Ishi Tib (nicknamed "Starfish"), prototype, 10 x 10 x 11 cm.

Hermi Odle, prototype, 14 x 16 x 32 cm.

Hole in the Head, prototype, 11 x 10 x 15 cm.

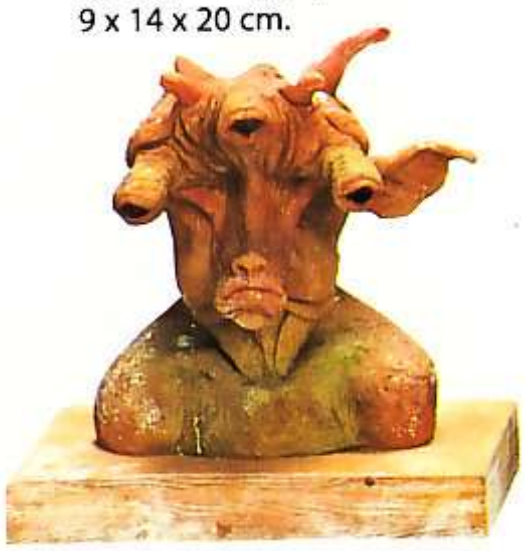
Elom (nicknamed "The Mole"), prototype, 10 x 8 x 15 cm.

Klaatu, prototype, 22 x 17 x 14 cm.

Road Creature, prototype, 20 x 36 x 24 cm.

Tooth Face, prototype, 10 x 8 x 2 cm.

Ree- Yees (nicknamed "Three-Eyes"), prototype, 9 x 14 x 20 cm.



Droopy McCool, prototype, 10 x 9 x 13 cm.

Yak Face, prototype, 10 x 14 x 18 cm.

Max Rebo, prototype, 10 x 11 x 15 cm.

Yak Face, full-head mask, 41 x 74 x 51 cm.

Nikto, full-head mask, 46 x 53 x 41 cm.

Klaatu, full-head mask, 36 x 53 x 33 cm.

Ishi Tib (nicknamed "Starfish"), full-head mask, 36 x 51 x 41 cm.

Sy Snootles, rod puppet, 41 x 53 x 147 cm.

Quee Quay (nicknamed "Weequay"), full-head mask, 41 x 42 x 30 cm.

Barada, full-head mask, 38 x 51 x 30 cm.

Ree-Yees (nicknamed "Three-eyes"), full-head mask, 58 x 76 x 41 cm.

Luke in Jabba's Lair, production painting

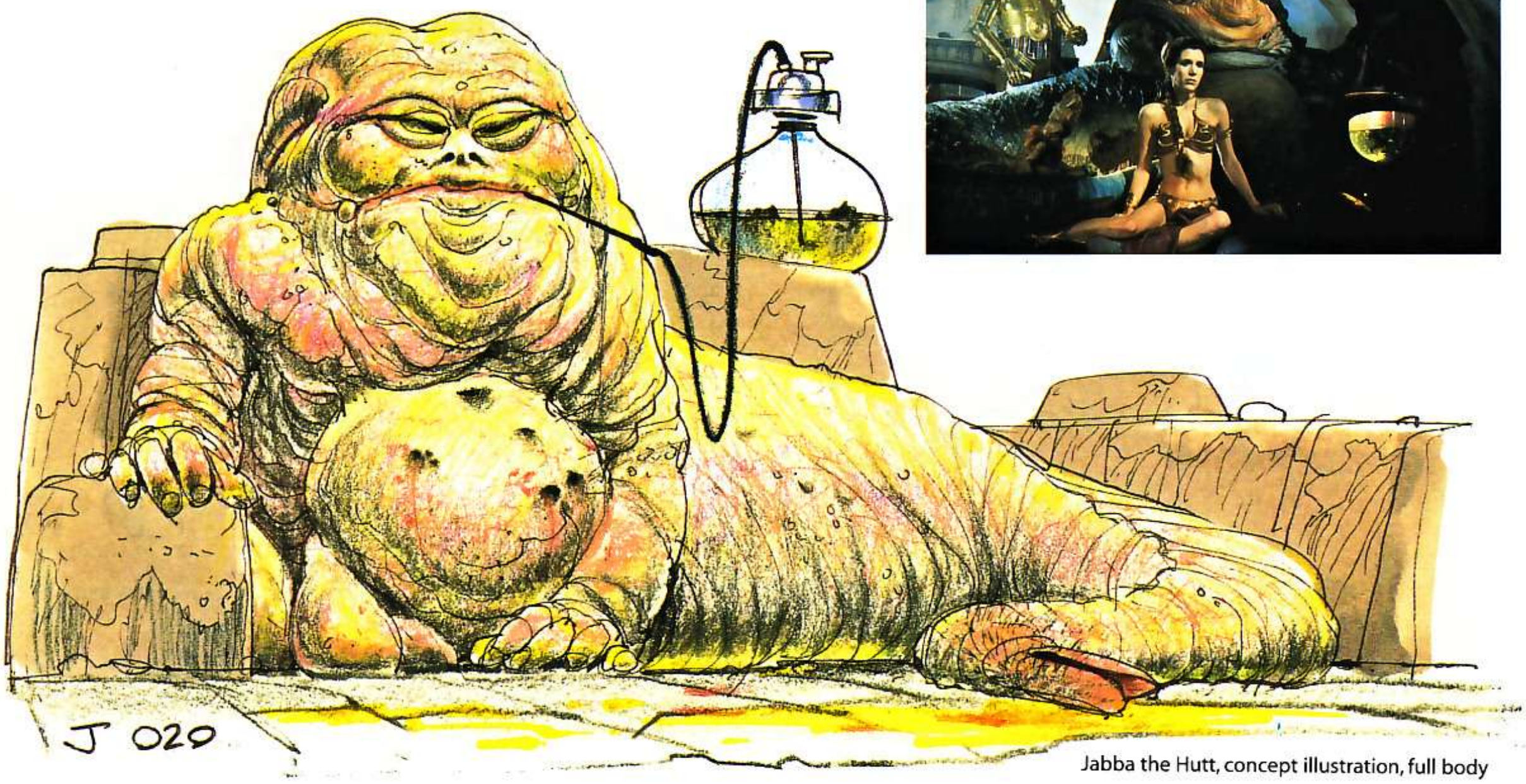
Jabba the Hutt, concept illustration, head detail

24 x 14 x 18 cm.

15 x 20 x 17 cm.

14 x 10 x 8 cm.

Jabba the Hutt, prototypes,



Jabba the Hutt, concept illustration, full body

Luke in Jabba's Lair, production painting

Jabba the Hutt, scale model, 84 x 279 x 86 cm.

Luke confronts Jabba, production illustration

SOLO RELIEF

The Empire Strikes Back ends with Han Solo, captured by the Imperial forces, encased in carbonite. The life-size prop utilized life molds of actor Harrison Ford's head.

Ford actually felt his character should have been killed off, entombed forever in the carbonite slab, a martyr to the cause of the Rebellion. But George Lucas disagreed, so Solo was rescued from the clutches of death and dropped back into the action.

Solo's salvation comes in the form of Princess Leia, who is armed with a thermal detonator and disguised as the bounty hunter Boushh. Lando and Luke, who also infiltrate the palace in disguise, are not far behind.

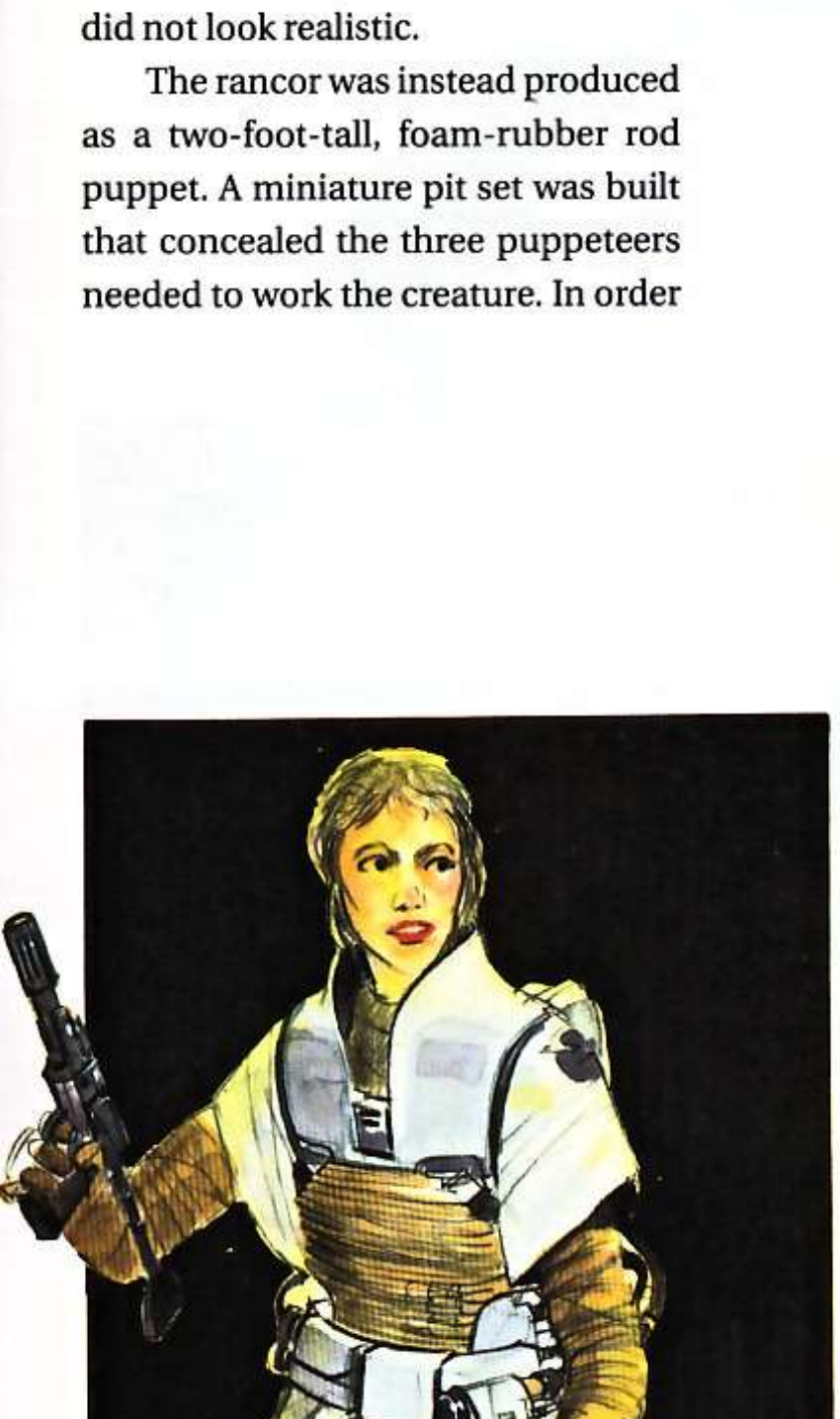
Han Solo in carbonite, prop, 81 x 203 x 25 cm.

RANCOR MONSTER

One of the most terrifying creatures in the film is the rancor beast, a flesh-eating creature locked in a cave pit below Jabba's palace. Phil Tippett recalls that Lucas originally wanted the rancor to be "the best Godzilla that had ever been done." Like Godzilla, the rancor was planned as a body outfit to be worn by an actor. Although intense preparations went into the idea, with the prop crew in England even shipping over a full-scale rancor cave set, the effect did not look realistic.

The rancor was instead produced as a two-foot-tall, foam-rubber rod puppet. A miniature pit set was built that concealed the three puppeteers needed to work the creature. In order

Princess Leia in Boushh disguise, costume design



Thermal Detonator, prop, 6 x 6 x 6 cm.

Princess Leia as Boushh, costume, 48 x 38 x 173 cm.

to create a feeling of weight and scale, the rancor puppet was shot at seventy-two frames a second instead of the normal twenty-four frames. "In stop-motion animation you try to imply weight and frame by frame you sculpt your movement," says Tippett. "But shooting high speed everything slows down, and it's tricky getting into a rhythm that will impart the sense of weight and scale. It's a very strange temporal space."

Luke in the Rancor Pit, concept sketch

Rancor Beast, model,
58 x 53 x 38 cm.

Rancor Beast, production illustration

Rancor Beast, concept illustrations

Lando in disguise, costume design

Luke's Jedi gear, costume design

Luke in Jedi gear, costume design

JABBA'S SAIL BARGE

One of the major scenes in *Jedi* is a desert sequence of Jabba's regal sail barge, which was staged at the location site in Yuma, Arizona. Both the barge and a sand skiff in which Skywalker and company make their escape required an extensive design phase.

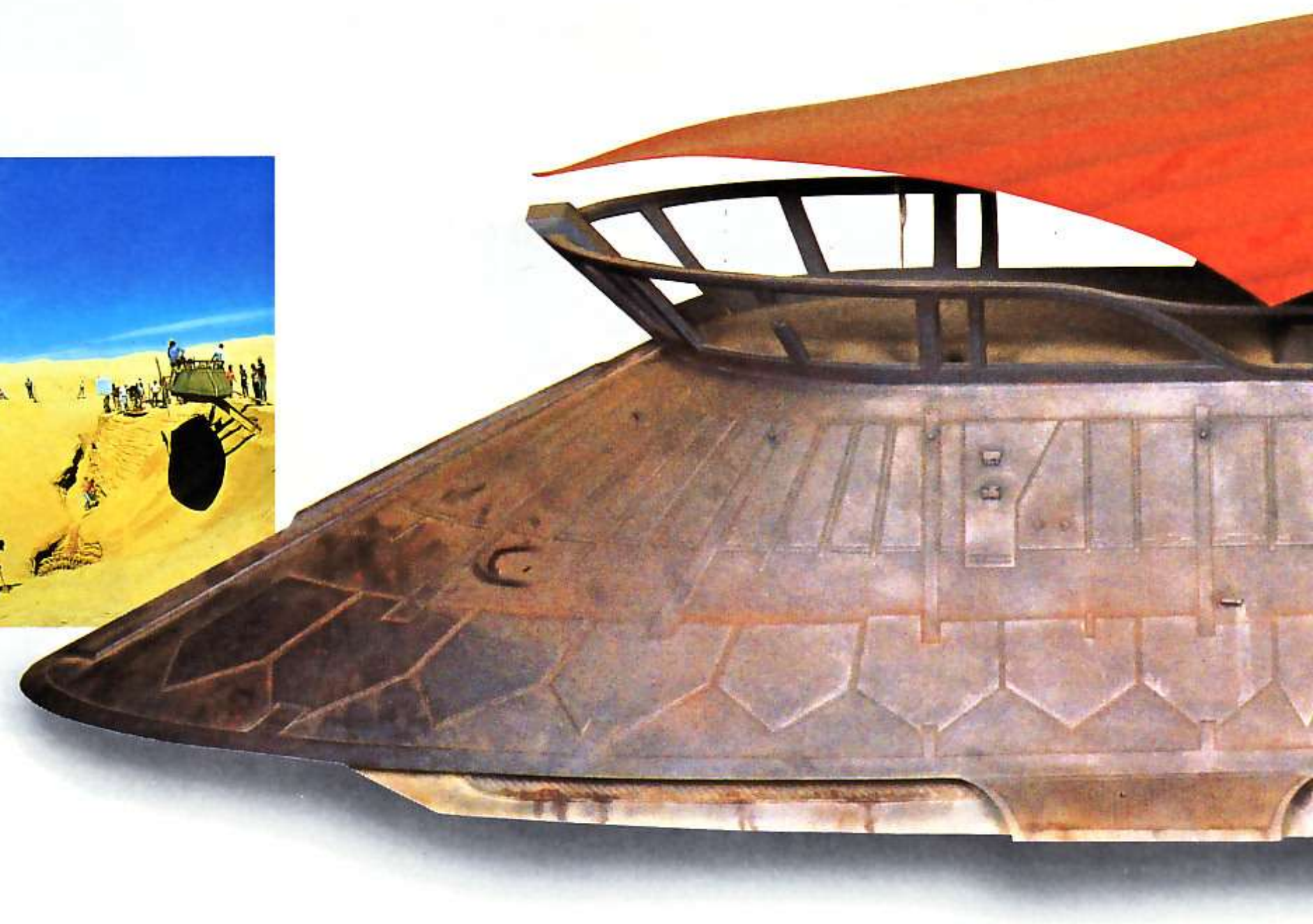
The Yuma shoot was a million-dollar piece of the production pie, with a four-acre shooting area surrounded by a chain link fence, the ground cleared of vegetation, and thirty-thousand square-foot area topped by a sixty-foot set. Local police and production security patrolled the perimeter. When a helicopter chartered by the media tried to fly overhead and take photographs, a production helicopter (bearing the *Blue Harvest* logo) drove away the interlopers.

The barge set construction required thousands of workhours to build, thousands of thirty-foot-long sheets of lumber, and more than fourteen thousand pounds of nails. Director Richard Marquand would remember the set as a frightening place on which to work, even with harnesses and other safety precautions for cast and crew.

Winged Transport, production painting

Winged Transport, production illustration

Jabba's Barge and Sarlacc Pit, location scene in Yuma, Arizona



Sand Skiff, model (with figures), 81 x 46 x 30 cm.

Jabba's Sail Barge, prototype, 36 x 64 x 15 cm.

Sand Skiff, model, 40 x 10 x 14 cm.

Sail Barge, model, 61 x 175 x 61 cm.

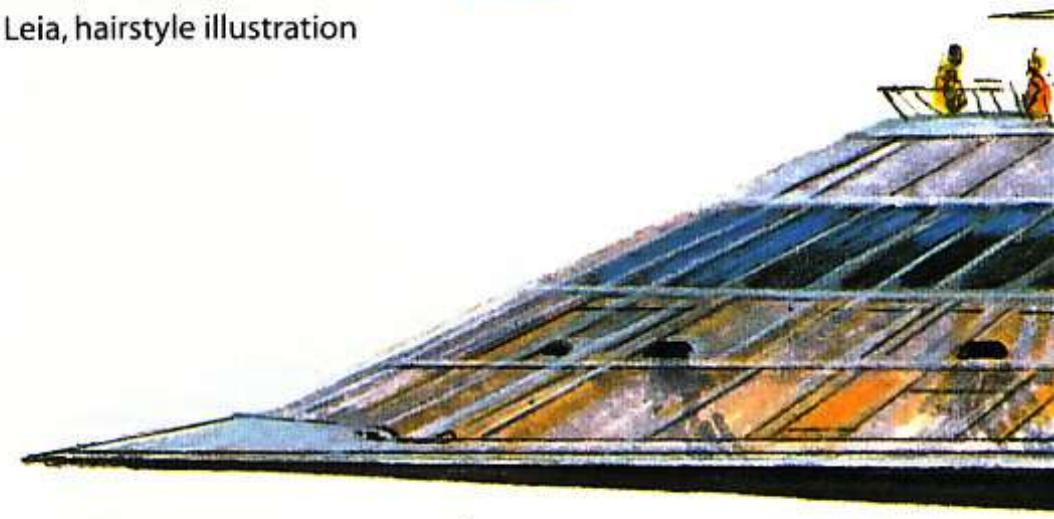
© L. F. L. 1981

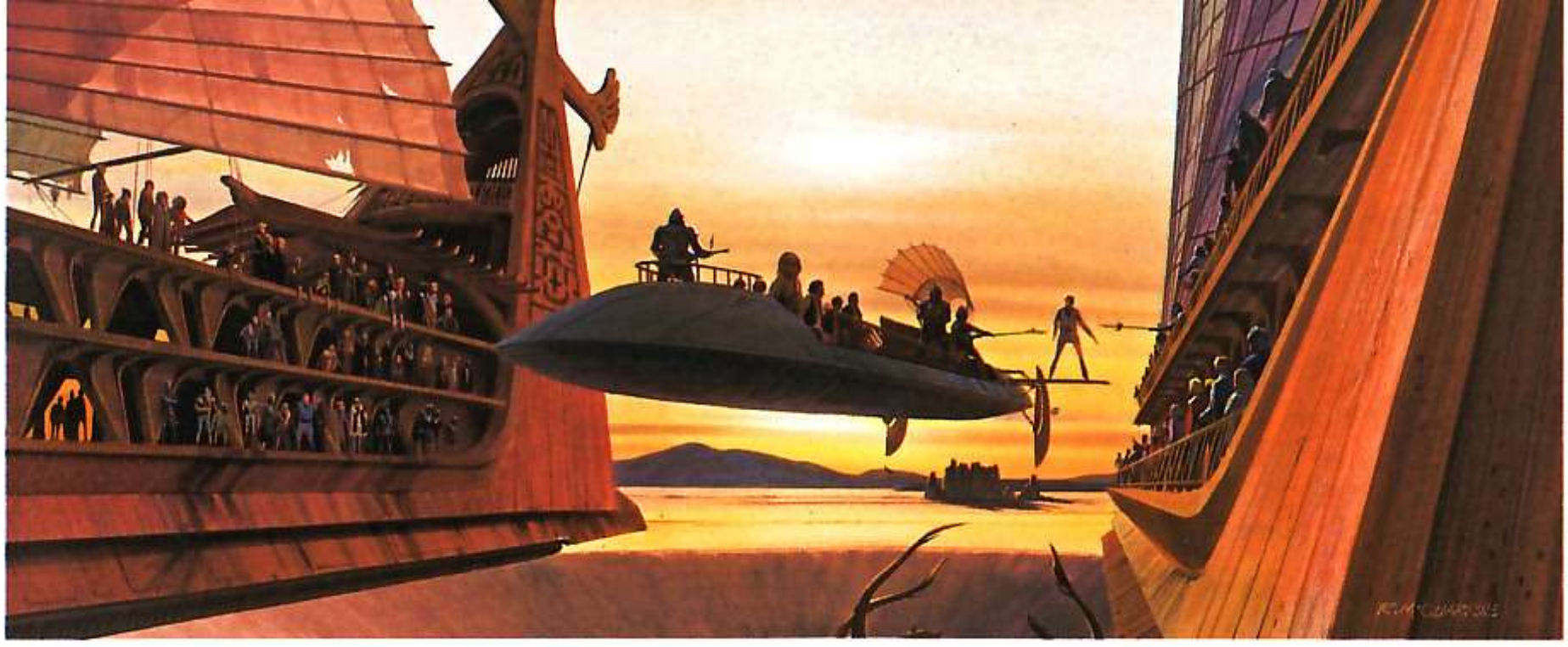
Princess Leia, hairstyle illustration

Battle on the Skiff, production painting

© L. F. L. 1981

Princess Leia, hairstyle illustration





Above the Sarlacc Pit, production painting

Princess Leia, costume design

Lando Calrissian, costume design

Han Solo, costume design

Sail Barge, concept illustration

IMPERIAL TROOPS ASSEMBLE

An impressive scene in *Jedi* is when seemingly thousands of Imperial troopers assemble in the Star Destroyer bay, standing at attention to receive the Emperor and his entourage.

Matte painting extended the action. Only two hundred costumed extras were needed for the soundstage element, with hundreds more foot soldiers provided as oil-painted creations by artist Chris Evans. Even some of the shining glints of light reflecting off of the black helmets were painted effects.

The Emperor (played by Ian McDiarmid) was conceived as an older person. But, unlike Yoda's gentle sagacity, the Emperor is consumed by the dark side of the Force. To add to his evil personality, costume design concepts dressed the Emperor in a hooded cloak to partially conceal his face.

Imperial Royal Guard, costume design

The Emperor's cane,
prop, 20 x 94 x 3 cm.

Imperial Royal Guard, costume design

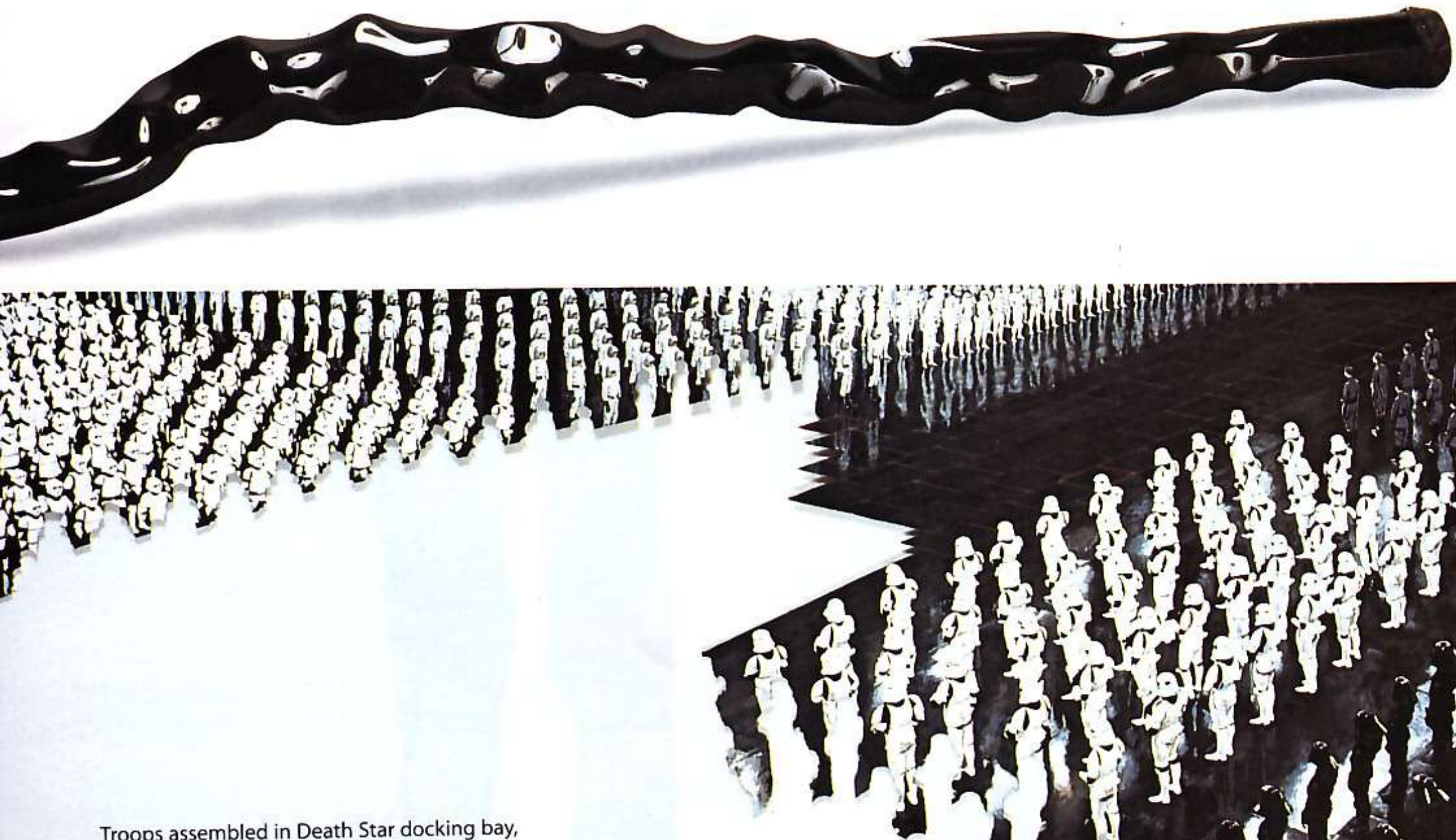
Imperial Royal Guard, costume headgear,
73 x 72 x 85 cm.

nperial Dignitary, costume design

Imperial Dignitary

EMPEROR

The Emperor, costume design

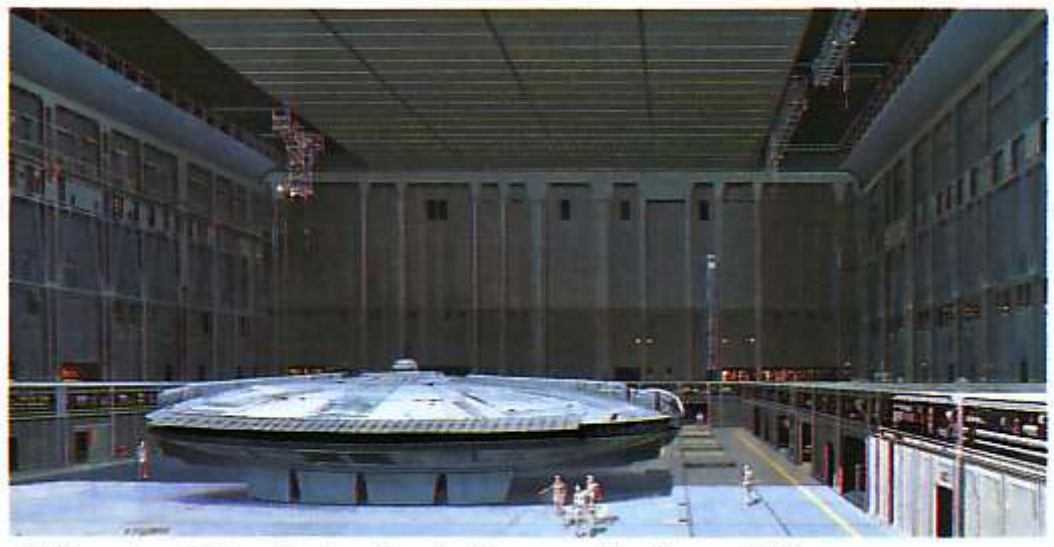


Troops assembled in Death Star docking bay,
matte painting, 191 x 84 cm.

REBEL FORCE

New ships were created for *Jedi*, in particular the Rebel Star Cruiser commanded by Admiral Ackbar, one of the race of aliens known as Mon Calamari. In the film, Ackbar's ship is the site of an important conference by the Rebel Alliance in which strategies for destroying the Death Star are plotted. The scene provided a dual challenge for both the creature shop artists who had to create the fishlike appearance of the Mon Calamarians and the model makers who created the Calamarian ships.

Ackbar, designed by Phil Tippett, was originally one of many anonymous creations filling the creature shop. "One day George [Lucas] walked in and said, 'that's Admiral Ackbar,'" Tippett recalls. "George



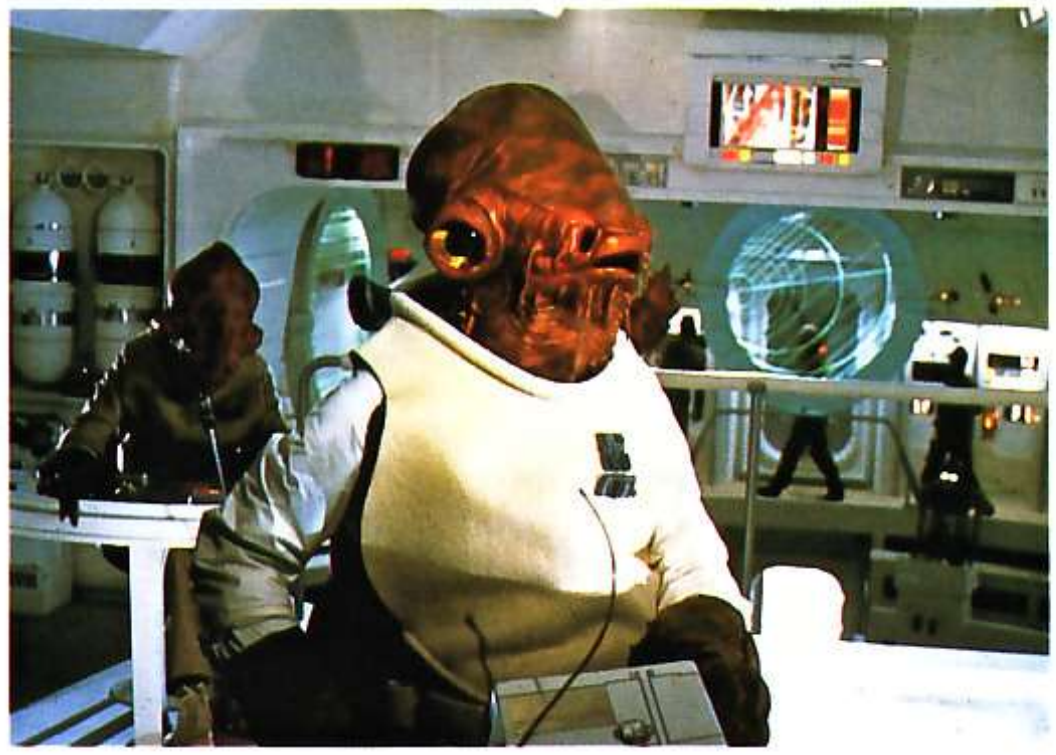
Millennium Falcon in the Death Star, production painting

Han Solo, costume design

Rebel pilot (B-Wing), costume design

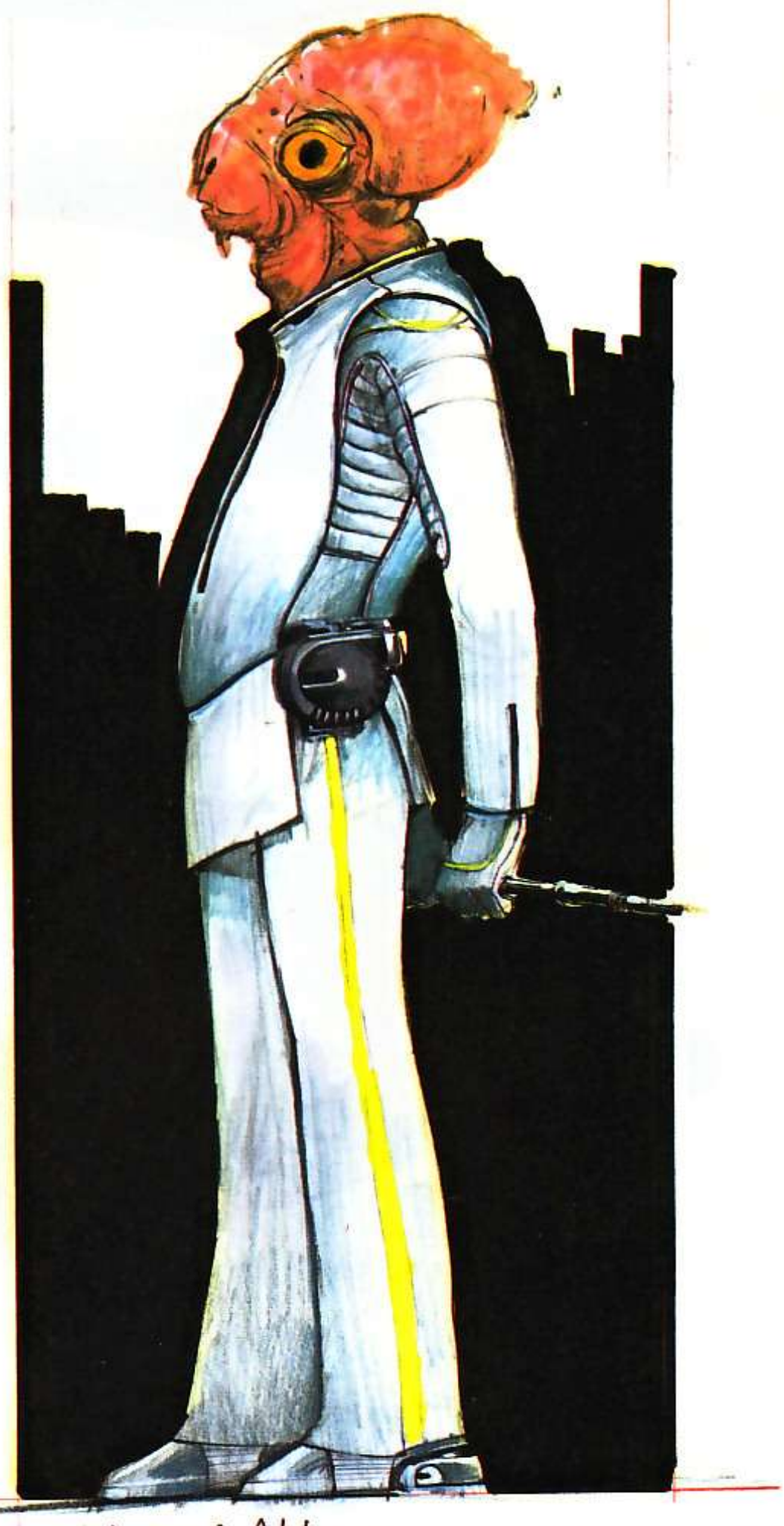
knighted him. We made two versions of Ackbar. One was a slip-on head harness that had ancillary cables hidden off-camera to operate the eyes and mouth. For close-ups we constructed a foam latex hand puppet."

Nien Nunb was another unsung creation who was snatched out of anonymity for a supporting role as Han Solo's copilot. Like Ackbar, Nien was realized as a slip-on head harness.

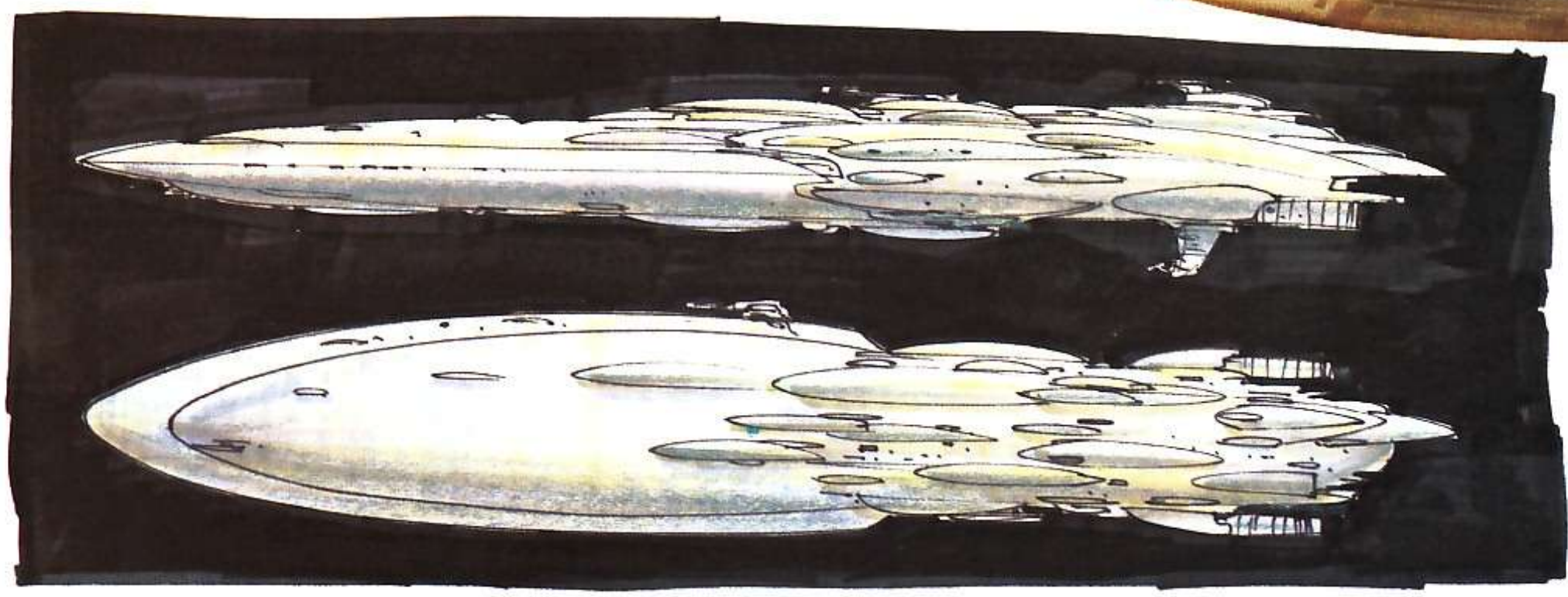


Admiral Ackbar, costume headgear, 38 x 71 x 41 cm.

Admiral Ackbar, costume design



Mon Calamari Transport #2, model, 97 x 244 x 30 cm.



Mon Calamari Transport, concept sketch

Mon Calamari Transport #1, model, 58 x 244 x 41 cm.

Rebels plot attack, production painting

Rebel Transport War Room, production illustration

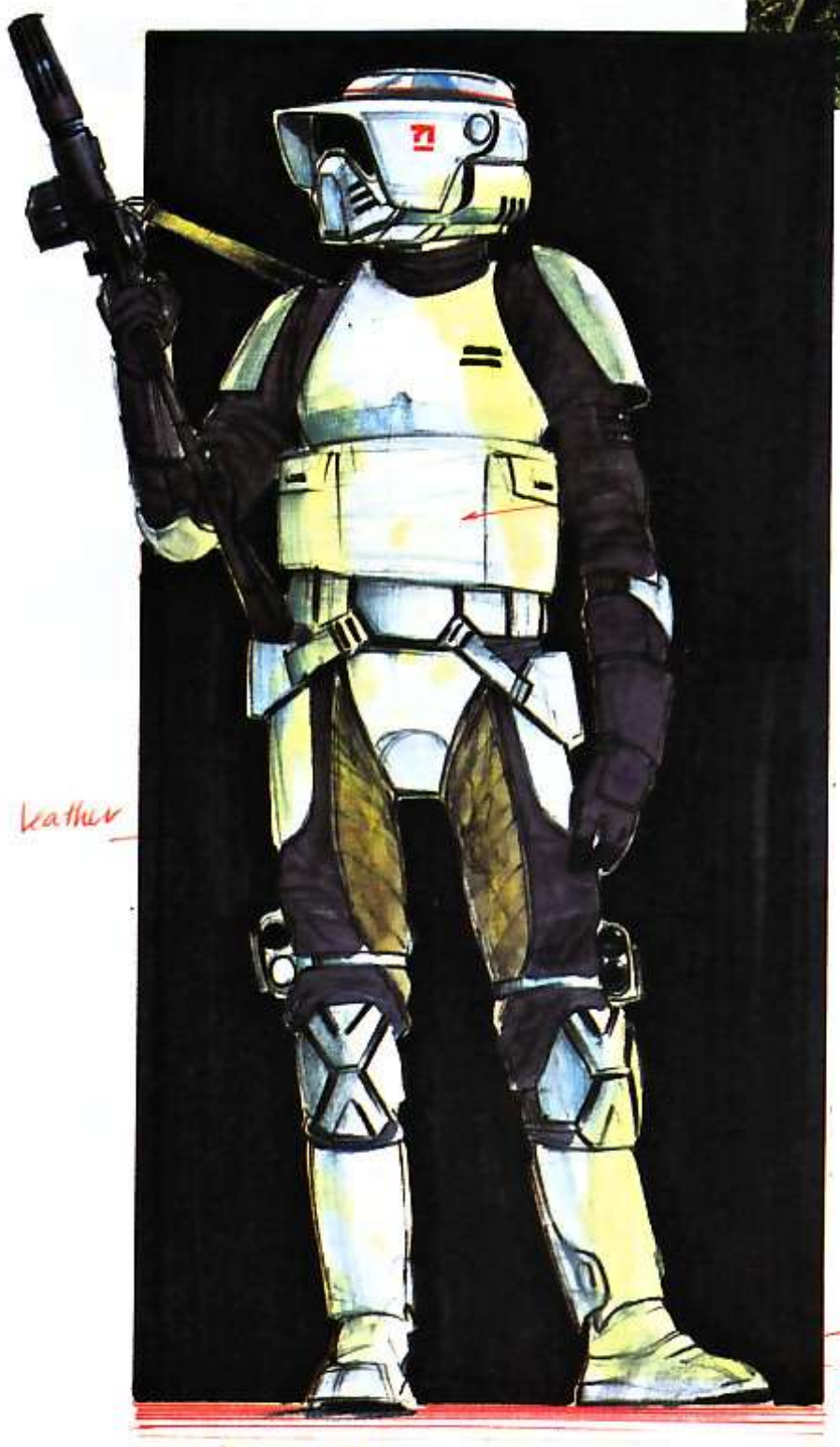
LAND OF THE EWOKS

The final battle between Rebellion and Empire takes place on the forest planet of Endor where Rebels seek to deactivate a generator that maintains a protective force field around the Death Star. But to sabotage the generator the Rebels have to get past Imperial bike scouts and two-legged scout walkers (or AT-STs: All Terrain Scout Transport).

The walkers were created as both eighteen-inch and three-foot models filmed on a miniature forest set under natural sunlight at ILM's Marin County facility, and as stop-motion puppets. The speeder sequence has become a textbook example of optical compositing, with actors on full-scale bikes filmed in front of a bluescreen and composited with background footage (called the "background plate") that was shot by visual effects supervisor Dennis Muren and his crew in the woods of Northern California.

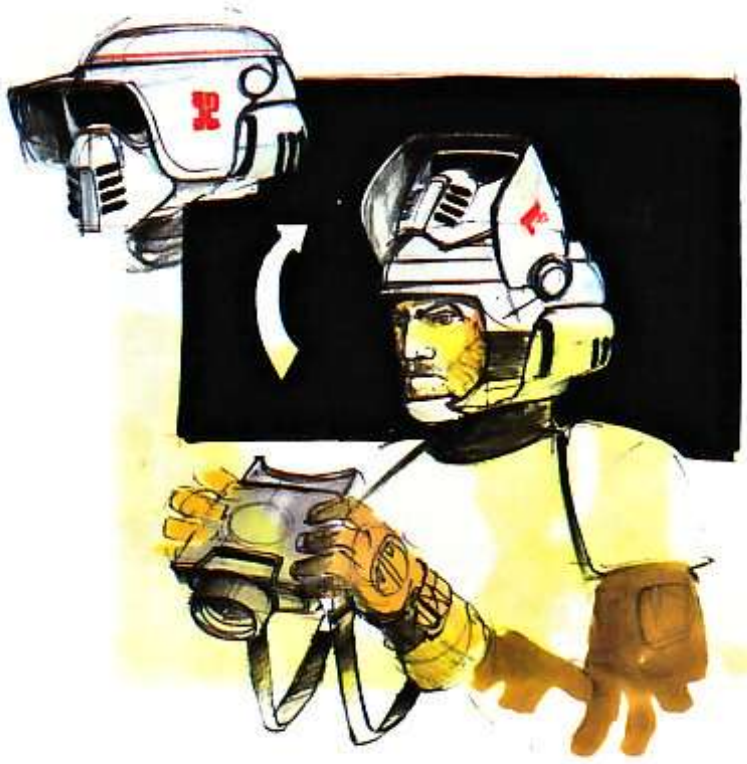
The speeder scenes also utilized bike and puppet models mounted to motorized pylons and stop-motion animated. The stop-motion effect was rendered even more realistic with ILM "go-motion," a breakthrough technique in which external motion-controlled rods attached to the models allowed for realistic motion blur while the shutter was still open, avoiding the staccato effect often evident in stop-motion work.

The battle sequences also featured some matte painting effects, such as "Endor Forest with Dead Stormtroopers." "George used the matte department as a way to enhance his vision," says Craig Barron, a matte photographer on *Jedi*. "If he couldn't get a shot on location he'd say, 'Oh, don't worry, I'll have [the matte department] paint it in later.' Which we were very happy to do, by the way."



© L. F. L. 1981

Imperial Scout Trooper, costume design IMPERIAL BIKE RIDER



Imperial Scout Trooper, costume design

Imperial Scout Trooper, costume design

Imperial Scout Trooper, costume design

Endor forest with dead Stormtroopers,
matte painting, 191 x 84 cm.

Imperial Speeder Bike chase, storyboard sequence

DESCRIPTION: EXT. FOREST - BIKERS - LUKE & LEIA

First the two Bikers, then Luke & Leia, bank between two trees that are close to camera & exit frame R. All the bikes are closer now (Luke & Leia have gained on the Bikers).

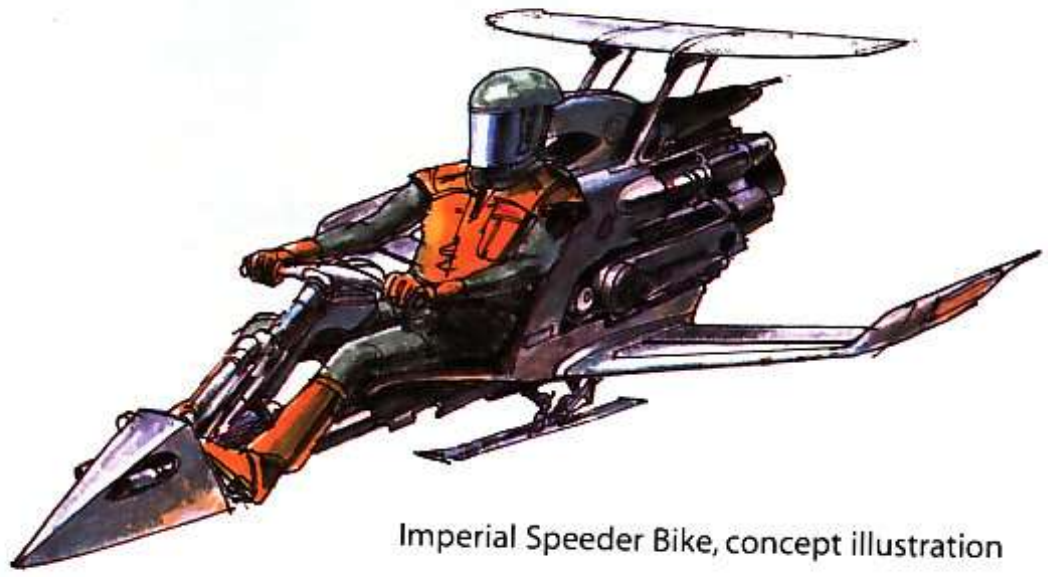
NOTES:

Camera should be close to ground; the closer the bikes get to camera the better.

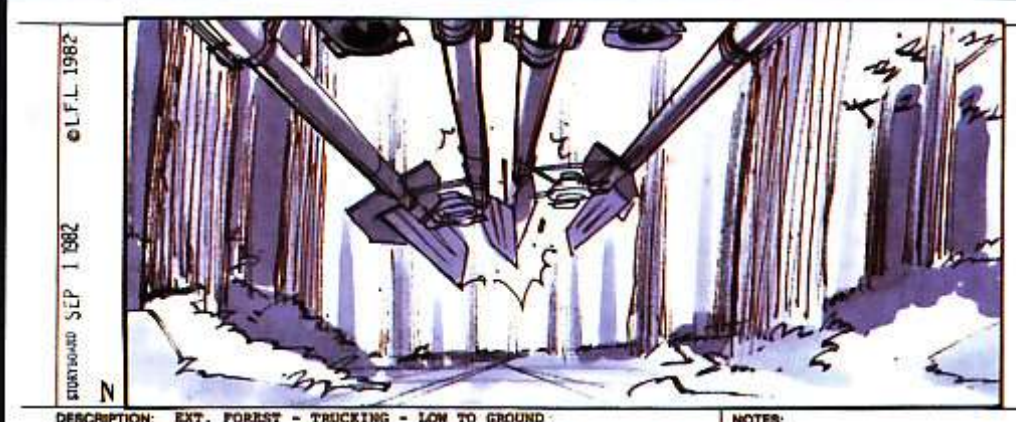
ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Forest			x		
Biker #1	x				
Biker #2	x				
Luke/Leia	x				

SHOT # / SEQUENCE: BC 9

FRM COUNT: 51 PAGE #:



Imperial Speeder Bike, concept illustration



DESCRIPTION: EXT. FOREST - TRUCKING - LOW TO GROUND

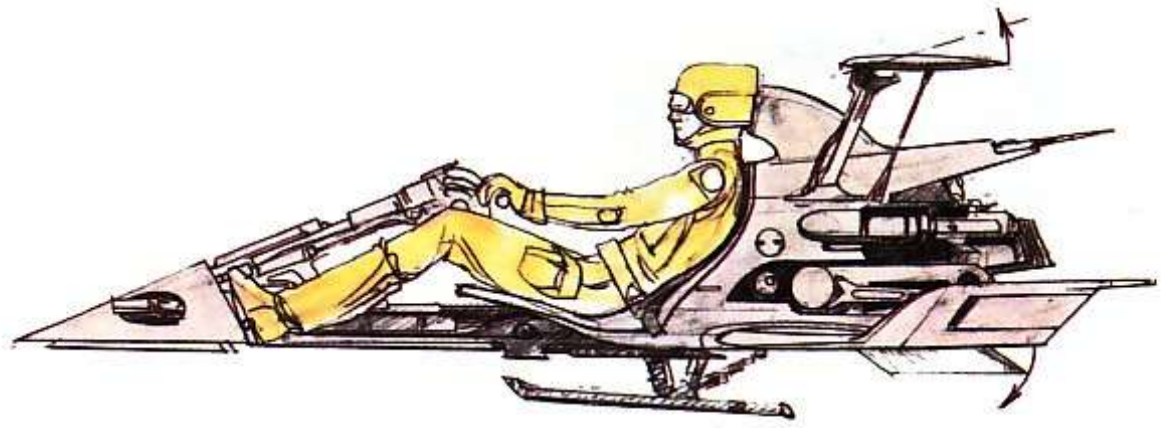
Very low, looking up & passing forest. The vanes hit once.

NOTES:

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Forest			x		
Vanes	x				
Sparks		x			

SHOT # / SEQUENCE: BC 17

FRM COUNT: 37 PAGE #:



Imperial Speeder Bike, concept illustration

DESCRIPTION: EXT. FOREST - PAN - LUKE & LEIA

Bikes should be fairly close to camera, but PAN should not be so fast it is a total blur.

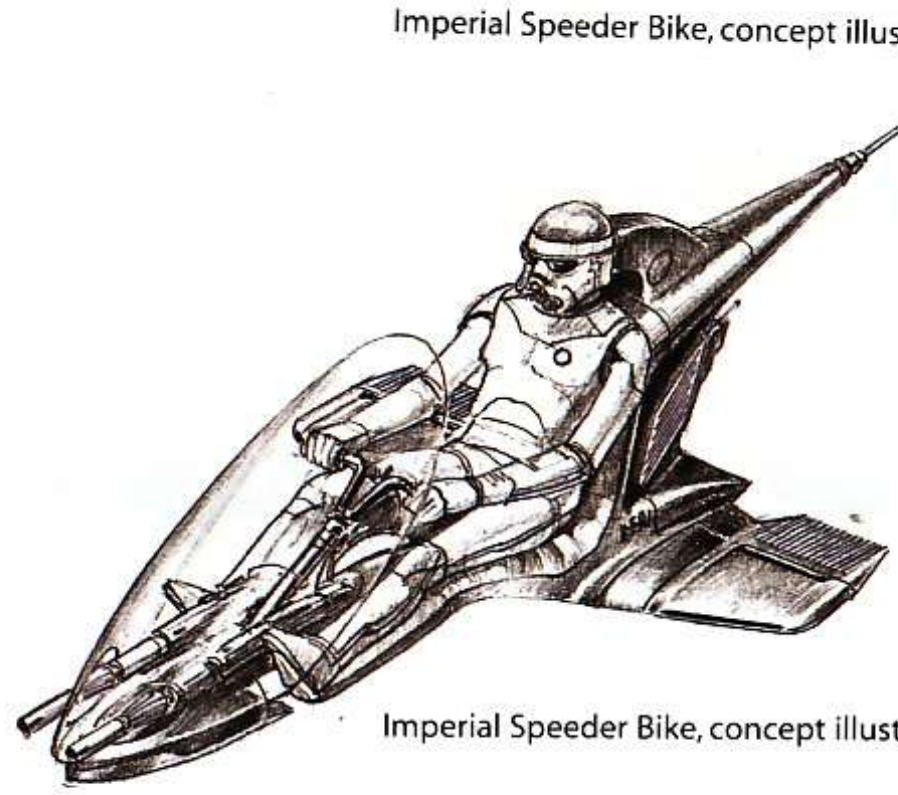
NOTES:

Have bikes go behind tree if possible?

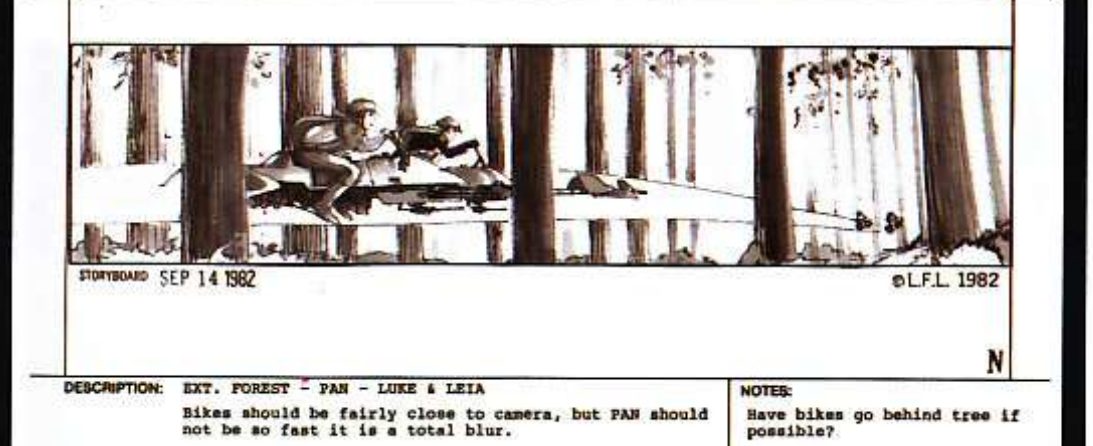
ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Forest			x		
Luke	x				
Leia	x				

SHOT # / SEQUENCE: BC 24

FRM COUNT: 49 PAGE #:



Imperial Speeder Bike, concept illustration



DESCRIPTION: EXT. FOREST - LUKE & LEIA - SIDE VIEW

MS. Luke brakes, leaving frame L. Leia speeds ahead, starting to move out of frame R.

NOTES:

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Forest			x		
Luke			x		
Leia			x		

SHOT # / SEQUENCE: BC 32

FRM COUNT: 82 PAGE #:

Imperial Speeder Bike, concept illustration

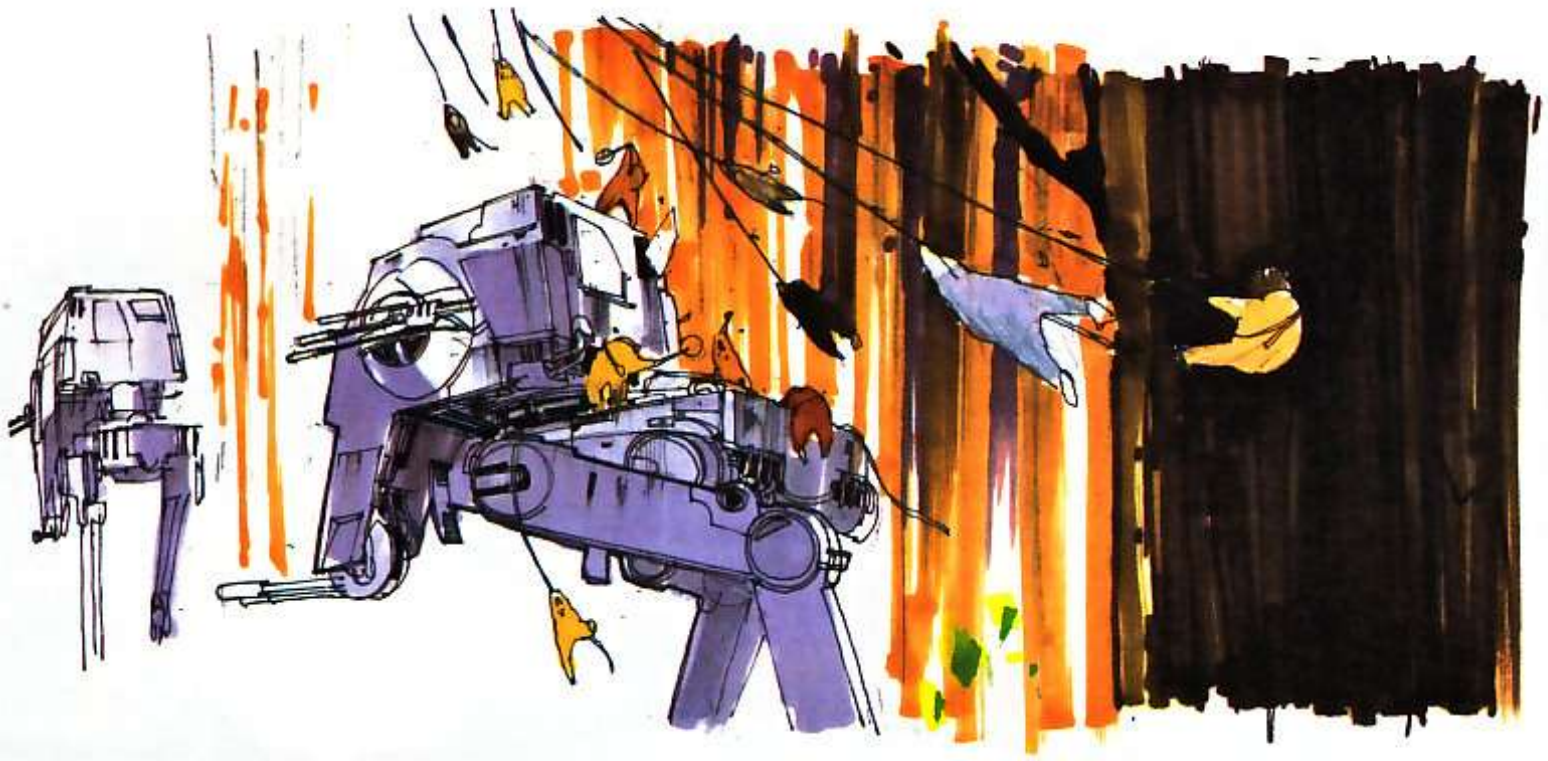
Imperial Scout Trooper, life-size model figure, 51 x 41 x 183 cm.

Imperial Speeder Bike, full-scale prop, 71 x 325 x 69 cm.

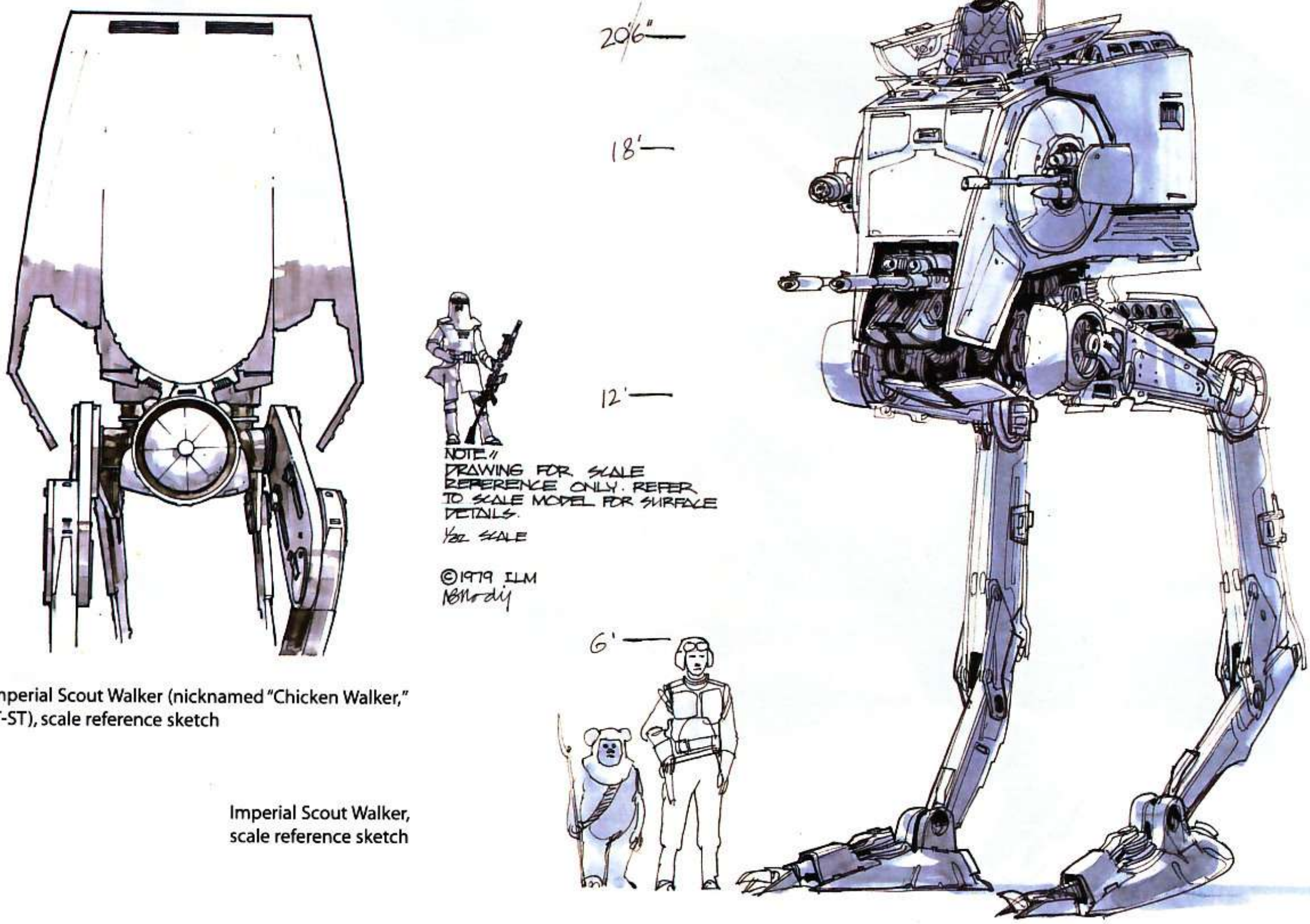
Luke on Speeder Bike, model (with figure), 20 x 81 x 41 cm.

The tide turns for the Rebels with the aid of the Ewoks, the furry denizens inhabiting the Endorian woods. Although Phil Tippett wanted to sculpt Neanderthal-like cannibal creatures, Lucas saw them as cute from the start. Joe Johnston (who also designed the speeder bikes) designed the creatures with furry bodies and puppy-dog faces. After the design stage, the Ewoks were made as costumes to be worn by a cast of dwarf actors. Ewok body casts had to be made for each actor, with separate casts for the heads. Attention to detail was such that every single fingernail had to be made separately.

Darth Vader on Endor, production painting



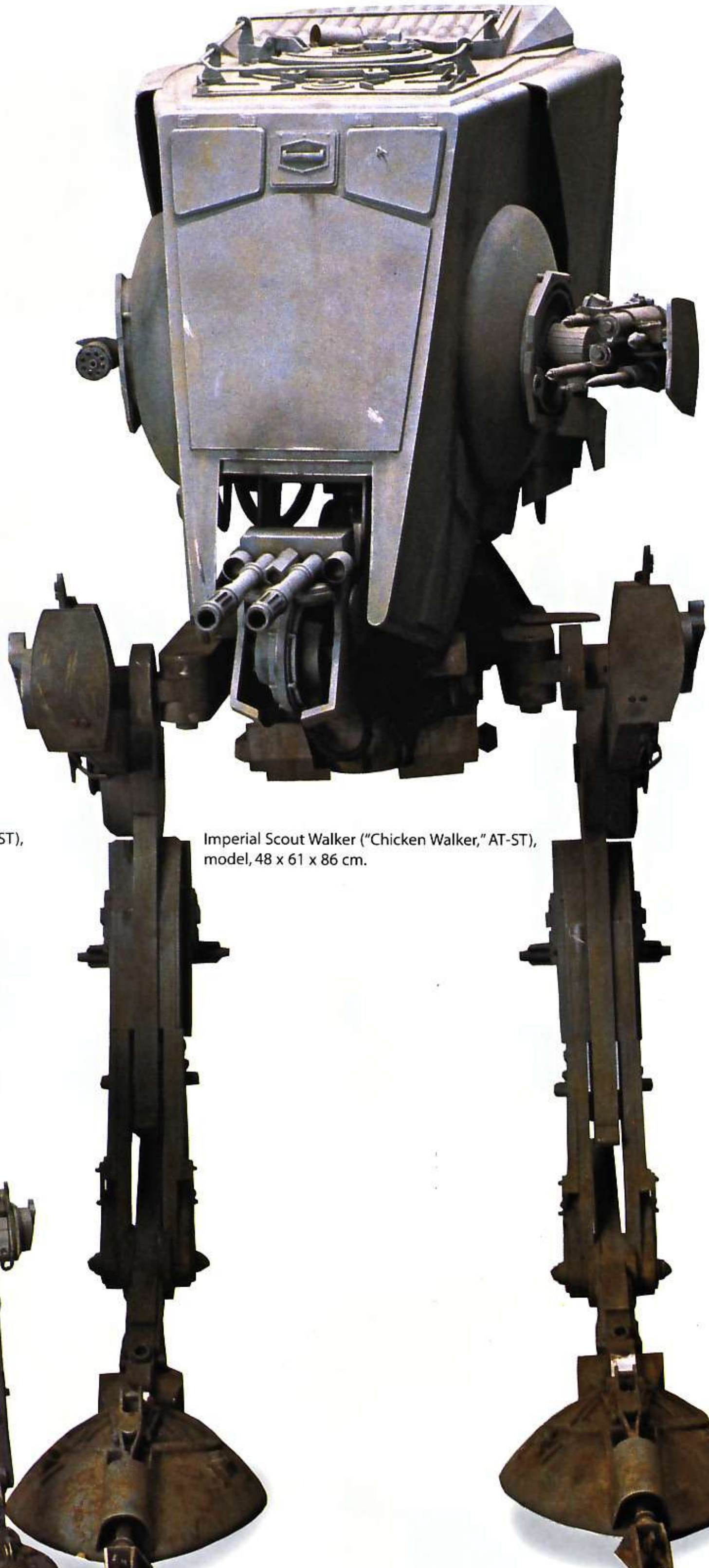
Ewok's attack, production illustration



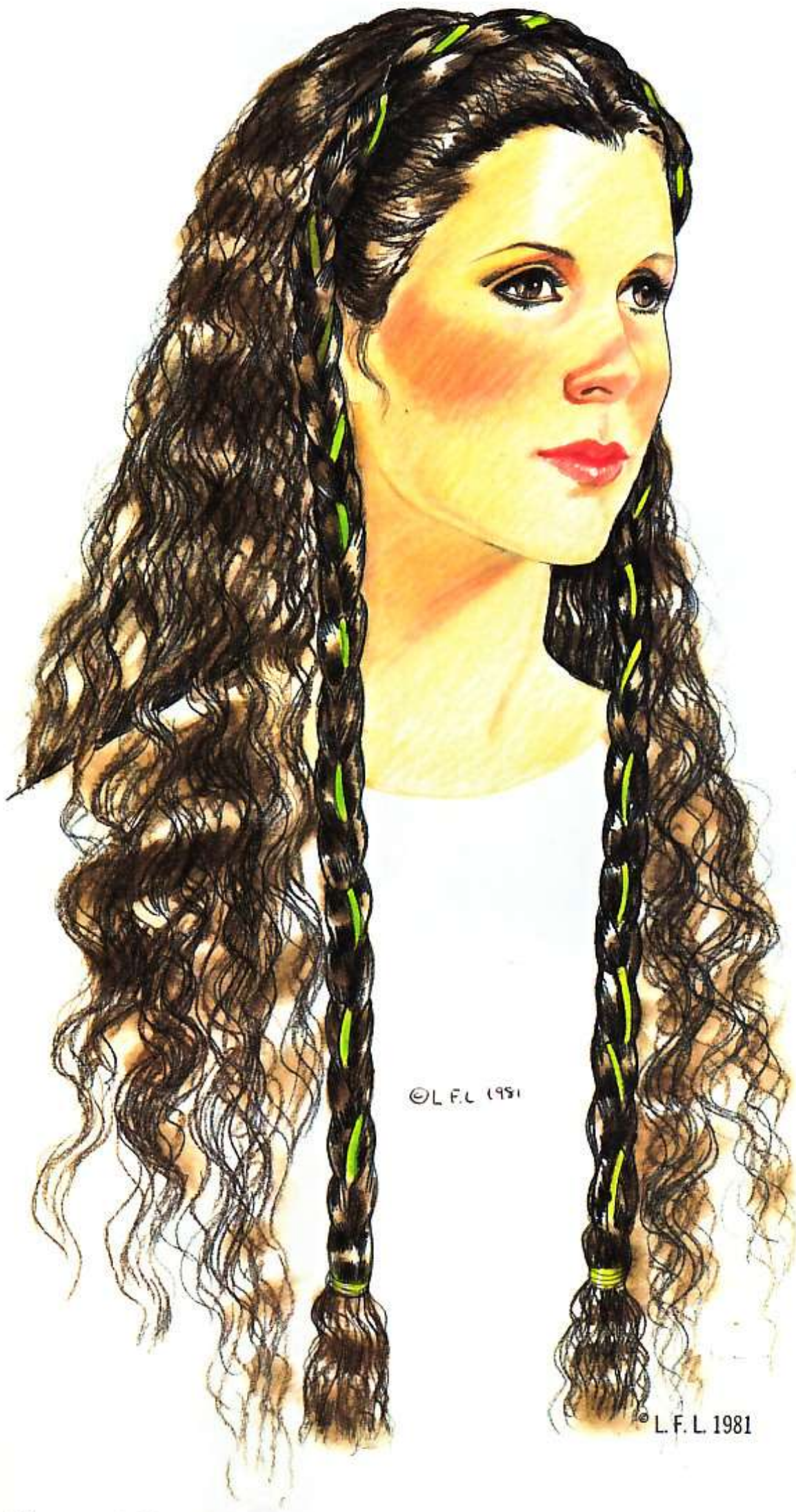
Imperial Scout Walker (nicknamed "Chicken Walker," AT-ST), scale reference sketch

Imperial Scout Walker, scale reference sketch

Imperial Scout Walker ("Chicken Walker," AT-ST), model, 23 x 27 x 38 cm.



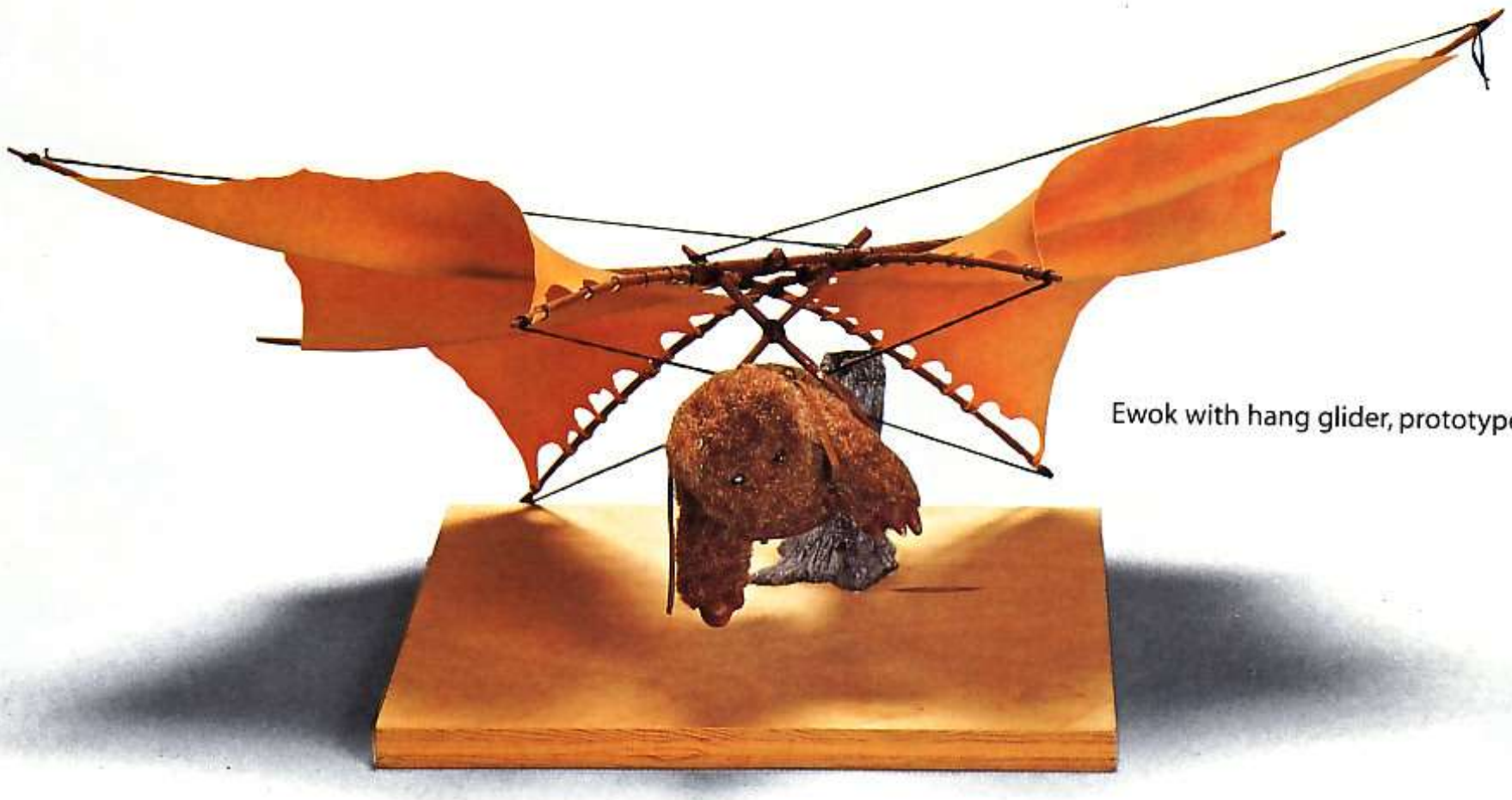
Imperial Scout Walker ("Chicken Walker," AT-ST), model, 48 x 61 x 86 cm.



Princess Leia, hairstyle illustration

C-3PO: worshiped by the Ewoks, production painting

Ewok, costume suit, 56 x 31 x 91 cm.



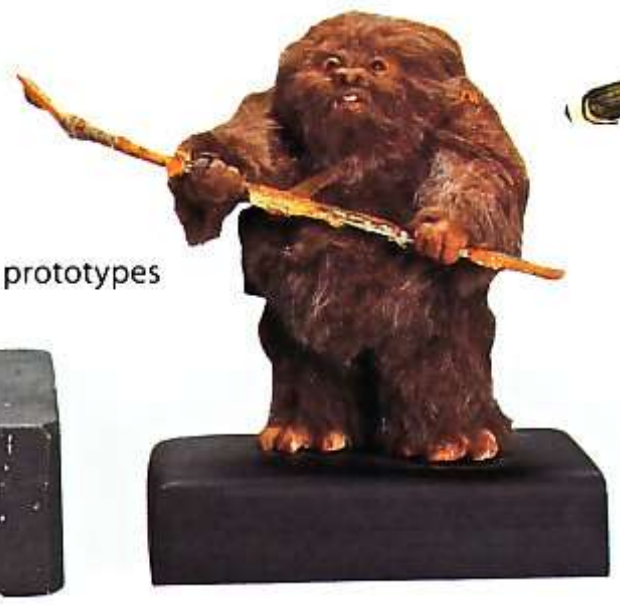
Ewok with hang glider, prototype, 45 x 10 x 21 cm.

Ewoks battle the Chicken Walkers, production painting

Ewok, production illustration

20 x 23 x 25 cm.

Ewoks, prototypes



14 x 10 x 9 cm.

MAY 21 1981
J 140

Ewoks crush an Imperial Scout Walker, production illustration

© L. F. L. 1981

MAY 4 1981
J 126

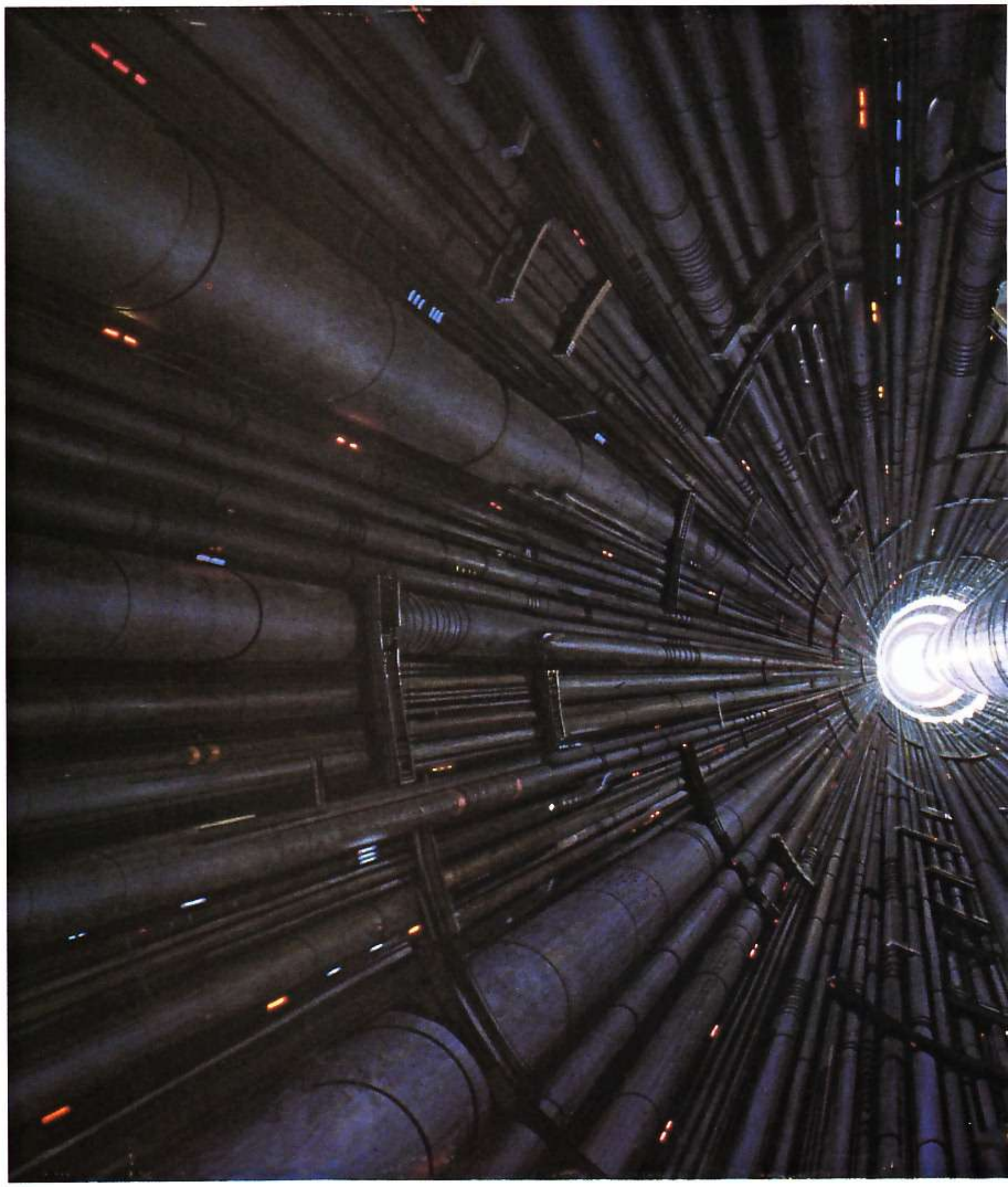
JEDI TRIUMPHANT

By the end of the film the reactor core of the Death Star has been bombed by Rebel forces, setting off the chain reaction that ends in the explosion of the Empire's stronghold. In a climactic showdown, Luke wins Vader back from the dark side of the Force. Freed from his spell, Vader tosses the evil Emperor to his death in the Death Star reactor shaft.

The film was a triumph for ILM, who produced some of the most complex effects shots in movie history. Whereas a *Star Wars* optical shot typically had thirty to forty separate elements, the most complex *Jedi* shots required between twenty and eighty elements. One space battle shot, among the most complex optical effects ever, used more than three hundred separate elements.

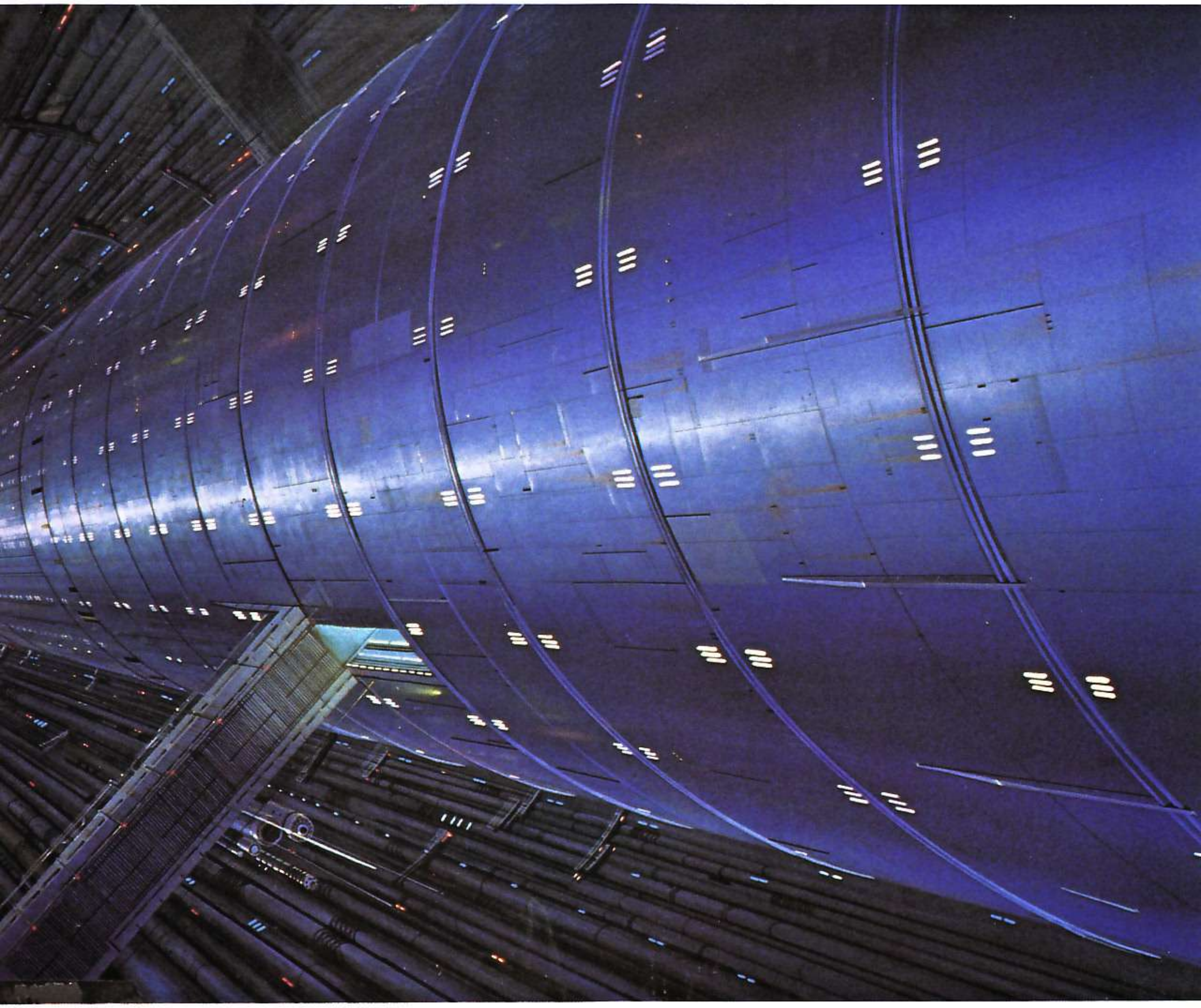
The *Star Wars* trilogy stands as one of the great stories in film history. But the films only represent chapters four through six in a final, nine-part saga. More than a decade later, Lucasfilm has begun gearing up for a return to the *Star Wars* universe and the legendary time of the Jedi Knights.

Luke attacked by the Emperor, production painting

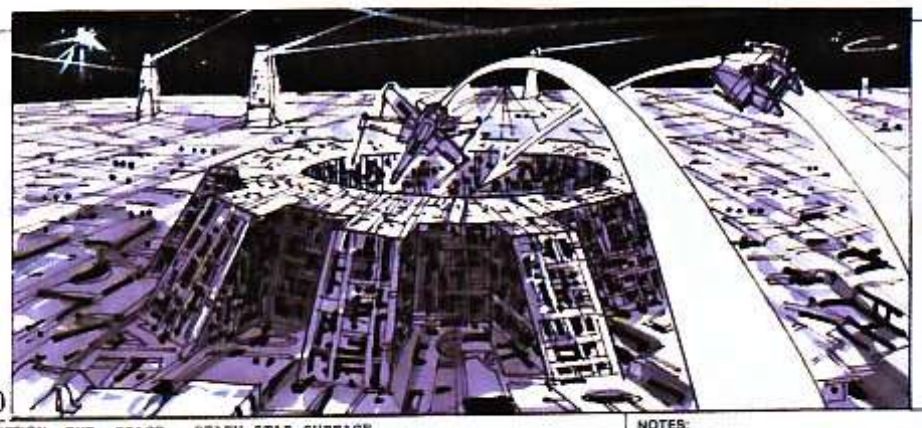


Death Star reactor shaft,
matte painting, 191 x 84 cm.

Vader and Luke's final battle, still from film



Death Star attack and destruction, storyboard sequence



REVISED JUL 27 1982 ©L.F.L. 1982

D

DESCRIPTION: EXT. SPACE - DEATH STAR SURFACE

TRUCKING, skimming Death Star surface. X-Wing and A-Wing enter frame under camera, gain through shot & turn into the tunnel. Camera continues to skim surface without ships & CUTS when it tilts down into tunnel.

NOTES:

Use BG surface plate up to last available frame.

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Death Star Surface	x				
X-Wing	x				
A-Wing	x				
Lasers		x			
Flak		x			
Stars	x				

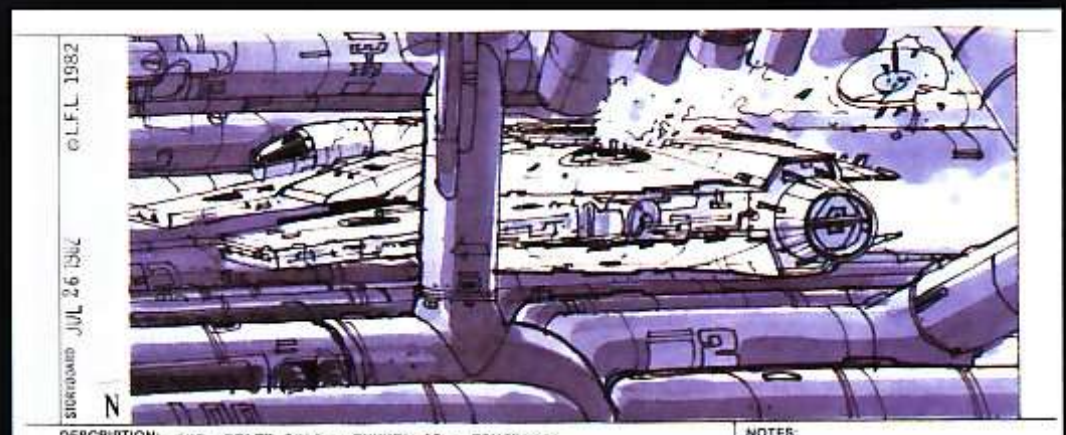
SHOT # / SEQUENCE

12a-12

RA 15

FRM COUNT 99

PAGE #



STORYBOARD JUL 26 1982 ©L.F.L. 1982

N

DESCRIPTION: INT. DEATH STAR - TUNNEL #2 - TRUCKING

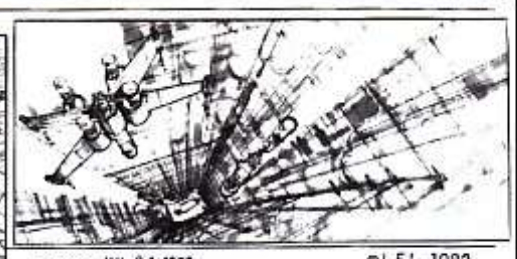
SIDE VIEW Falcon, TRUCKING through horizontal slot. Whole screen should be very dark. Pipes go by both in the foreground & the background. The dish of the Falcon hits a pipe & gets knocked off, causing a small flash/explosion. Falcon bounces slightly with impact.

NOTES:

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Tunnel #2 / Slot	x				
Falcon	x				
Flash/Explosion	x				

SHOT # / SEQUENCE

RA 36



REVISED JUL 26 1982 ©L.F.L. 1982

NJ

DESCRIPTION: EXT. SPACE/INT. DEATH STAR - TUNNEL #1 - TRUCKING

TRUCKING along Death Star surface & into Tunnel #1. Falcon enters under camera & turns into Tunnel #1. It gains through shot, moving away from the camera; then the A-Wing, Y-Wing & X-Wing speed around camera & away after Falcon.

NOTES:

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Surface/Tunnel #1	x				
Falcon	x				
A-Wing	x				
X-Wing	x				
Stars	x				
Lasers		x			
Flak		x			

SHOT # / SEQUENCE

12a-15

RA 17

STORYBOARD JUL 27 1982 ©L.F.L. 1982

J

DESCRIPTION: INT. TIE COCKPIT - CU TIE PILOT

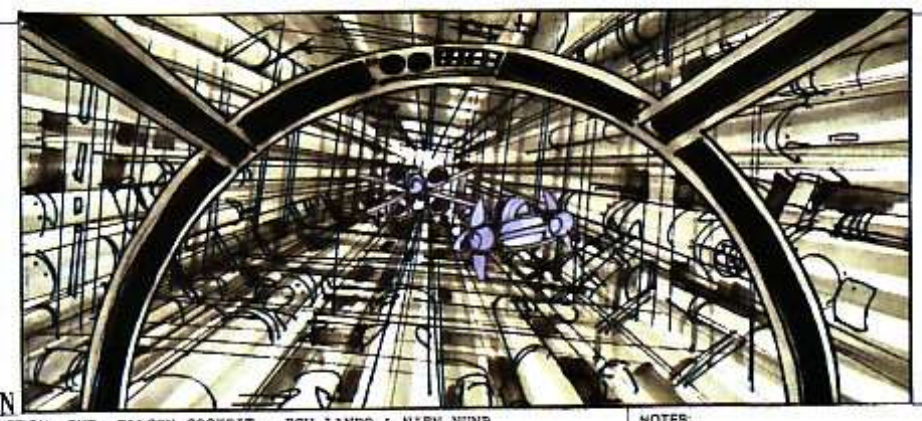
Tunnel #2 in background. Pilot should squeeze the trigger in this shot.

NOTES:

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
TIE Cockpit			x		
Tunnel #2	x				

SHOT # / SEQUENCE

RA 42



REVISED AUG 9 1982 ©L.F.L. 1982

N

DESCRIPTION: INT. FALCON COCKPIT - POV LANDO & NIEN NUNB

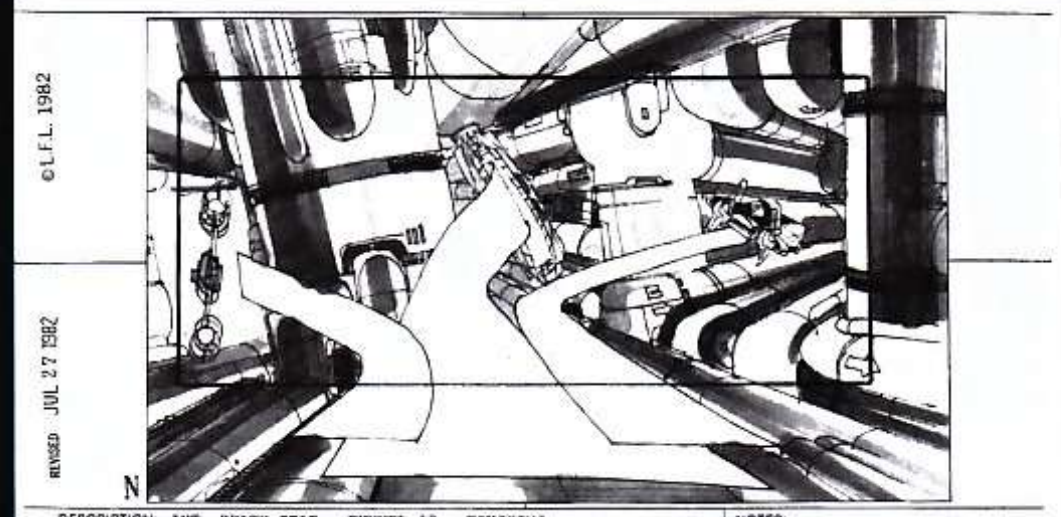
Tunnel #1. X-Wing & A-Wing are not as far ahead any longer. They do some crisscrossing moves as they maneuver their ways through the tunnel.

NOTES:

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Falcon Cockpit			x		
Tunnel #1	x				
X-Wing	x				
A-Wing	x				

SHOT # / SEQUENCE

RA 19



©L.F.L. 1982 REVISED JUL 27 1982

N

DESCRIPTION: INT. DEATH STAR - TUNNEL #2 - TRUCKING

TRUCKING behind the Rebel fighters. The Y-Wing takes off down the left branching tunnel (exits frame left), and the A-Wing takes off down the right branching tunnel. For a moment both the A-Wing in the branch tunnel and the Falcon in the main tunnel are visible; then camera continues trucking with Falcon to end of shot.

NOTES:

Branching right tunnel will be at less of an angle than pictured.

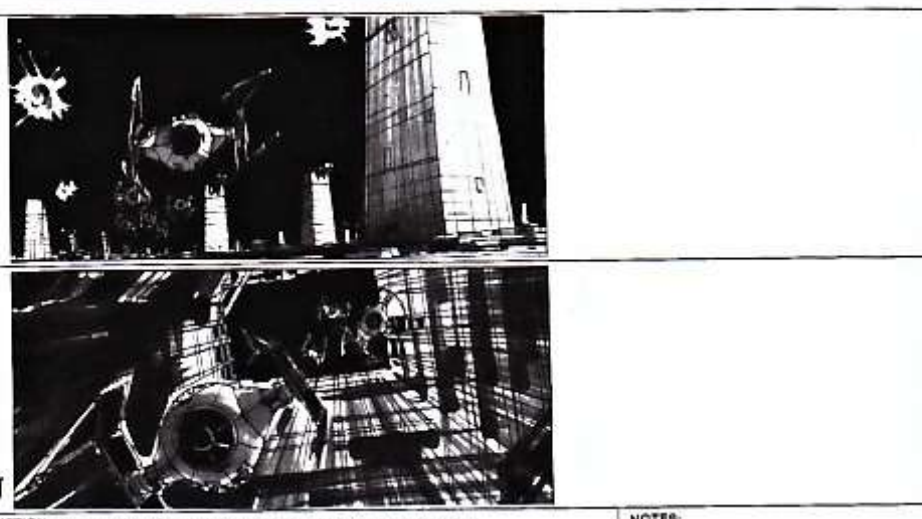
Wedge's X-Wing is in front of Falcon.

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Tunnel #2	x				
Falcon	x				

SHOT # / SEQUENCE

126-16

RA 48



©L.F.L. 1982 REVISED APR 13 1982

J

DESCRIPTION: EXT. SPACE - DEATH STAR - TIES - TRUCKING

TRUCKING BACK. Three TIEs and three Interceptors are skimming the Death Star surface toward camera. They dive into the same tunnel the Rebel fighters have just entered. TIEs are gaining through shot.

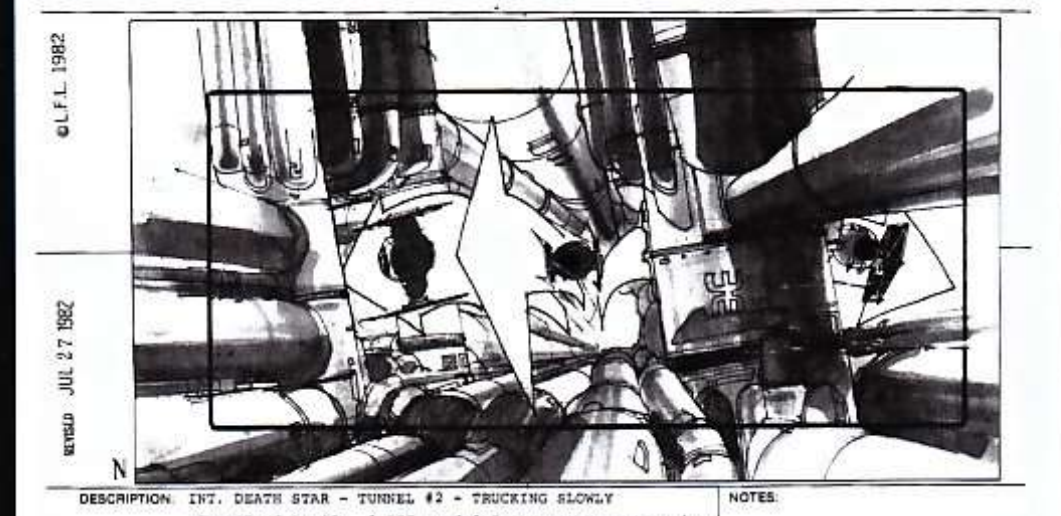
NOTES:

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Surface/Tunnel #1	x				
TIE #1	x				
Interceptor #2	x				
Interceptor #3	x				

SHOT # / SEQUENCE

126-17

RA 20



©L.F.L. 1982 REVISED JUL 27 1982

N

DESCRIPTION: INT. DEATH STAR - TUNNEL #2 - TRUCKING SLOWLY

REVERSE of RA 48. 2 TIEs and 2 Interceptors are coming toward camera, gaining through shot. The 2 front TIEs turn off after the two Rebel fighters; the 2 Interceptors continue after the Falcon & the X-Wing, roaring over camera.

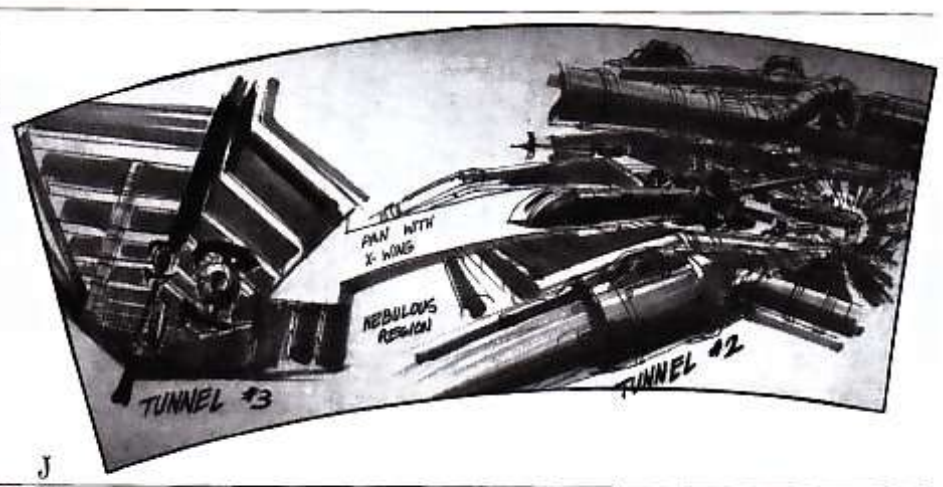
NOTES:

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Tunnel #2	x				
TIE #1	x				
TIE #2	x				

SHOT # / SEQUENCE

126-17

RA 49



©L.F.L. 1982

REVISED AUG 20 1982

J

DESCRIPTION: PAN - INT. DEATH STAR - TUNNEL #2 to #3

PAN, side view, as X-Wing & Falcon dive a 90° turn down into Tunnel #3. PAN with X-Wing, then HOLD as Falcon & 2 Interceptors ROAR over camera & down Tunnel #3.

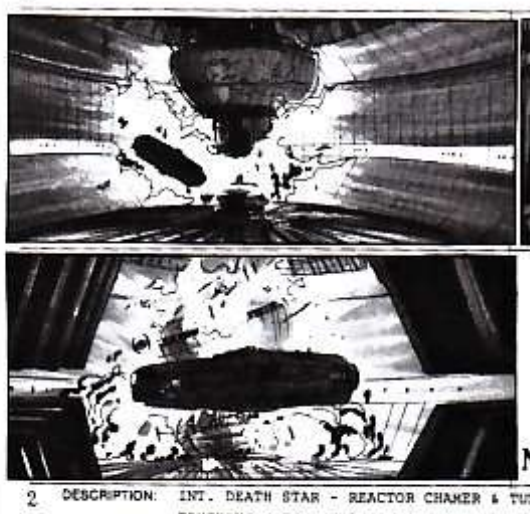
NOTES:
NO DISH ON FALCON!

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Tunnel #2/#3	x				
Falcon	x				
X-Wing	x				

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM

SHOT # / SEQUENCE
126-16

RA 50



1

3

REVISED AUG 25 1982

©L.F.L. 1982

N

2 DESCRIPTION: INT. DEATH STAR - REACTOR CHAMER & TUNNEL #3 - TRUCKING

TRUCKING BACK. Falcon & Interceptor are coming toward camera fast away from the core. The Force Field, now very erratic, can be seen around the core in background. The core starts to collapse. Falcon exits over camera. After Interceptor makes it into Tunnel #3, a flash of core exploding is visible at Tunnel opening.

NOTES:
NO DISH ON FALCON!

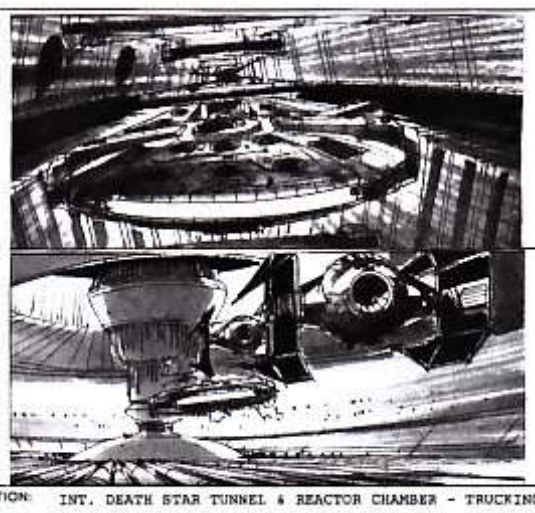
ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Reactor Chamber				x	
Tunnel #3	x				
Falcon	x				

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Explosion - TBD					

SHOT # / SEQUENCE
189-19

RA 90

(1)



©L.F.L. 1982

STORYBOARD APR 23 1982
REVISED AUG 4 1982
REVISED AUG 11 1982

J

2 DESCRIPTION: INT. DEATH STAR TUNNEL & REACTOR CHAMBER - TRUCKING

TRUCKING through third Death Star tunnel. Start with Falcon close to camera; ships gain through shot. Ships and camera pass through small opening into extremely large Reactor Chamber. Ends as 2 Interceptors enter over camera, following Falcon & X-Wing (still trucking).

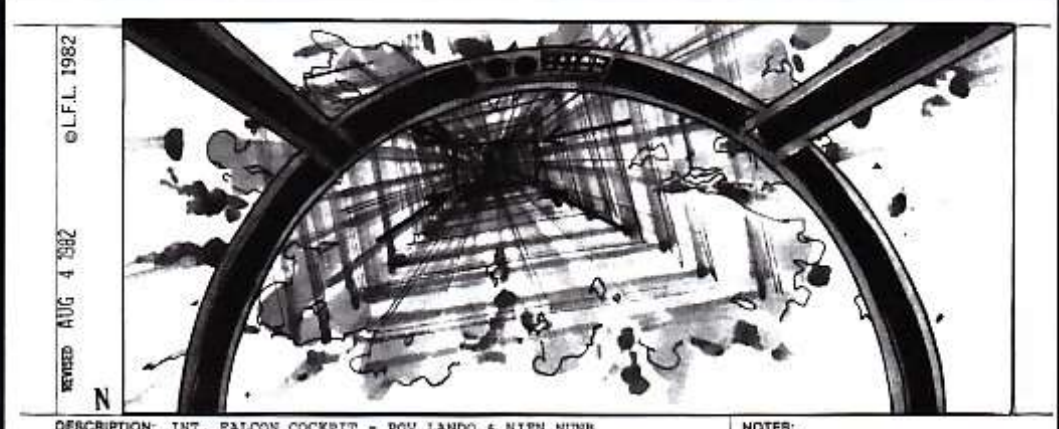
NOTES:
Scale of Reactor Chamber is important. Although ships are gaining thru shot, they are not noticeably closer to core. A force field surrounds core.

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Tunnel #3	x				
X-Wing	x				
Falcon	x				

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Lasers		x			
Flak		x			
Reactor Chamber				x	

SHOT # / SEQUENCE
129-5

RA 81



©L.F.L. 1982

REVISED AUG 4 1982

N

DESCRIPTION: INT. FALCON COCKPIT - POV LANDO & NIEN NUNB

Entrance of Tunnel #1 is VERY SMALL, far away... Speeding out as fast as possible. Small explosions are coming in somewhat from sides of tunnel at very end of shot.

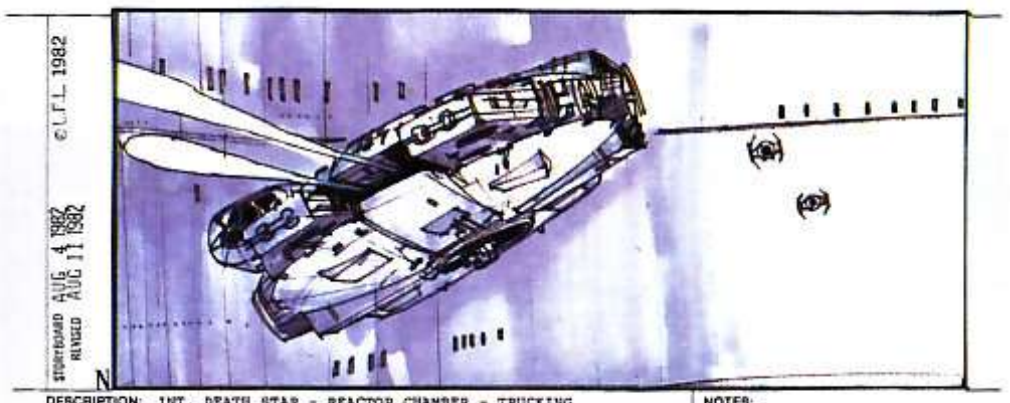
NOTES:

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Tunnel #1	x				
Falcon Cockpit			x		
Stars	x				
Explosion - TBD					

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM

SHOT # / SEQUENCE
130-5

RA 99



©L.F.L. 1982

STORYBOARD AUG 4 1982
REVISED AUG 11 1982

N

DESCRIPTION: INT. DEATH STAR - REACTOR CHAMBER - TRUCKING

TRUCKING BACK with Falcon coming to camera in the enormous Reactor Chamber. The Interceptors are still chasing the Falcon & firing. At end of shot, the Falcon shoots laser out frame left.

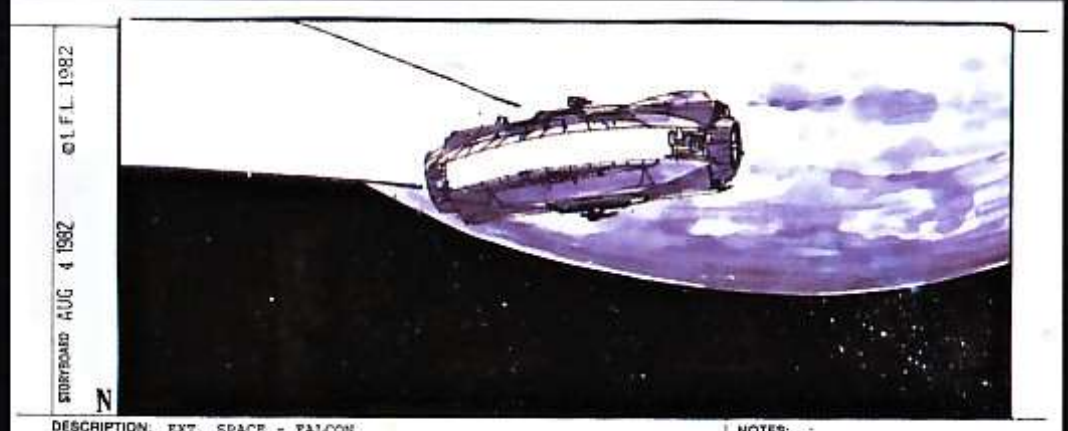
NOTES:

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Reactor Chamber				x	
Falcon	x				
Interceptor #1	x				
Interceptor #2	x				
Lasers		x			
Flak		x			

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM

SHOT # / SEQUENCE

RA 87



©L.F.L. 1982

STORYBOARD AUG 4 1982

N

DESCRIPTION: EXT. SPACE - FALCON

The Falcon speeds away over camera toward Endor. No other Fleet ships are visible.

NOTES:

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Falcon	x				
Endor - pntg.	x				
Stars	x				

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM

SHOT # / SEQUENCE

RA 101

©L.F.L. 1983

REVISED FEB - 3 1983

J

DESCRIPTION: INT. DEATH STAR - REACTOR CHAMBER CORE - TRUCKING BACK

TRUCKING BACK SLOWLY from the core of the Reactor. The Falcon comes around the core & toward camera, exiting over camera. The two Interceptors are still following, but the second Interceptor is caught by a tongue of the now-erratic Force Field, and it blows up. The core erupts in an explosion.

NOTES:

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Reactor Chamber	x				
Falcon	x				
Interceptor #1	x				
Interceptor #2	x				
Force Field: arc	x				
Force Field: cone	x				
Explosion-to be prdj. STOCK					

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM

SHOT # / SEQUENCE
120-15

RA 89

©L.F.L. 1982

REVISED DEC 13 1982

P

DESCRIPTION: EXT. SPACE - FALCON ESCAPE - DEATH STAR EXPLOSION

Camera is MOVING BACK SLOWLY. The Falcon comes toward camera. The Death Star hangs in space for a beat as explosions ripple across its surface. The Falcon exits over camera as the explosions overtake the Death Star & it erupts in one giant explosion.

NOTES:

ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM
Death Star	x				
Explosion - Stock					
Falcon	x				
Stars	x				

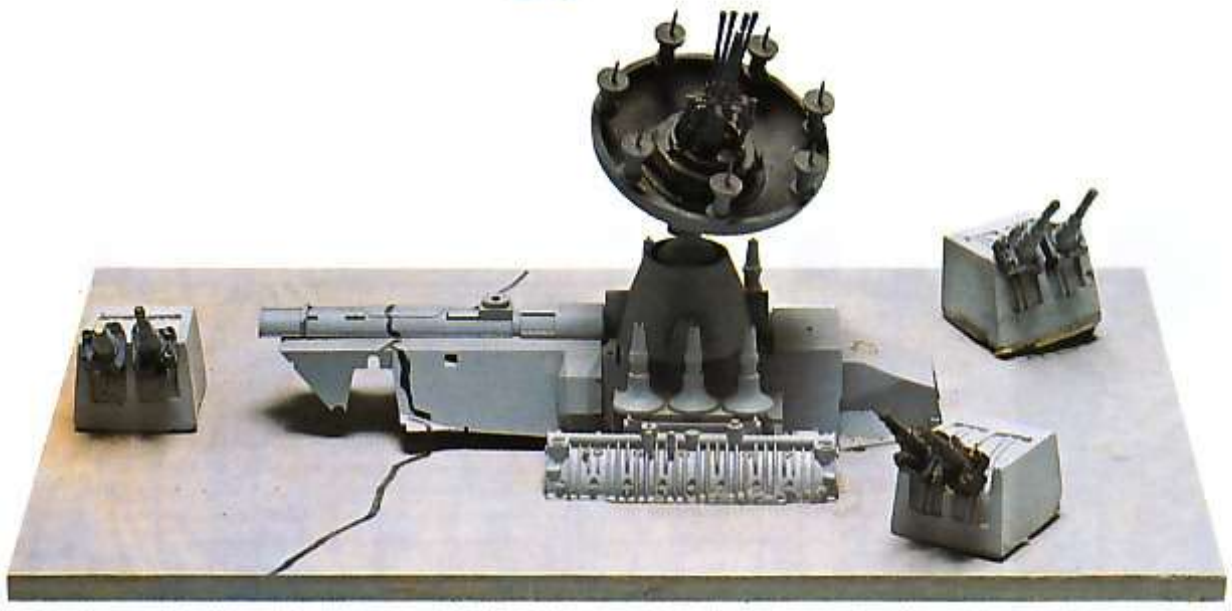
ELEMENTS:	STAGE	ANIM	PLATE	MATTE	NON-ILM

SHOT # / SEQUENCE

RA 102

Nien Nunb, costume headgear,
30 x 41 x 30 cm.

Falcon hits Death Star reactor core, production painting

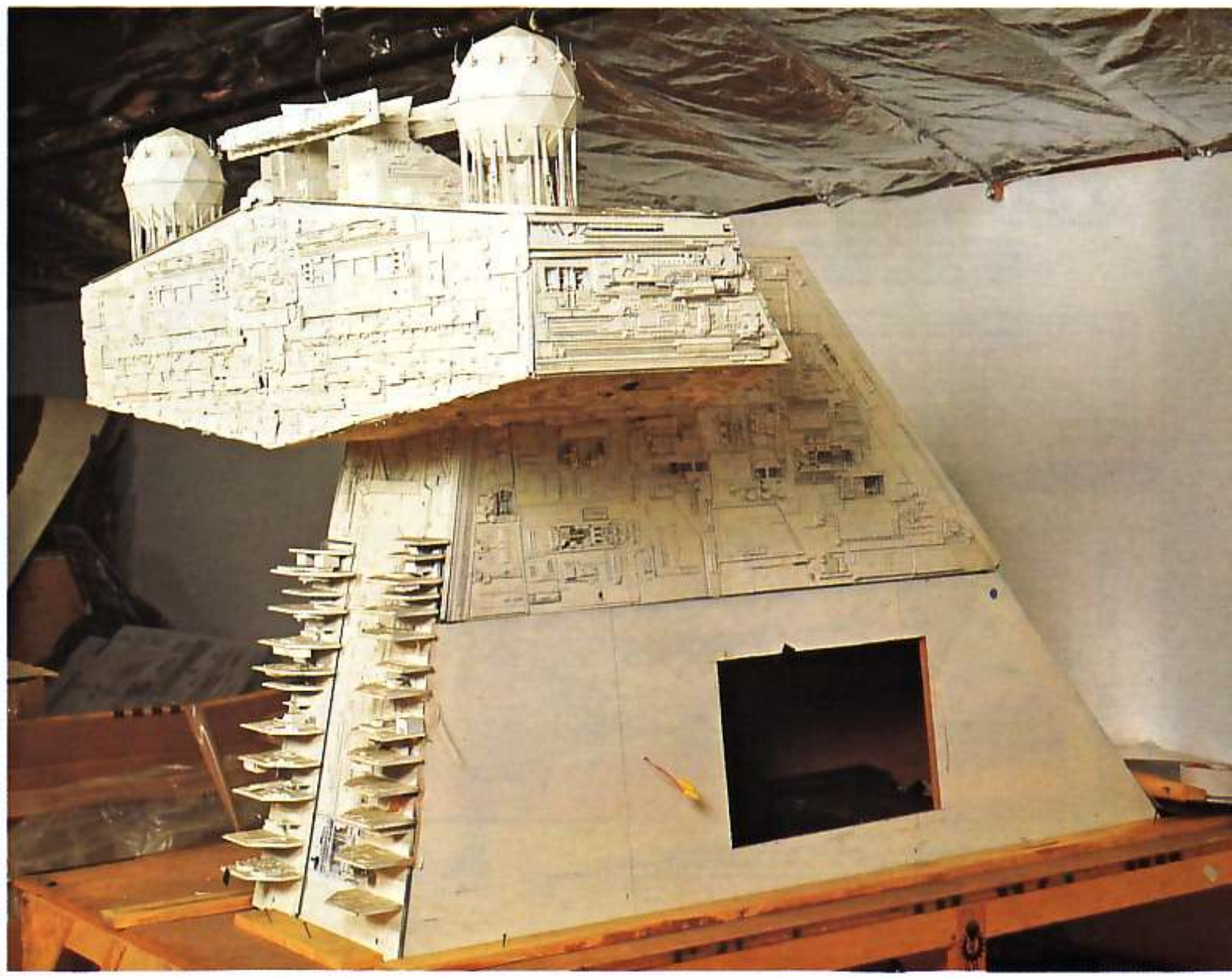


Endor radar dish, prototype,
25 x 37 x 43 cm.

Death Star reactor core, model,
89 x 89 x 109 cm.

Damaged sphere, Imperial Star Destroyer,
model, 20 x 20 x 15 cm.

Death Star surface exhaust port,
model (detail), 122 x 122 x 28 cm.



Imperial Star Destroyer bridge, model (detail), 152 x 173 x 135 cm.

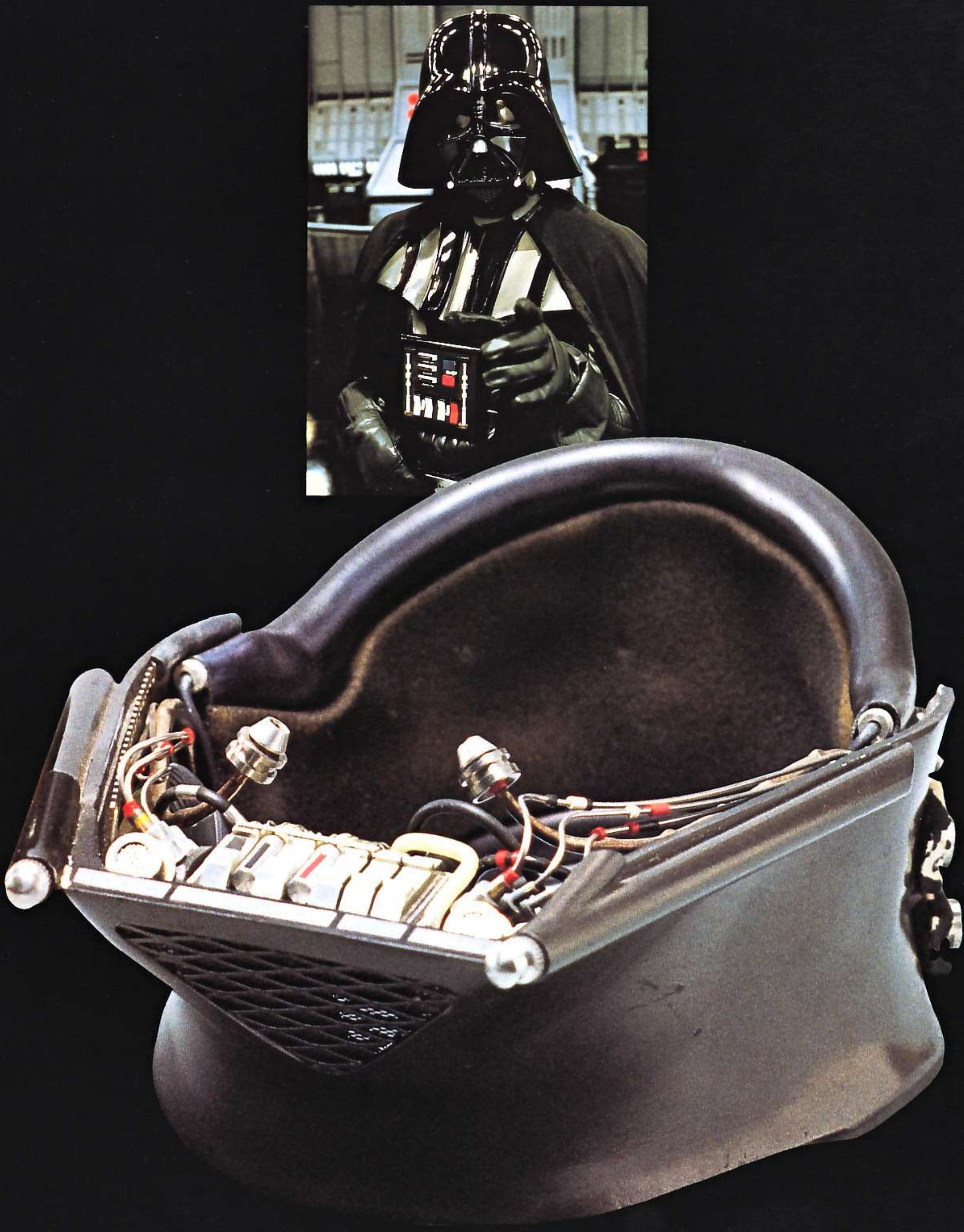
Rebel B-Wing Fighter, model, 58 x 10 x 25 cm.

Rebel A-Wing Fighter, model, 40 x 60 x 22 cm.

Rebel B-Wing Fighter, production sketch

Imperial TIE Interceptor, model, 36 x 31 x 46 cm.

Imperial TIE Interceptor, model, 13 x 18 x 12 cm.



Darth Vader mask for Anakin Skywalker's reveal,
costume headgear, 23 x 33 x 12 cm.

Darth Vader mask for Anakin Skywalker's reveal, costume headgear, 23 x 33 x 18 cm.

Emperor's Throne Room (with Luke and Vader), early concept painting

George Lucas in the final Emperor's Throne Room set

II

FORTUNE AND GLORY

RAIDERS OF THE LOST ARK

(Lucasfilm/Paramount) 1981

THE GOLDEN IDOL

The creation of Indiana Jones is now the stuff of movie legend: Lucas and Spielberg relaxing on a Hawaiian beach (even as *Star Wars* box office receipts are going through the roof on the mainland), Spielberg revealing his desire to direct a James Bond picture and Lucas going him one better, telling him about a character he has created, an adventuring archaeologist whose thirst for fortune and glory would lead him on a search for the legendary Ark of the Covenant (the symbol of God's contract with the Israelites into which Moses placed the tablets of the Ten Commandments). Spielberg, intrigued by the concept, expresses his interest in directing the movie and the two friends make a handshake deal.

Indiana Jones (whose name was inspired by Lucas's dog Indiana) was fleshed out in every detail by Lucas, Spielberg, and screenwriter Lawrence Kasdan. In spirit the character embodies the two-fisted, swashbuckling panache of the classic pulp magazine and matinee serial heroes. Indiana would lead two lives, from the soft-spoken professor of archaeology at a small New England college who dressed in tweed to the globe-trotting seeker of relics outfitted for action in a fedora hat, leather jacket, a cracking whip in hand, and a gun and holster on his hip. (During the character's gestation period many concepts were considered. Lucas was even interested in giving Indy the high-life of a Manhattan playboy, an aspect of his character never fully explored in the films.) Indy came to life with the casting of Harrison Ford, an actor Spielberg praised as a combination of Errol Flynn (in *The Adventures of Don Juan*) and Humphrey Bogart (a villainous turn in *The Treasure of Sierra Madre*).

Raiders of the Lost Ark would, like Lucasfilm's *Star Wars* films, require first-unit filming at far-flung locales, soundstage work at EMI Elstree Studios in England, and the visual effects wizardry of Industrial Light & Magic. With story and characters set in the mid-1930s the production also had to recreate the period look. Although the production values and character development were light years beyond

Indy approaches the Golden Idol of Fertility, storyboard sequence

Indy's whip, prop, 244 x 3 x 3 cm.

Raiders of the Lost Ark, 10th anniversary poster, 69 x 104 cm.

the slam-bang staging of the old serials, *Raiders* would retain their tradition of cliff-hanging thrills.

In the opening sequence alone, Indiana, making his way through a South American jungle (shot on location on the Hawaiian island of Kauai), would brave the betrayal of his guides, the poison-tipped spears of native warriors, and the deadly booby traps of an ancient temple to pluck his prize: the Golden Idol of Fertility.

The idol prop itself, built by the production art department in England, was inspired by Inca and pre-Columbian art. The female figure was designed with a horrific countenance to heighten the suspense as Indy cautiously approaches the golden relic. When Spielberg sketched an image of the idol he scribbled the note: "statue seems to be watching, cursing his every step."

Literally every step Indy would take was carefully plotted. To outwit the ancient keepers of the idol, who have left behind traps ready to be sprung should the idol be removed from its pedestal, Indiana tries to transfer a weighted sack of sand for his golden prize. Despite his precautions the traps are triggered, including a crushing boulder rolling down a chute after our hero, which ranks as one of the most famous thrills of any movie. The camera composition and cuts, all planned and storyboarded in advance—from the "big face close up" as our hero realizes his peril to the wide shot of the juggernauting boulder and Indy running for his life—bring the death-defying situation to the audience with full dramatic impact.

In the path of danger, storyboard sequence and still from film

Golden Idol of Fertility, prop, 15 x 15 x 20 cm.

PAN AM CLIPPER

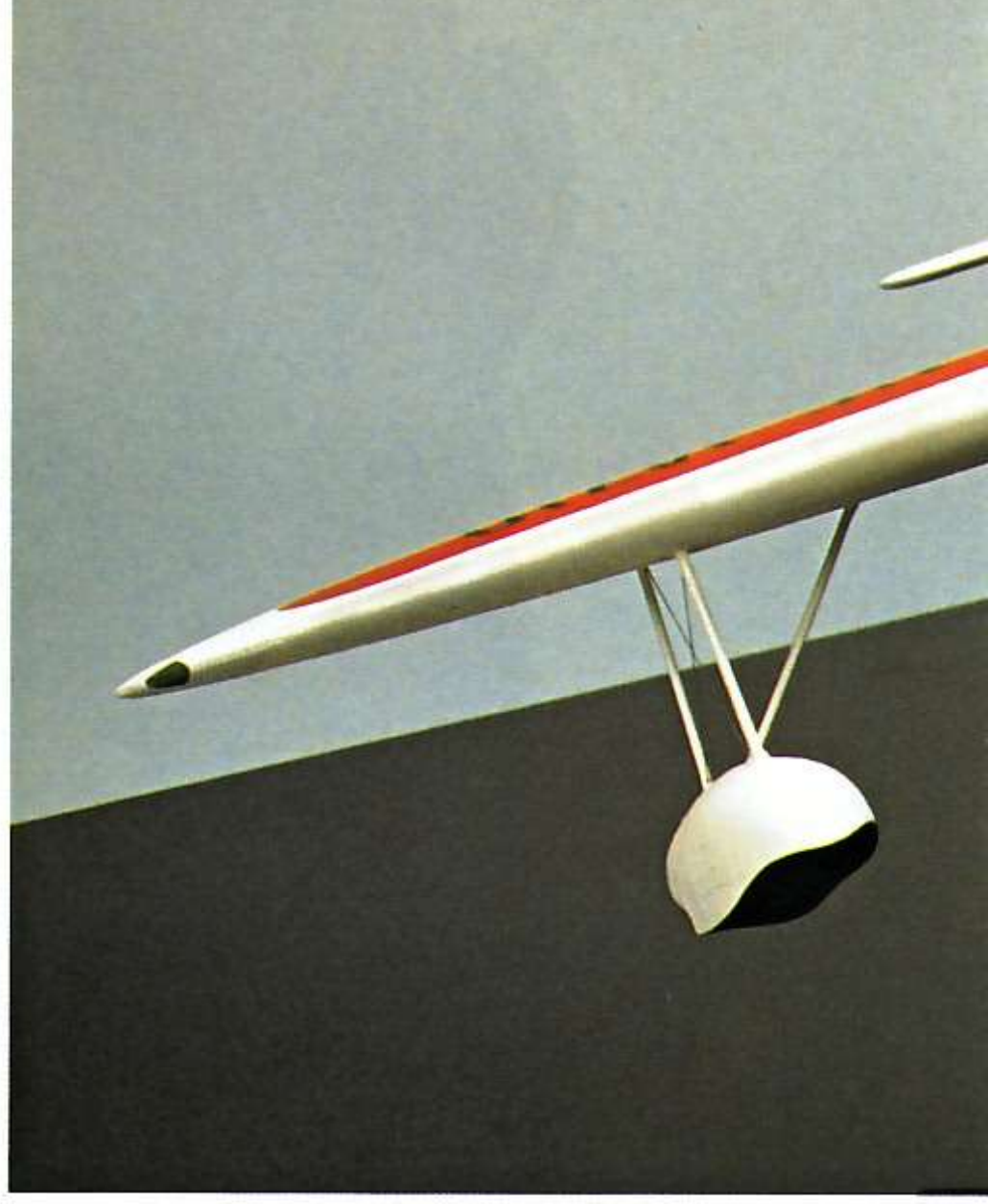
The logistics and economics of moviemaking often require effects artists to fabricate scenes of seemingly ordinary reality. One such fabrication of reality in *Raiders* is a loading dock and an amphibious clipper plane that Indy boards for the first leg of his journey to find the Ark.

Though the production team had tracked down an operating clipper ship of the period five thousand miles from Lucasfilm's Northern California headquarters, only a few miles away, in a Bay Area boatyard, sat the hulk of a 1930s clipper plane undergoing restoration. Since it was a quick shot (ultimately eight seconds on screen), the production team opted for creating the scene in their own backyard with the broken-down ship, even though the craft was so unseaworthy it would sink if placed in water.

The shot was achieved by combining a glass matte painting of the loading dock, complete with sky, period cabs, cargo-loading cranes, and the airline name added in period type style, with separately filmed elements of water and the actors boarding the dry-docked seaplane. The live elements of water and actors boarding were then rear projected onto the glass painting, allowing the combined elements to be photographed as one image.

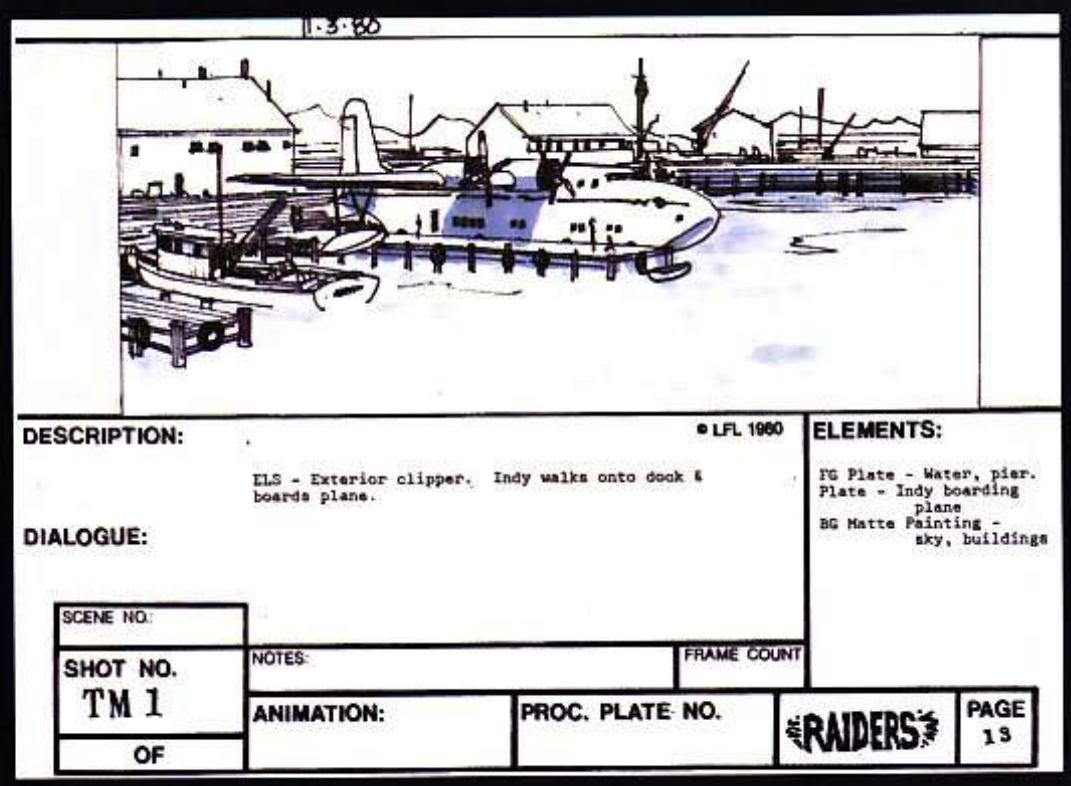
The airborne craft as it wings its way toward the setting sun and the Golden Gate Bridge was realized as a model composited with a background plate. Succeeding shots of Indy's journey to Nepal were planned and storyboarded to evoke the montage-shot tradition of classic movies.

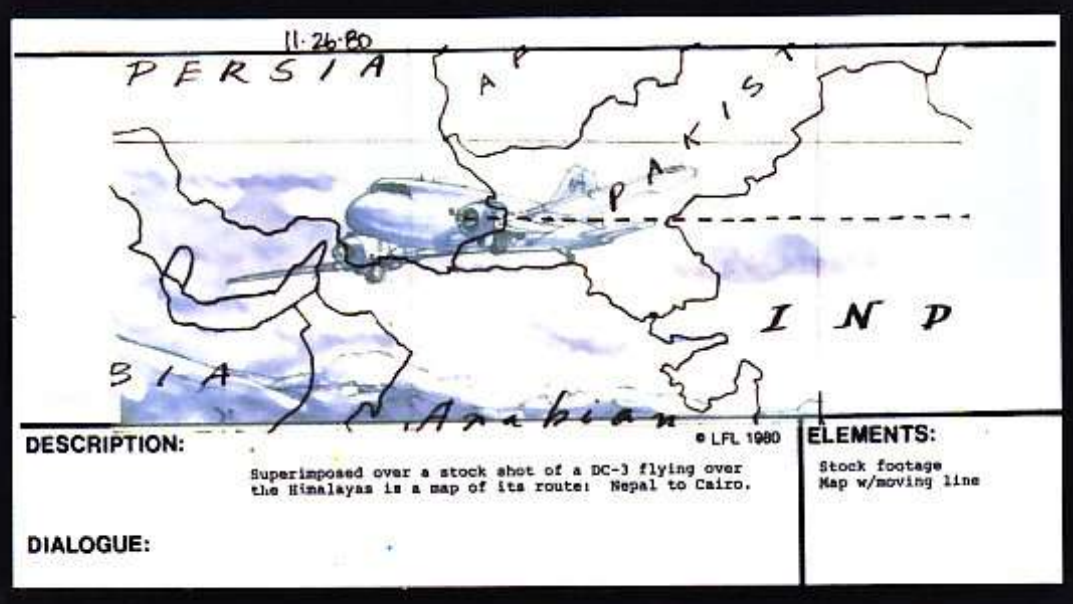
Pan Am Clipper, model, 66 x 56 x 11 cm.

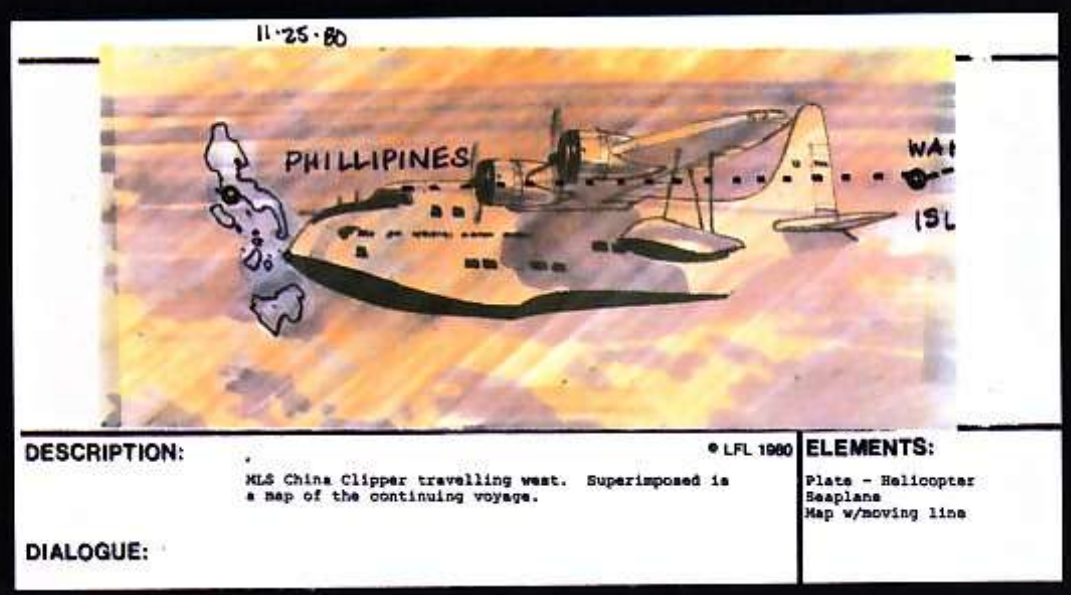


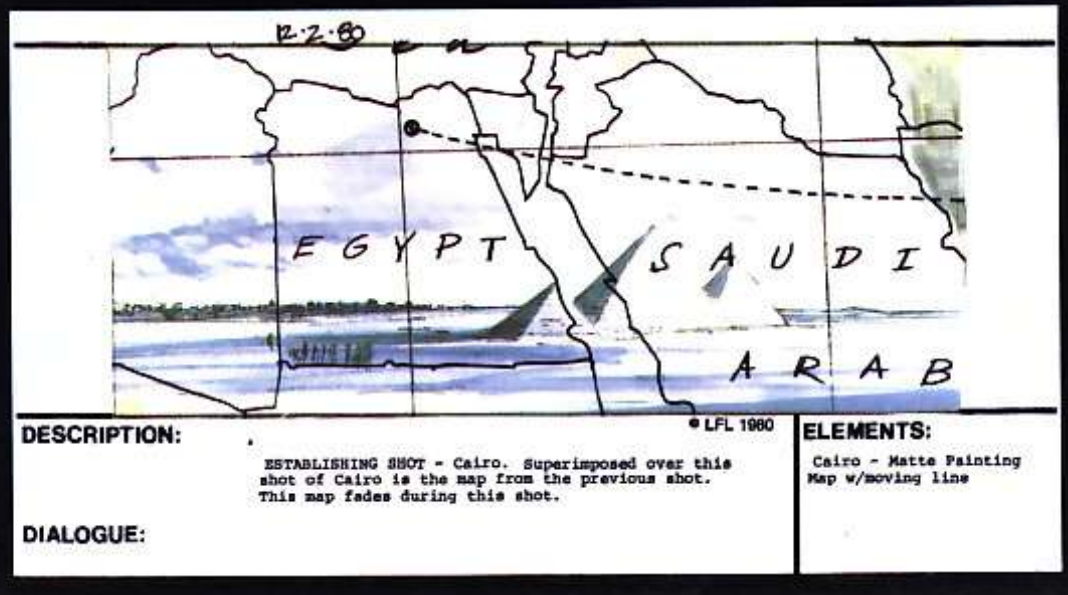
Pan Am Clipper boarding dock, matte painting, 191 x 84 cm.

Indy's flight, storyboard montage









RAIDER RELICS

One of the key props created by the *Raiders* art department in England was the headpiece of the staff of Ra, a relic that, as the story goes, will lead searchers to the long-lost Ark of the Covenant.

In ancient Egyptian cosmology Ra was the Sun God, a deity identified with dawn and rebirth. But other than the allusions to Ra, the art department took poetic license in their design of a purely fictional example of Egyptian antiquity.

To obtain the medallion Jones journeys to Nepal, where the relic is in the possession of Marion Ravenwood (played by actress Karen Allen), a headstrong woman, former flame of Indy (and daughter of one of

Marion Ravenwood contemplates the Ra headpiece, still from film

Staff of Ra, prop, 4 x 4 x 21 cm.

Headpiece of the Staff of Ra, prop, 9 x 1 x 11 cm.

Indy's professors). But Nazi agents are also on the trail of the headpiece, following the order of Adolf Hitler, who is convinced that possession of the Ark will clinch his plan for world dominance.

With Indy and Marion teamed up, the action shifts to Cairo, Egypt, with the Nazis in hot pursuit. A stroll through the marketplace becomes a battle as Indy is attacked by the henchmen of his Nazi foes. (As with most movie weapons, the swords brandished by Indy's attackers were created as life-size props.) The fight scene boasts one of the great ad-libs to make it to the screen: instead of engaging in the long attack pitting Indy's whip against swords as scripted, actor Harrison Ford, suffering from fatigue and intestinal illness, simply pulled the gun from his holster and fired away.

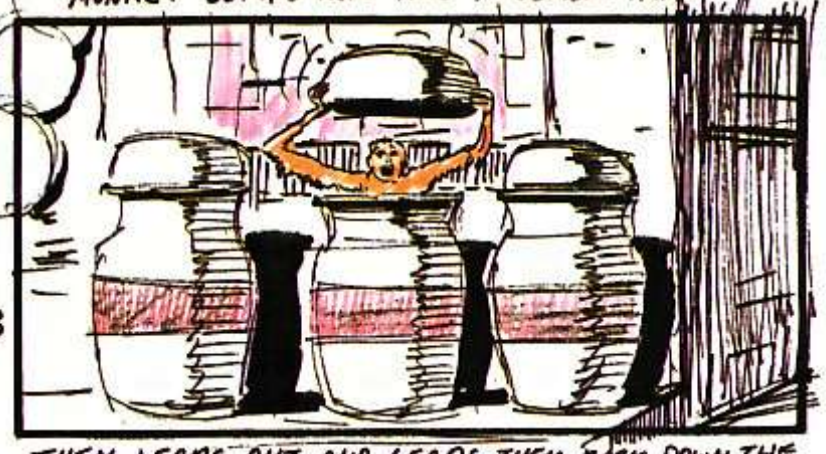
In the climax of the sequence, Marion, who's hidden herself in a basket, is being carried off with Indy giving chase. The scenes, as storyboarded, provide instructions for the camera work, from close-ups to crane downs and pans.

Indy battle in the marketplace, still from film

Swords, props, left: 29 x 4 x 109 cm.; right: 30 x 4 x 109 cm.

MONKEY JUMPS INTO VASE TO DEMONSTRATE...

53



THEN LEAPS OUT AND LEADS THEM BACK DOWN THE ALLEY.

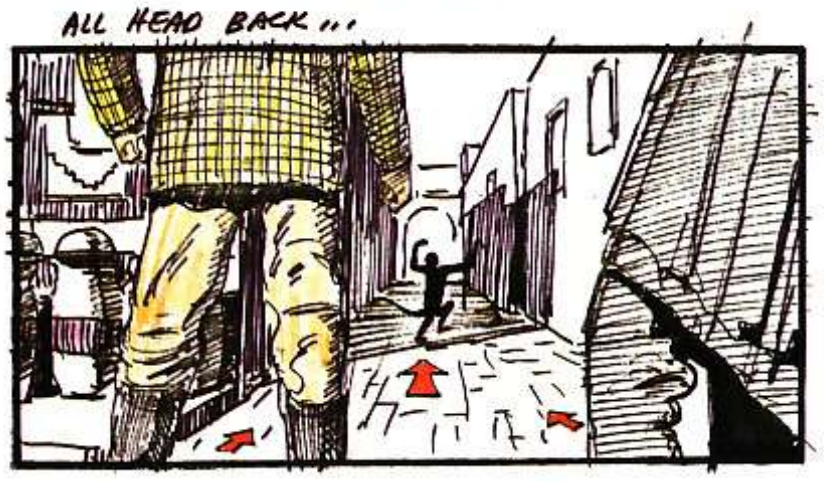
54

GERMAN AGENT: SHOUTS IN ARABIC AND POINTS

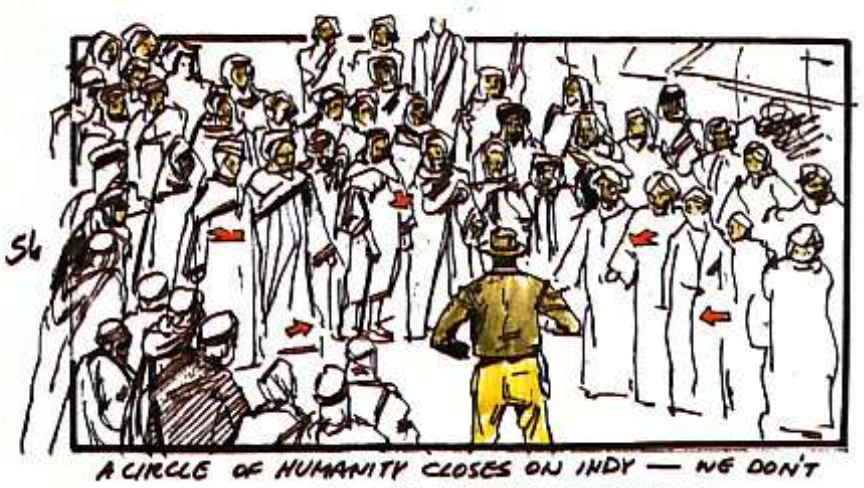
BACK WHERE THEY CAME!

ALL HEAD BACK...

55



56



A CIRCLE OF HUMANITY CLOSES ON INDY — HE DON'T KNOW WHETHER THEY ARE HOSTILE OR CURIOUS —

"... THEY CLOSE AROUND HIM ... INDY SEES ARAB —

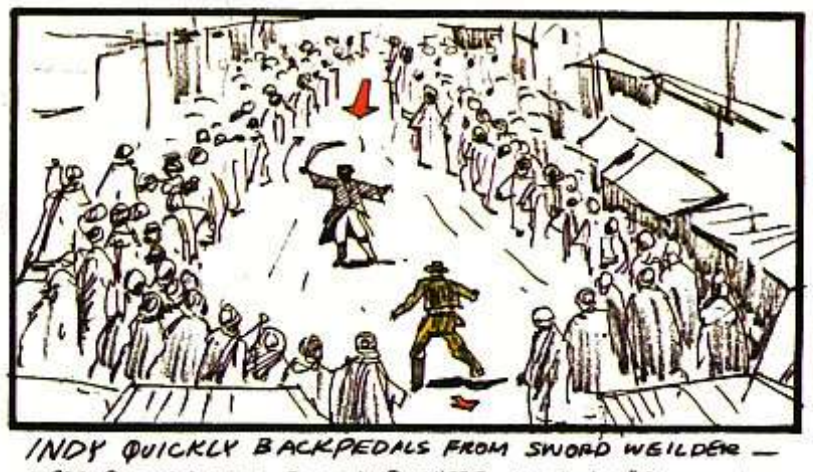
57

"CROWD OPENS UP TO GET 'HI' - LET ARABIAN SWORD

58

WHEALING THROUGH..." LIKE A FIN CUTTING THROUGH THE WATER ARABIAN SWORD APPROACHES ABOVE A SEA OF HEADS —

59



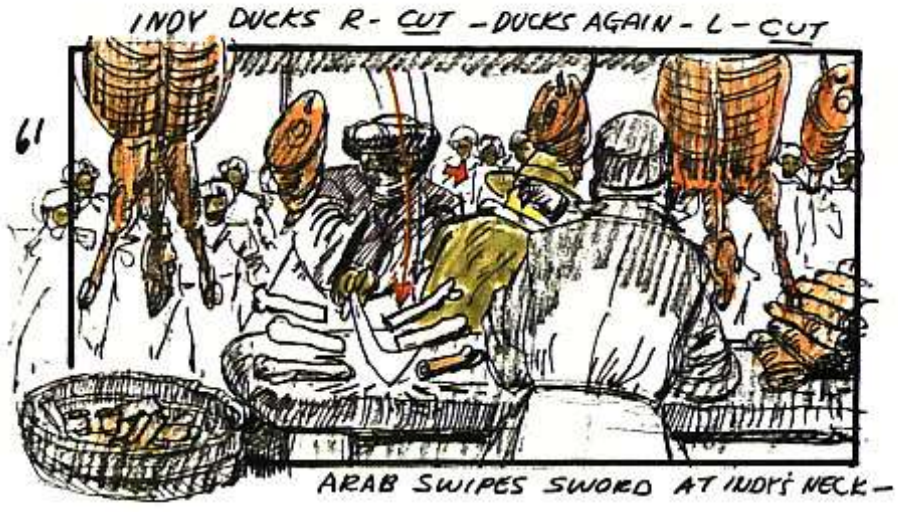
INDY QUICKLY BACKPEDALS FROM SWORD WEILDER — CROWD STARTS TO ROOT AND CHEER LIKE ITS "RO CKY"

60

BUTCHER CASUALLY BRUSHES THE NEATLY CUT PIECES INTO RECEPTICLE AND REPLACES THE EMPTY CUTTING BOARD WITH NEW BONES.

INDY DUCKS R- CUT - DUCKS AGAIN - L - CUT

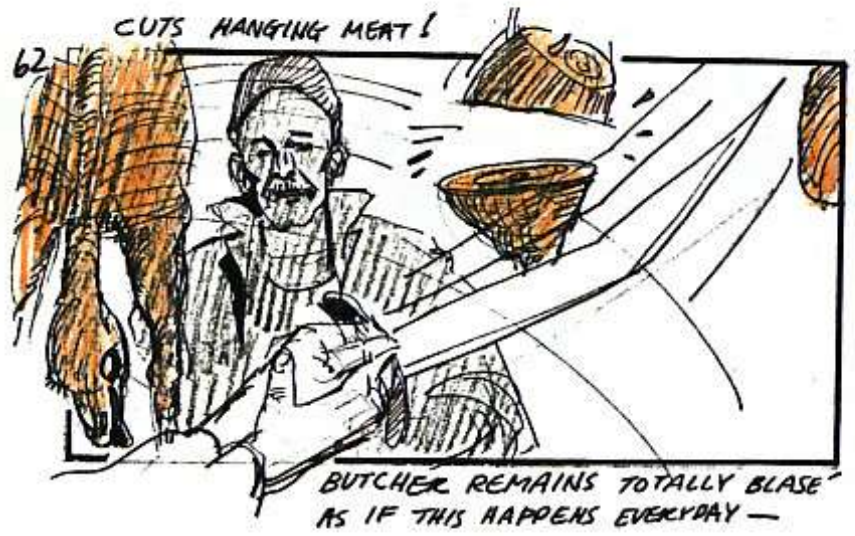
61



ARAB SWIPES SWORD AT INDY'S NECK -

CUTS HANGING MEAT!

62



BUTCHER REMAINS TOTALLY BLASE AS IF THIS HAPPENS EVERYDAY —

INDY HITS HIM!

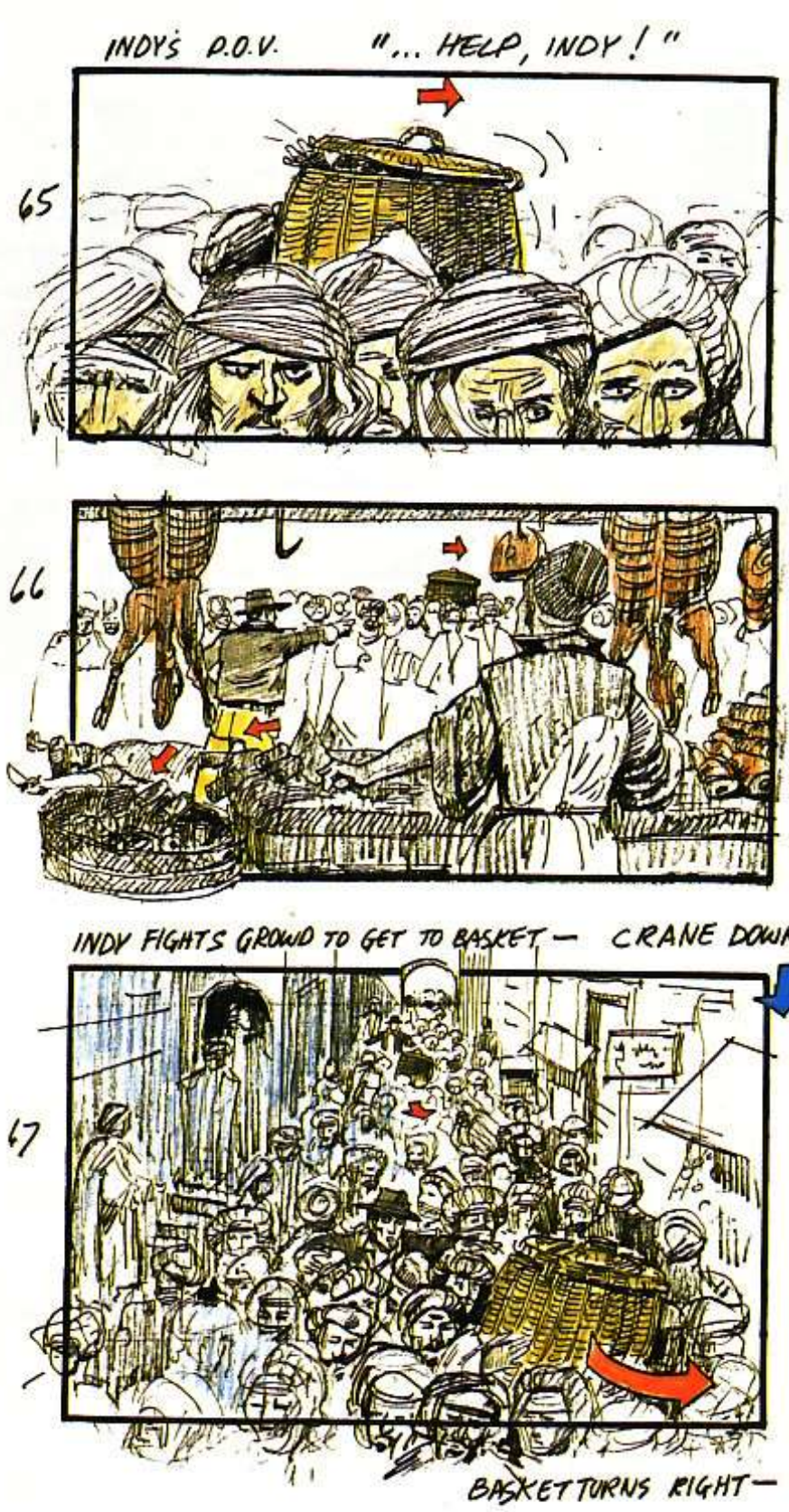
63

O.S. "HELP INDY!"

64

INDY LOOKS UP AND SEES...

RLAC 00883



Marketplace chase, storyboard sequence (with Marion in basket)

THE WELL OF SOULS

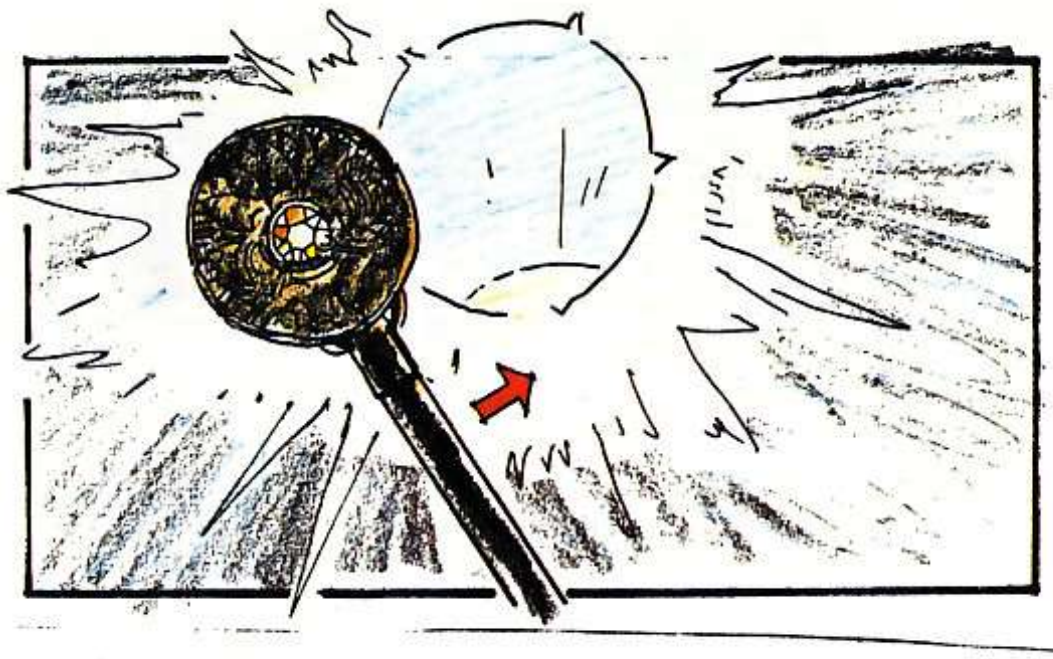
Dressed in Arab garb, Indy infiltrates a desert dig site outside Cairo where the Nazis are searching for the Ark. Our hero discovers the Map Room, a chamber hidden beneath the ancient sands that holds a miniature model of the city which once flourished on the site. With the headpiece of Ra raised up on a staff, a beam of sunlight passing through the medallion illuminates the spot of the Well of Souls, the long-lost resting place of the Ark.

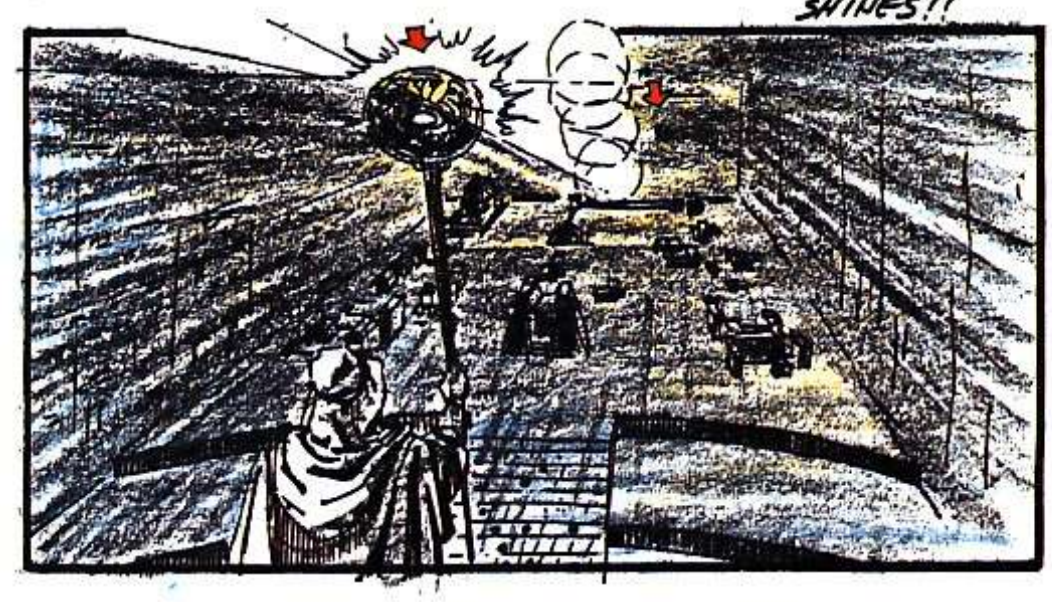
Storyboard artist Dave Negron captures Indiana's wide-eyed look of wonder as the Well of Souls site is revealed, but Indiana is all business as he is lowered down into the Well of Souls to snatch his prize. The set for the Well of Souls, constructed by production designer Norman Reynold's crew at Elstree Studios, was considered by many the most impressive set in the film. Egyptian jackal god statues tower thirty-seven feet in the air while the sandy floor below is filled with thousands of cobras, pythons, and boa constrictors.

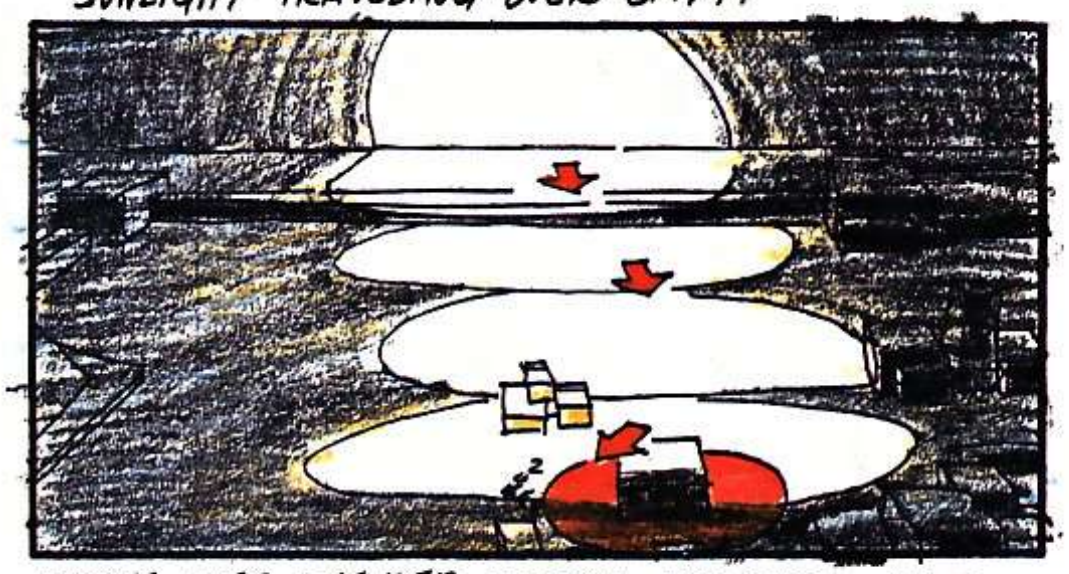
The set also has one of those production in-jokes which decorate many a Lucasfilm production: on a wall behind the revealed Ark, hidden among the hieroglyphics, are depictions of those lovable droids, R2-D2 and C-3PO.

Indy lowers himself into the Well of Souls, still from film

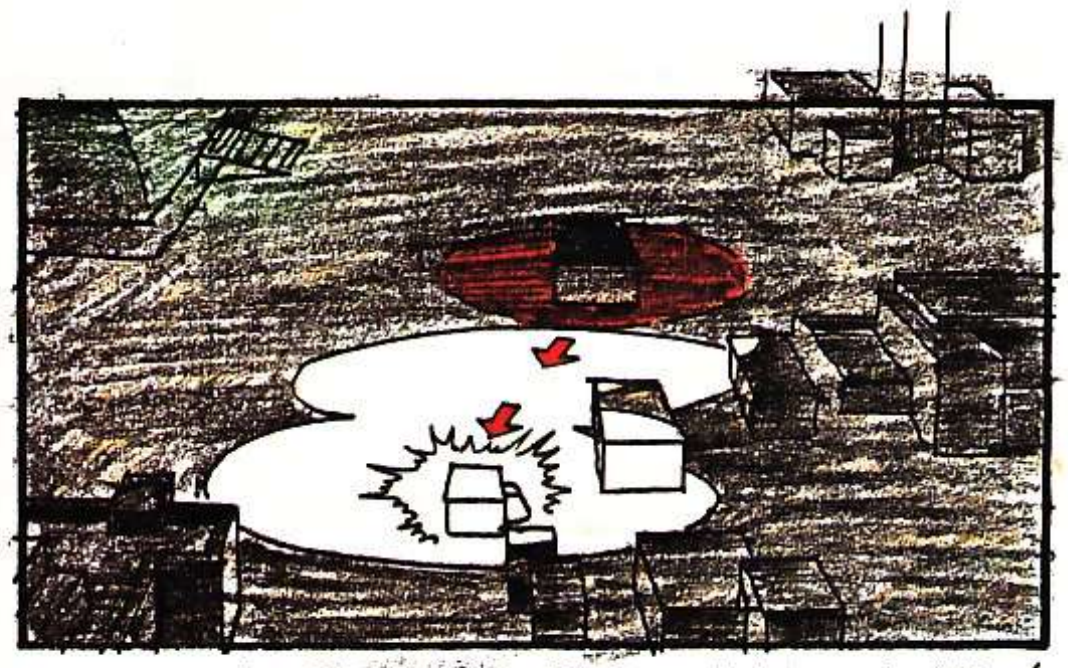
Indiana uses Staff of Ra in the Map Room, storyboard sequence

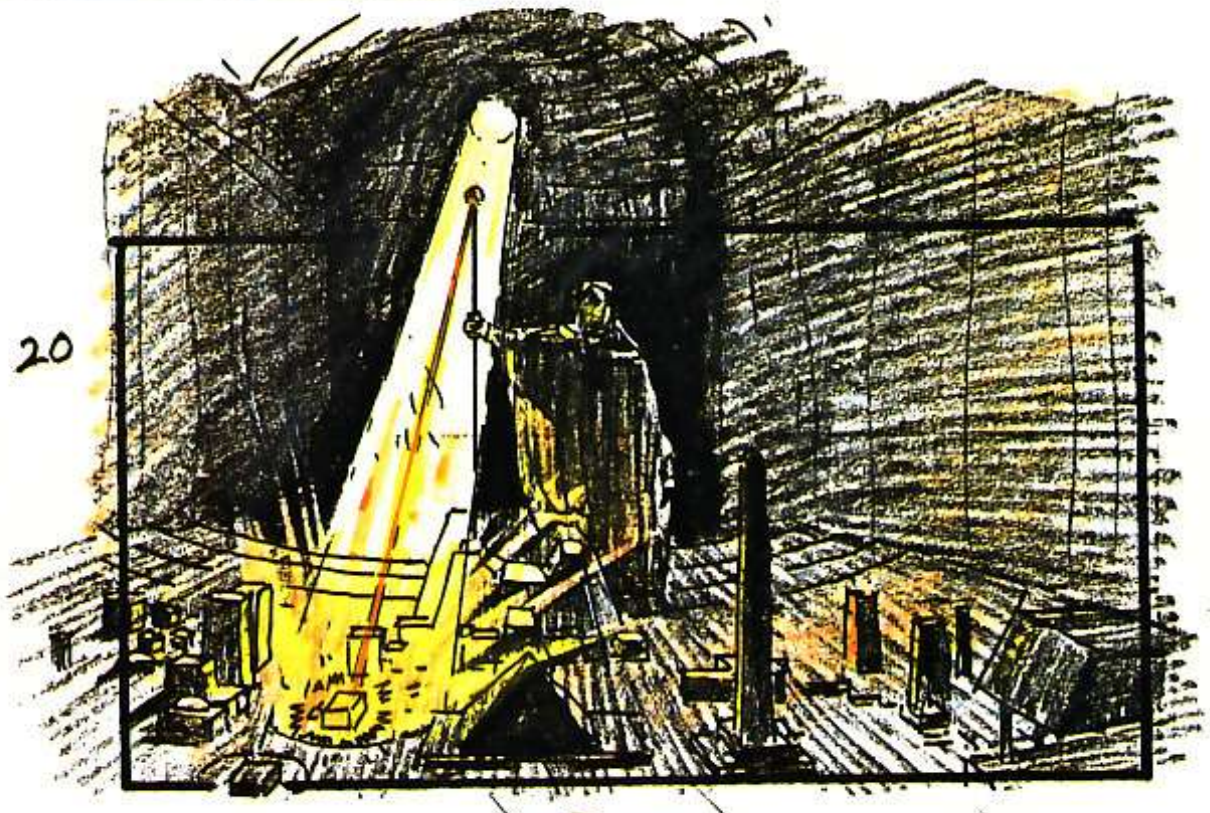


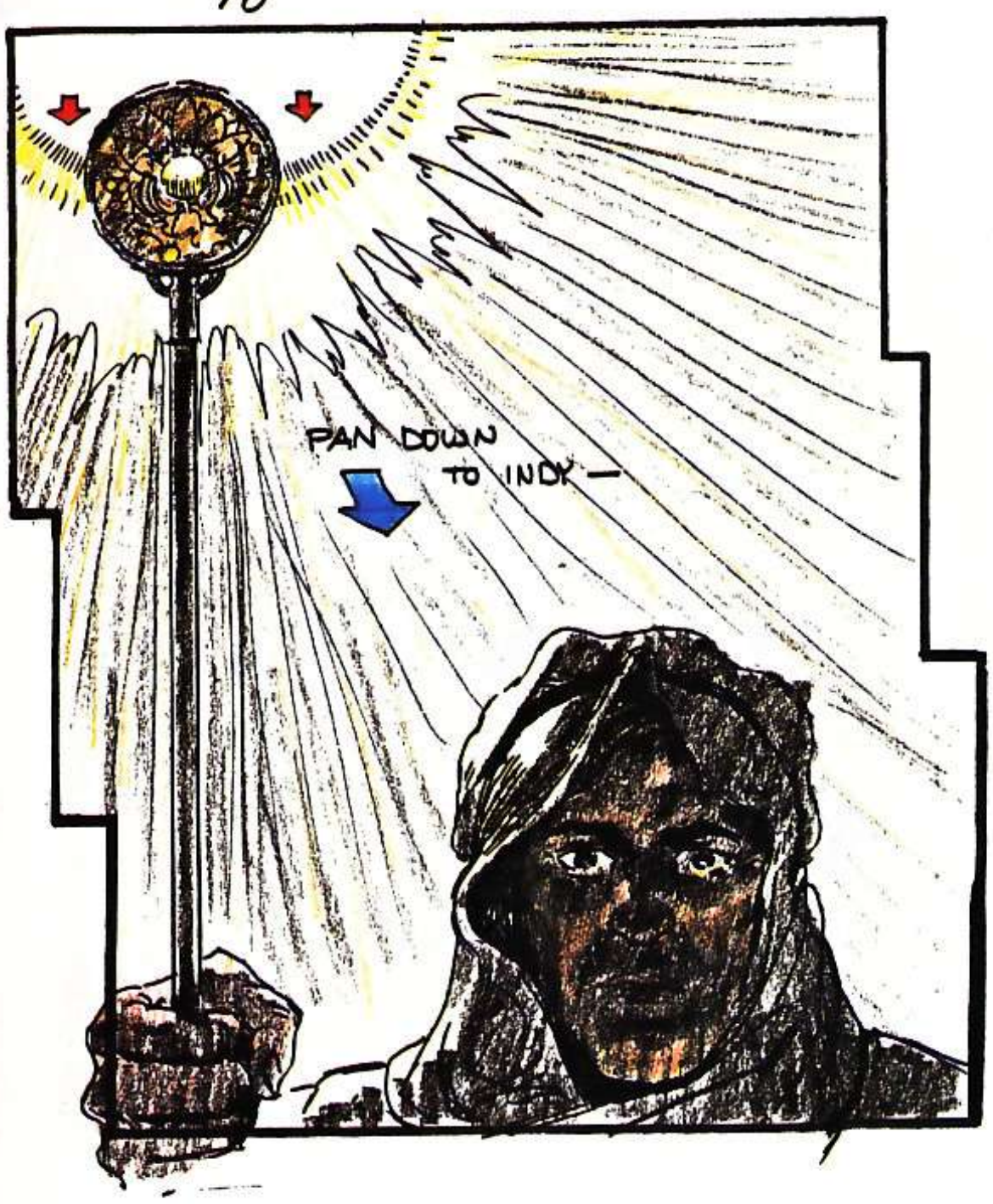




Indy lowers himself into the Well of Souls, still from film







Indiana uses Staff of Ra in the Map Room, storyboard sequence

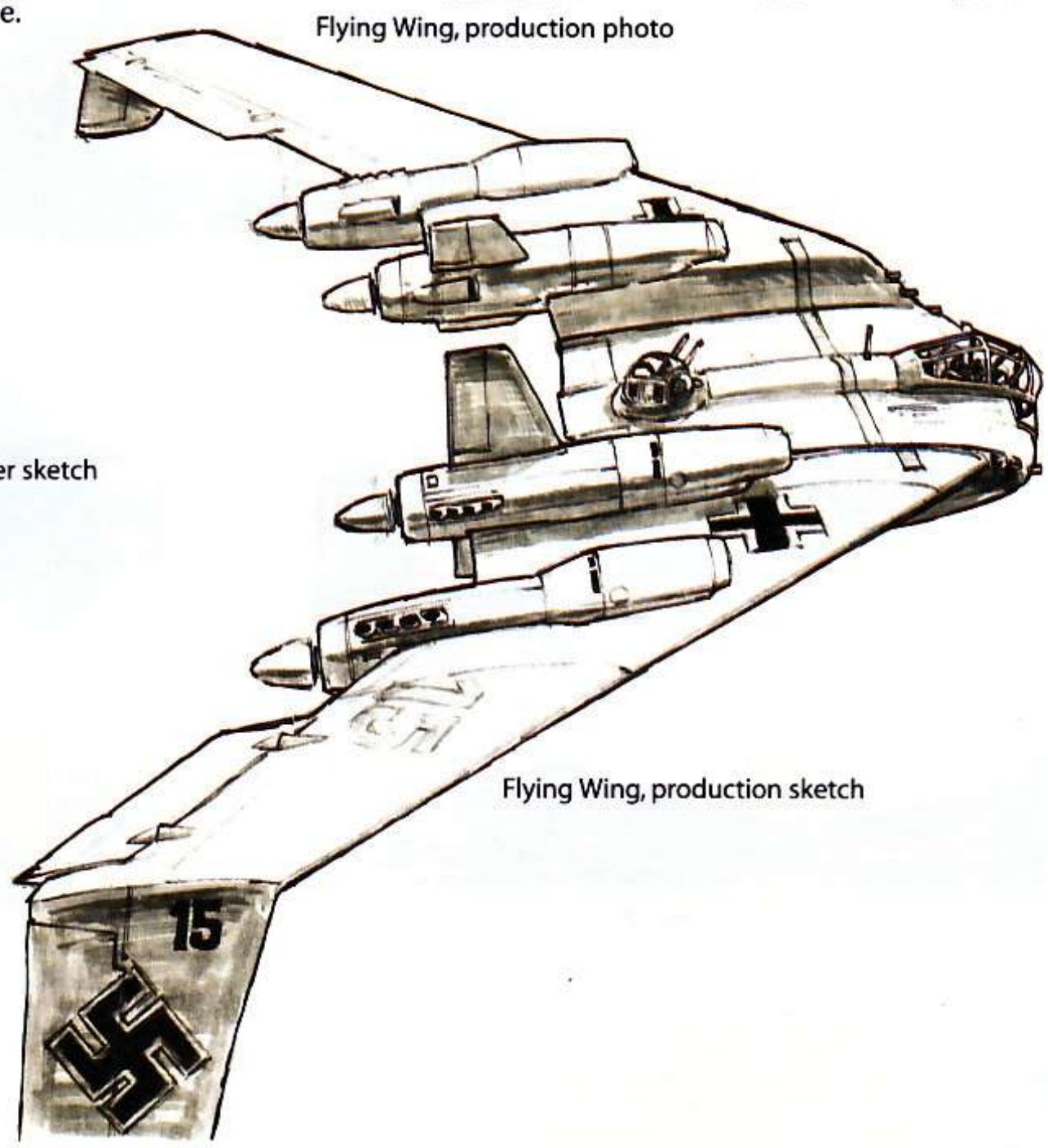
THE FLYING WING

At an airport near the dig site sits a Flying Wing, which will transport the Ark to Hitler. The dream of an all-wing airplane (which could theoretically reduce drag and make a craft more aerodynamic) is as old as aviation. For *Raiders*, artist Ron Cobb designed a prototype Flying Wing that, with its end wing flaps tilted downward, was closer to the look of a U.S. prototype developed in the 1940s.

The final, life-size Wing was built by the Vickers Aircraft Company in England and painted at EMI Elstree Studios. Once completed the craft had to be disassembled and shipped to the location site in Tunisia, where it was rebuilt on location.

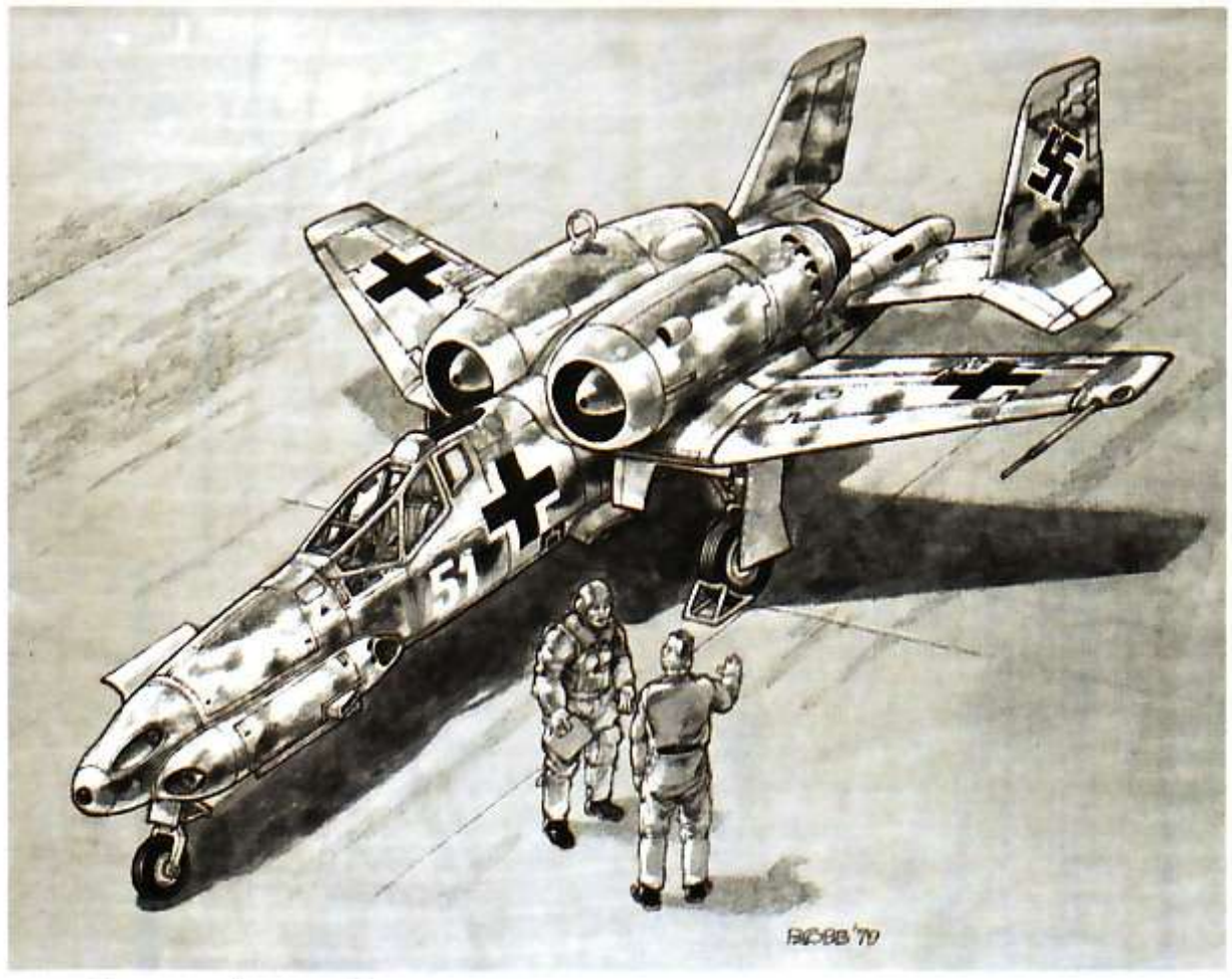
In the shadow of the Flying Wing, Indy battles a burly Nazi while Marion subdues the pilot. During the carefully staged fight sequence, there was a moment when Harrison Ford tumbled to the ground and was in the path of the moving wheel of the airplane, which alert crew members stopped in time. Spielberg is said to have called an unscheduled coffee break to allow nerves to settle after the real-life escape.

Flying Wing, production photo



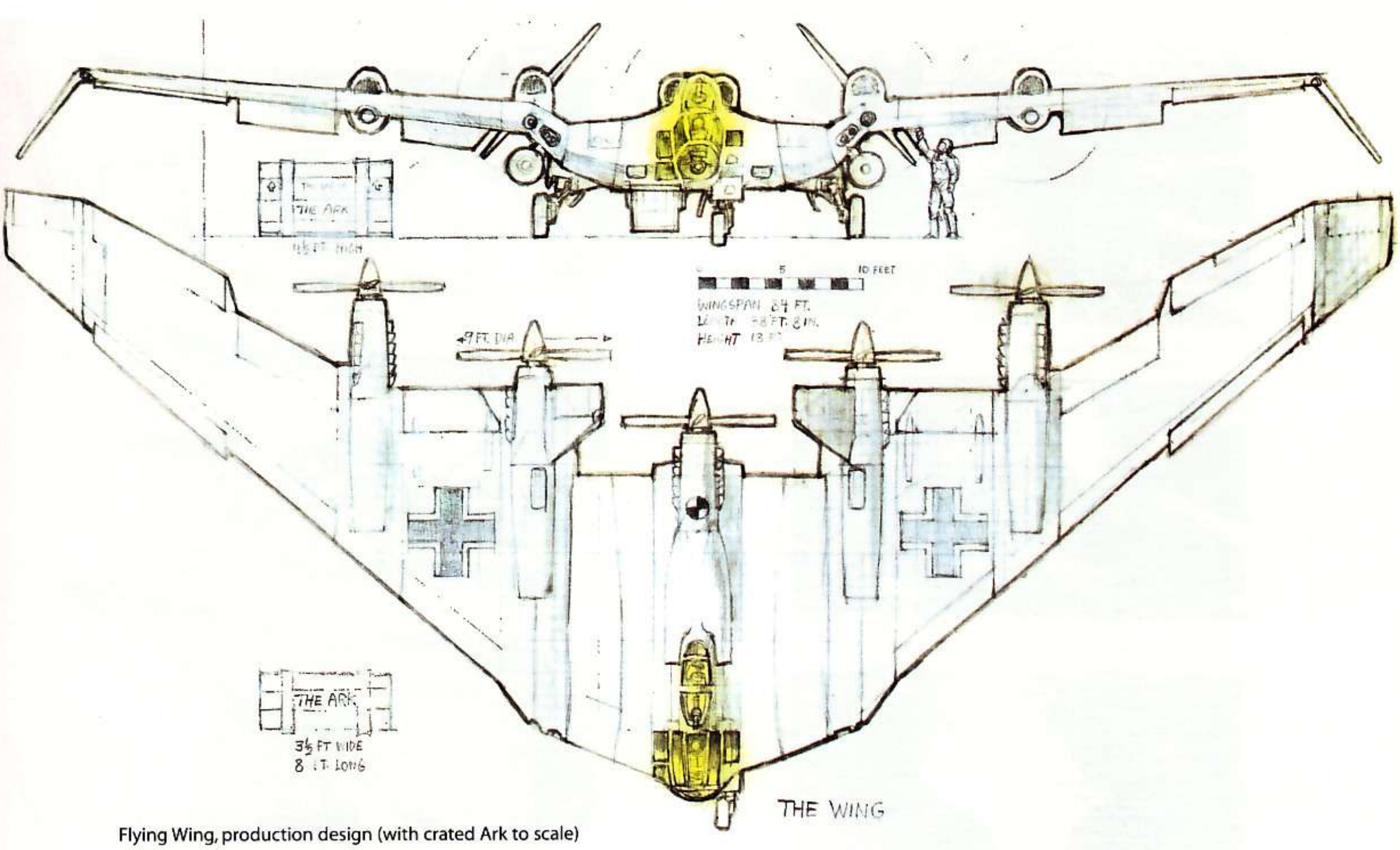
Flying Wing, production sketch

German officer, character sketch

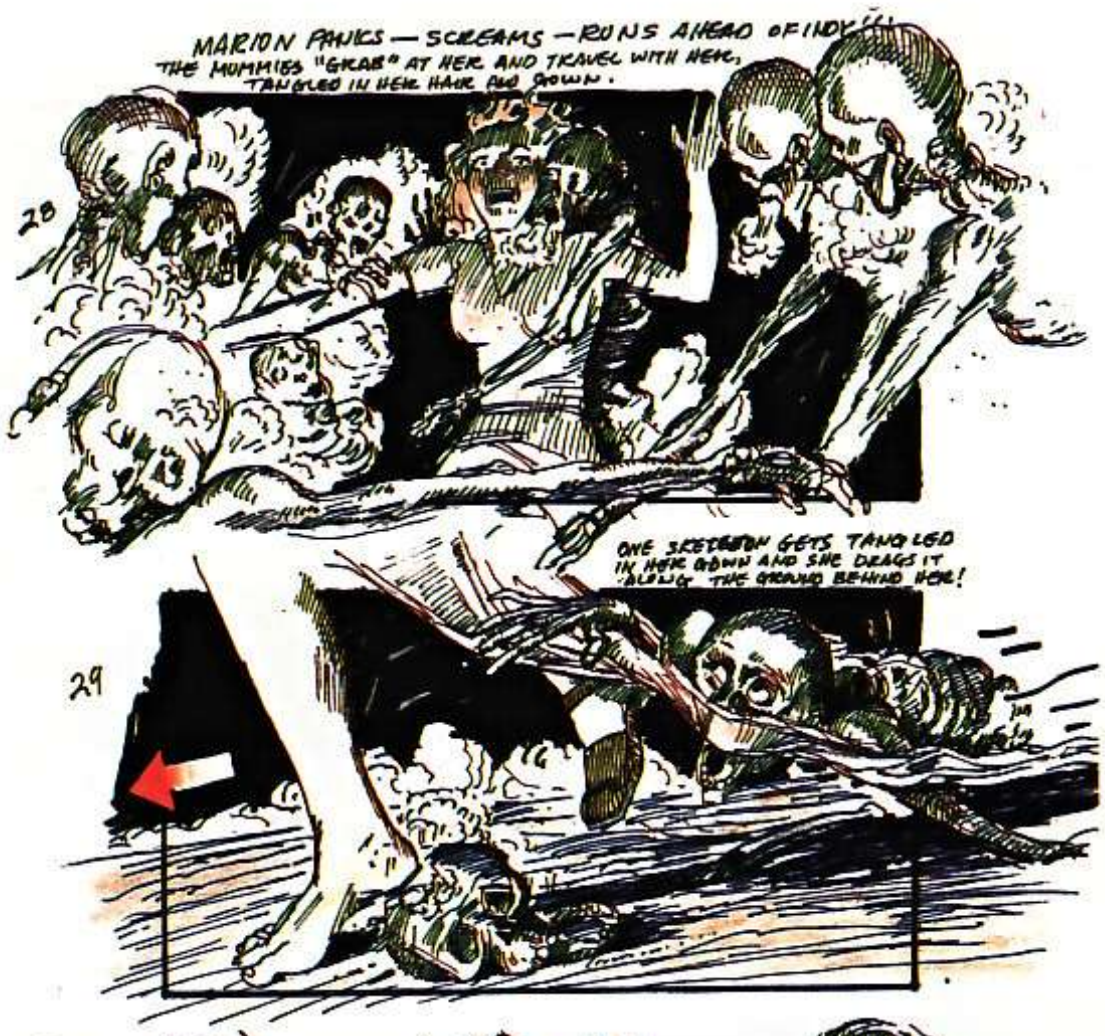


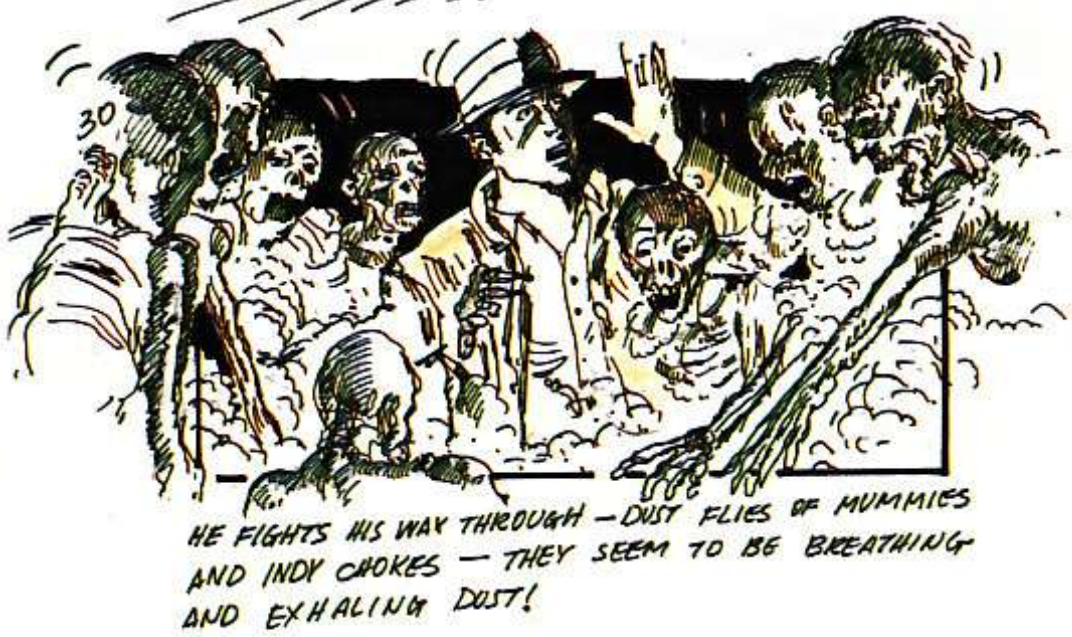
Nazi plane, production illustration

Flying Wing, model, 89 x 36 x 17 cm.



Flying Wing, production design (with crated Ark to scale)



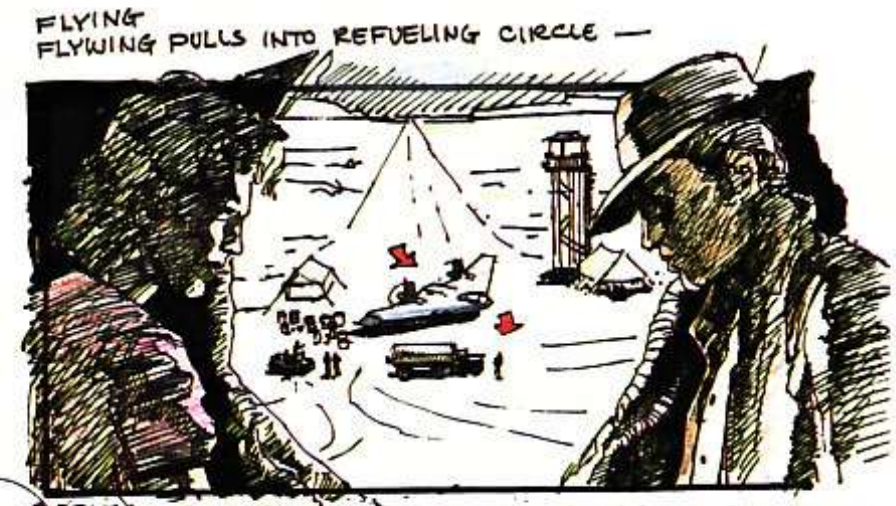


HE FIGHTS HIS WAY THROUGH — DUST FLIES OF MUMMIES AND INDY CHOKES — THEY SEEM TO BE BREATHING AND EXHALING DUST!

SUDDENLY MARION TACKLES INDY AND HE SCREAMS IN FEAR.

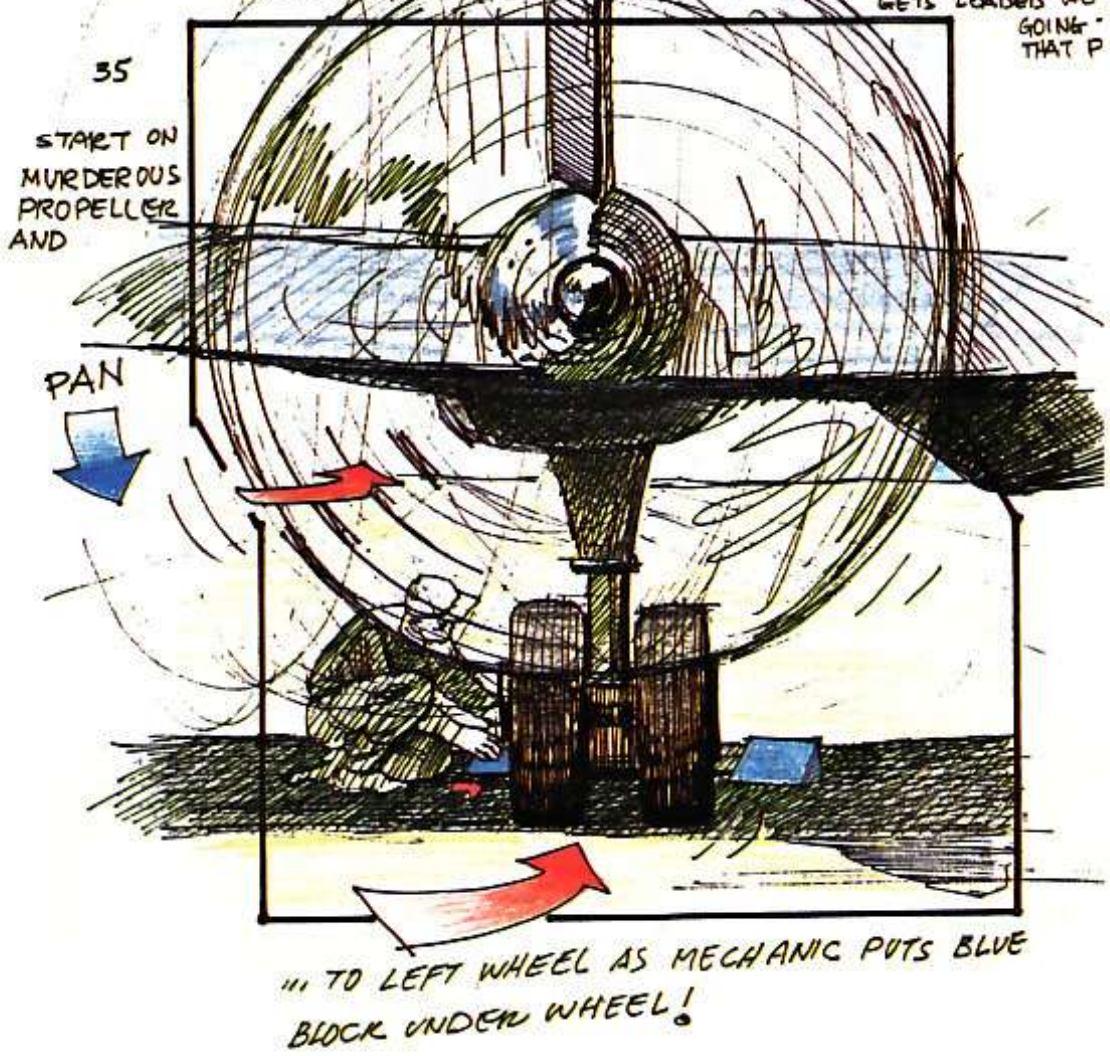
THEY EXIT —

DOLLY WITH INDY AND MARION TO THE DAYLIGHT OPENING.

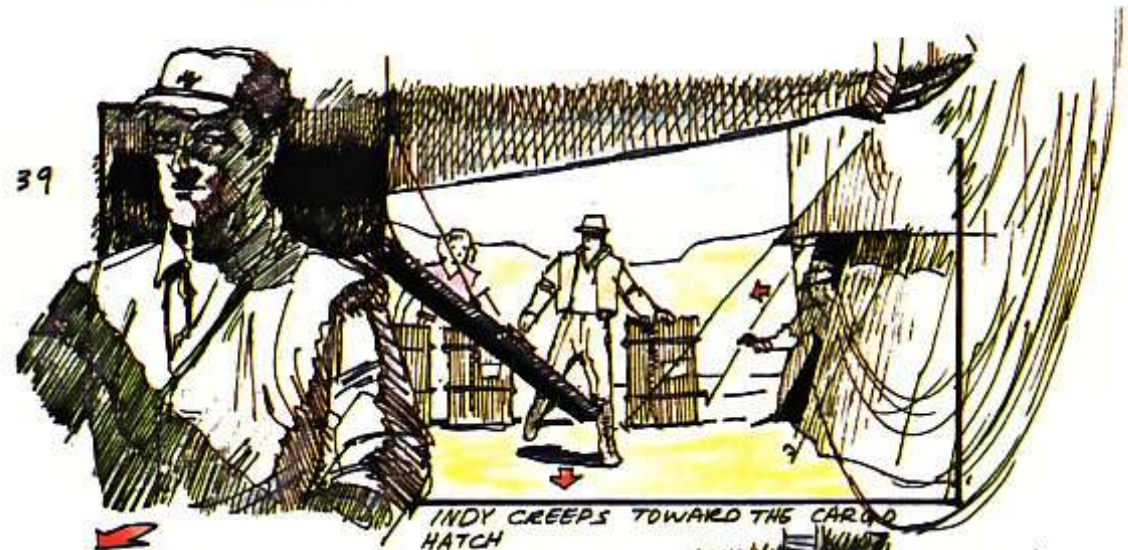


GOBLER IN STAFF CAR TELLING MECHANICS TO GET READY TO TAKE ON SPECIAL CARGO.

INDY: "WHEN THE GETS LOADED WE GOING. THAT P



... TO LEFT WHEEL AS MECHANIC PUTS BLUE BLOCK UNDER WHEEL!



RLAC 00714

Battle at the Flying Wing, storyboard sequence from Well of Souls to Landing Strip

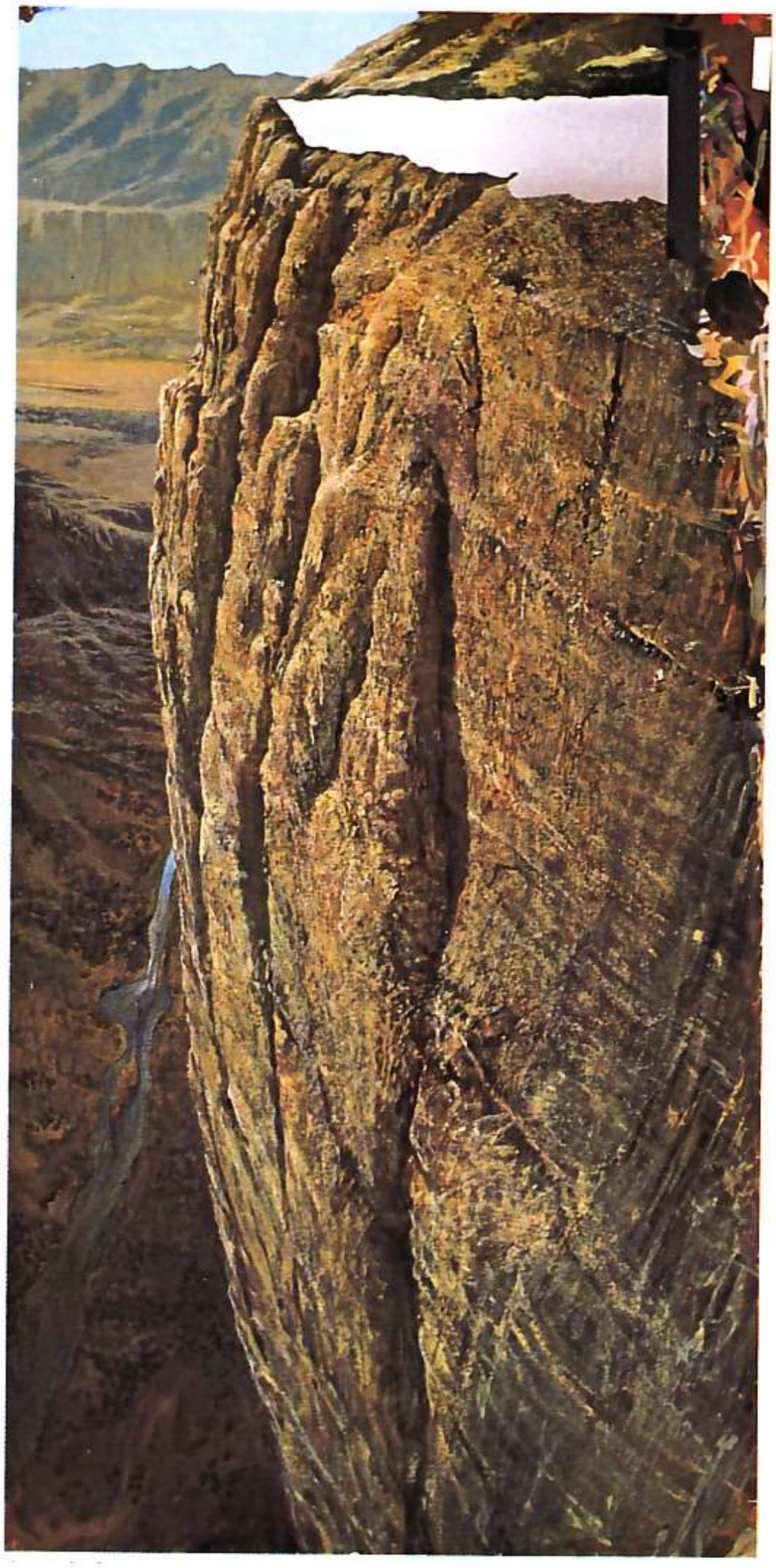
SECRETS OF THE ARK

One of the greatest chases ever filmed is the truck chase in which Indy pursues Nazis who are making their getaway with the Ark. The sequence intercut both live-action stunt work and ILM's visual effects magic. A key ILM shot had Indy drive a Nazi jeep off a cliff, an effect executed with a matte painting of the cliff's sheer drop in which opticals composited separate elements of a miniature jeep and puppets. Longtime ILMer John Ellis points to the shot as a signature example of Lucas's understanding of his audience, explaining that when Lucas viewed the shot in dailies he told his team to print it, despite a chorus of concerns that there was still work to be done—color timings, additional painting details, some work on the matte lines. But Lucas instinctively knew the shot couldn't be improved upon and that audiences would cheer it in the theaters.

The chase for the Ark shifts to the Nazi submarine where the Ark has been crated. The crate, complete with Nazi insignia, called for an ILM animation effect to have the Ark burn the crate's surface, foreshadowing the eventual destruction of the Nazis when they open the Ark.

The opening of the Ark was presided over by Belloq, Indy's old foe in the hunt for lost treasures of

Submarine bearing the Ark docks in Nazi stronghold, still from film



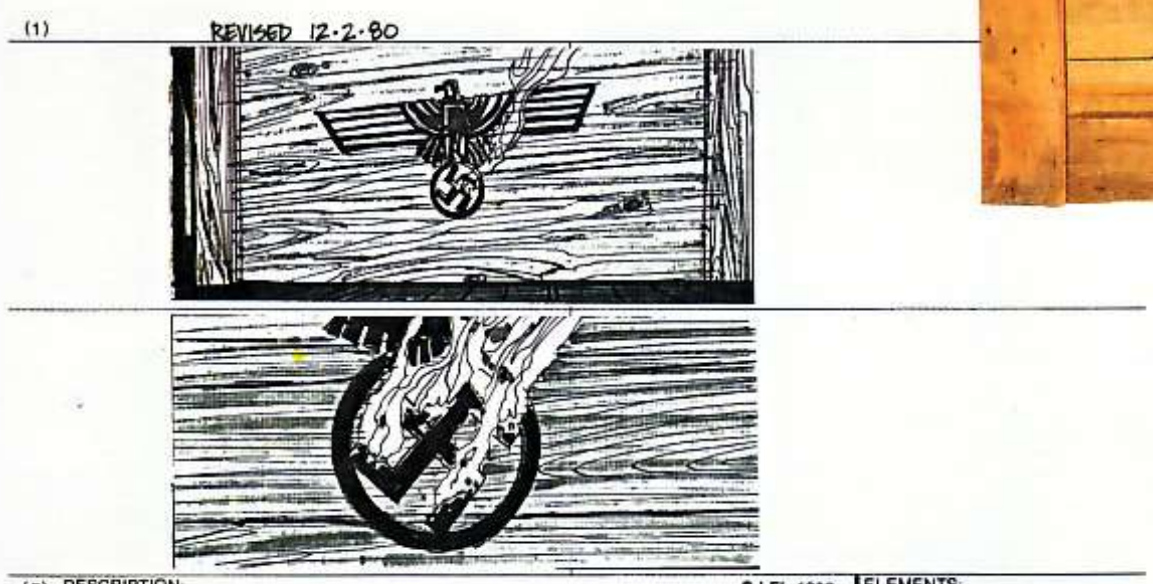
Cliff drop, matte painting, 122 x 244 cm.

Nazi jeep, model (with figure), 13 x 26 x 13 cm.

Nazi crate, prop, 136 x 93 x 10 cm.

Nazi crate burned, prop, 136 x 93 x 10 cm.

Ark smolders in crate, storyboards



REVERSE ANGLE... SPIRIT PASSING THRU...

AS ARC IS OPENED WE FIRST WITNESS HAPPENS..... THEN...

SPIRIT PASSING THRU HOLES OF TOLAND SOLDIERS HEAD... AS IF TO CONFRONT HIM... WITH SOMETHING...

(WHITISH) MIST POURS OUT OF ALL... BEINGS SPECTRES BUT WITHOUT COLOUR...

CLOSE OVER SHOULDER... FACE OF SPIRIT HEAD RISES TOLAND NAZIS FACE...

MIST ISSUES FORTH AND SLOWLY FILLS AND SURROUNDS EVERYONE...

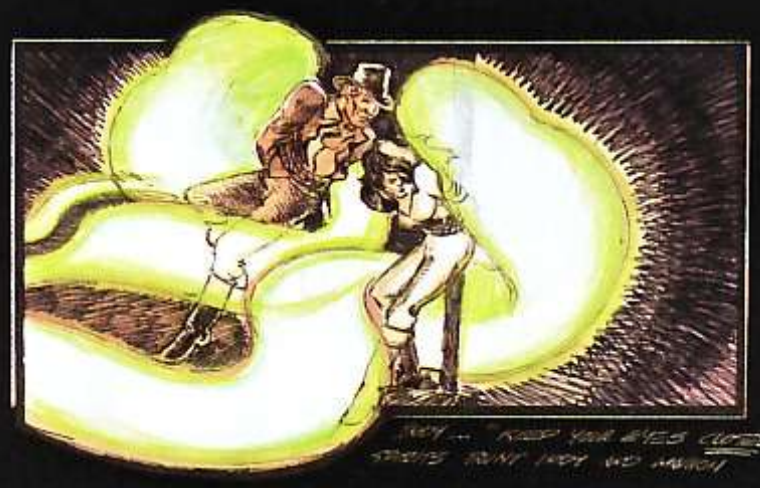
REVERSE ANGLE... RETURNS STARING ENTRANCED... MYSTIFIED...

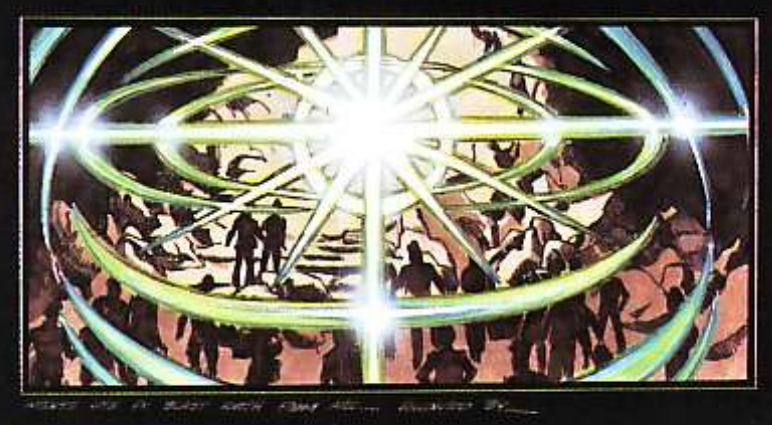
FINGERS CLOSE TO HIM...

FACE OF SPIRIT THEN REVEALS ITSELF... THE FACE OF DEATH !!!

AND THRU HIM.. AS IF IN TELEPATHY... SOLDIER LOOKS HARDER TO SEE IF THIS IS REALLY HAPPENING...

SOLDIERS REACTION... BEGINS A SCREAM WHICH IS NEVER HEARD.. FOR AS HIS FACE TURNING TO STONE...



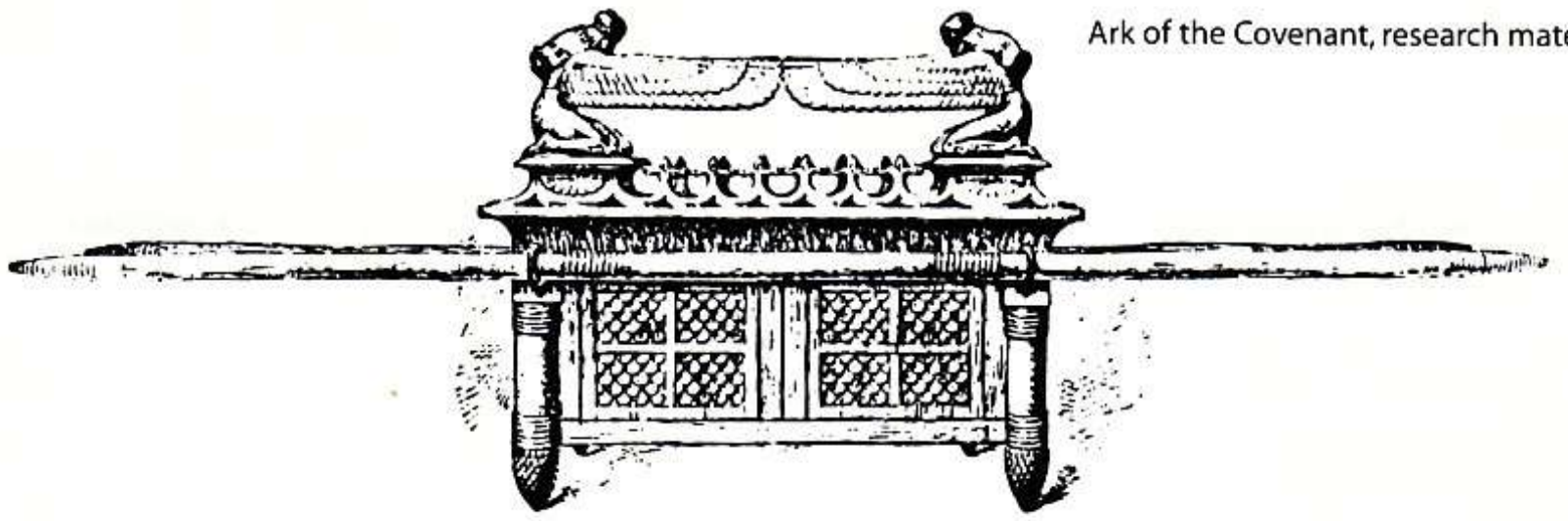


Opening of Ark and the Nazi destruction, storyboard sequence

Belloq's ram's head staff, prop, 13 x 154 x 13 cm.

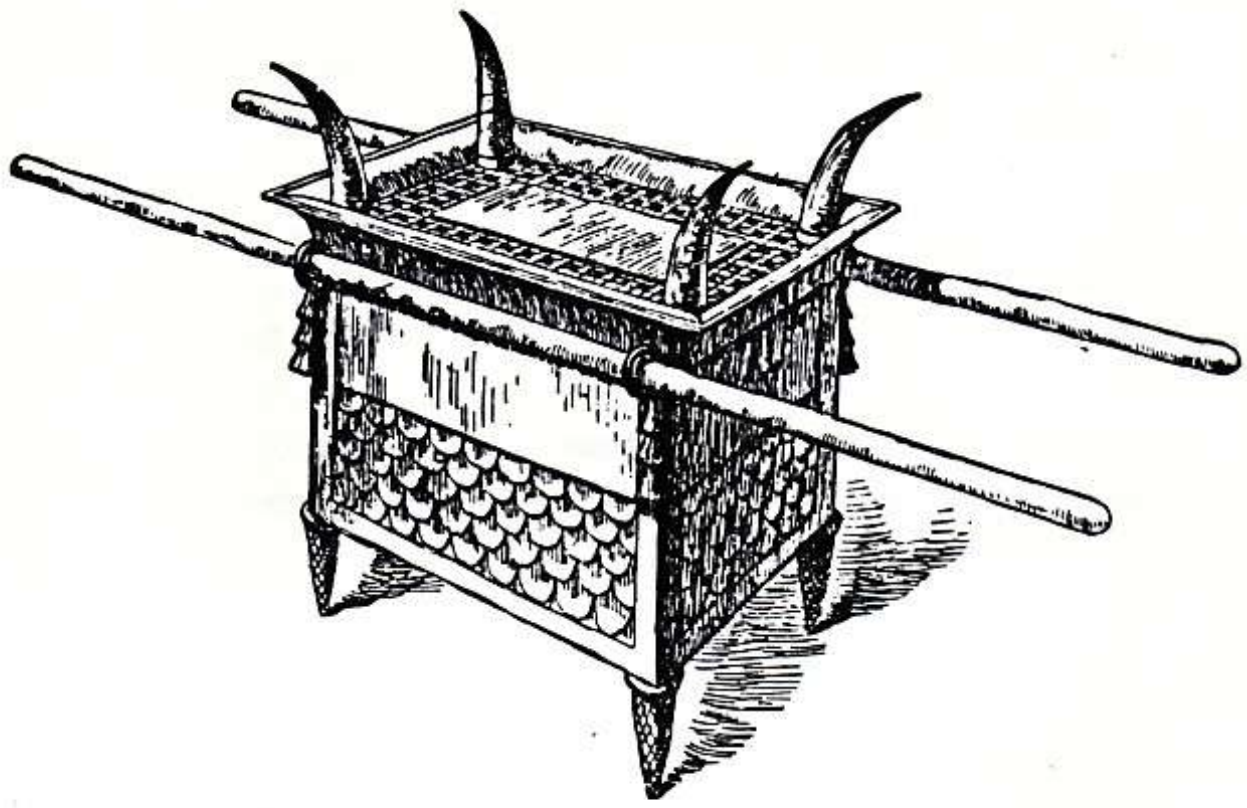
Belloq's jeweled breastplate, prop, 20 x 20 x 3 cm.

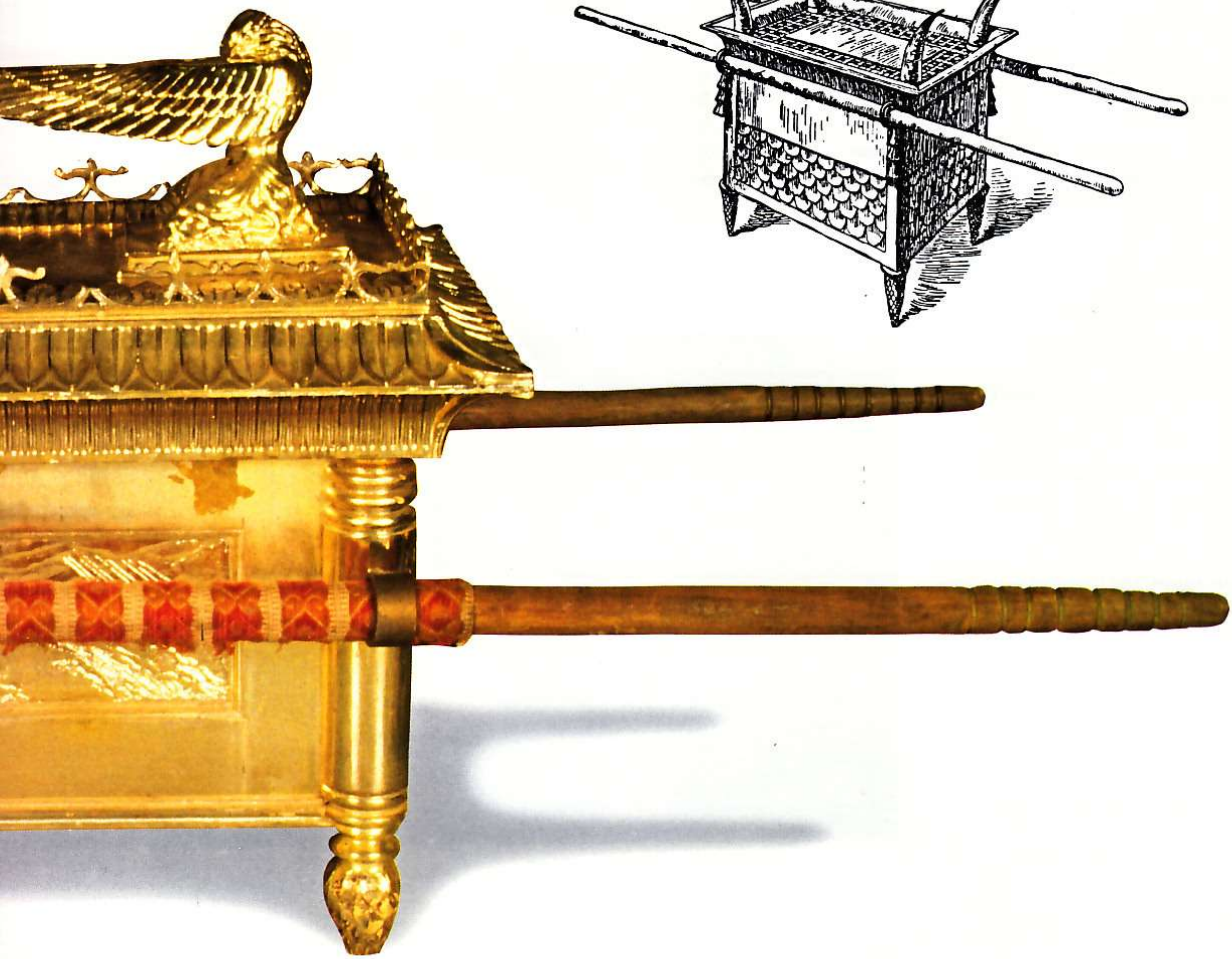
Ark of the Covenant, prop, 71 x 234 x 94 cm.



Ark of the Covenant, research material

Portable altar, research material





antiquity. For the fateful ceremony several props were inspired by ancient Hebrew ceremonial objects, including a bejeweled breastplate and ram's head staff.

The *Raiders* art department had divine source material in recreating the Ark. Its design, including golden, winged cherubs facing one another atop a wooden chest plated inside and out with gold, is described in exact detail in the Old Testament's book of Exodus. The design research also included old religious texts and archaeological journals in which the sacred relic had been drawn to biblical specifications.

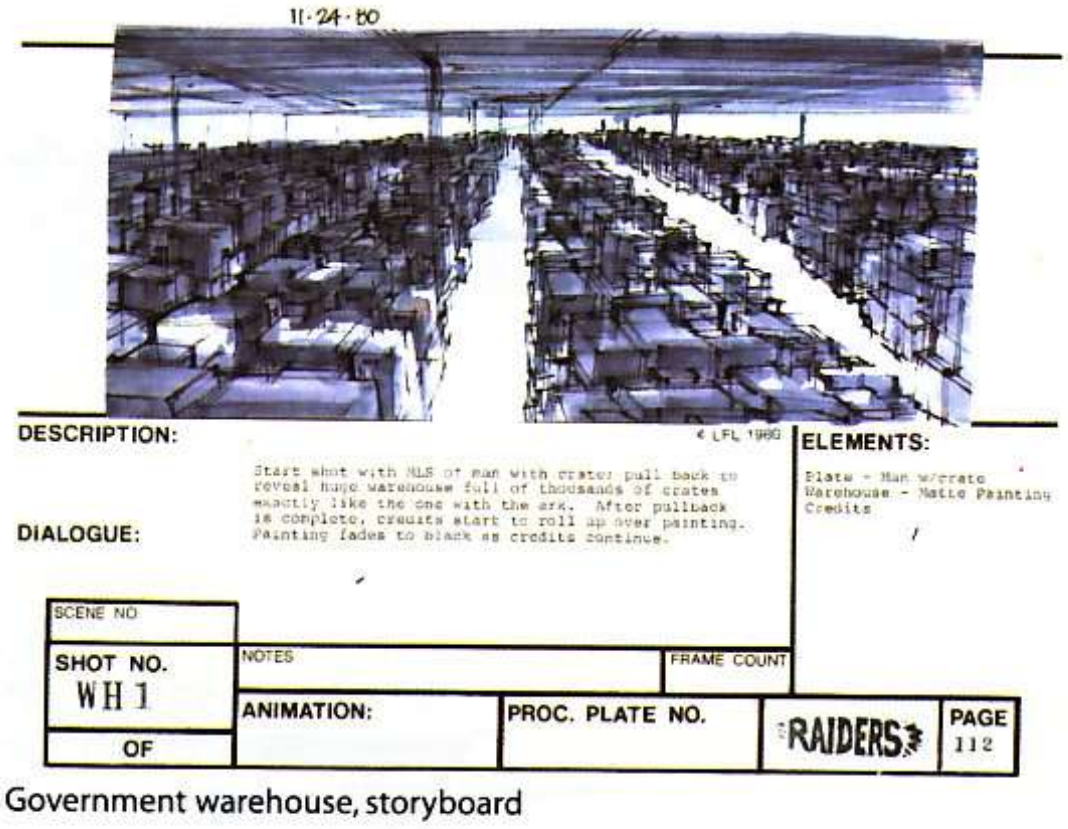
The climactic opening of the Ark, with the destruction of the Nazis, required a mix of live action and visual effects. Bolts of energy that zap the Nazis were created as cel animation, with the actors' shirts rigged with lightbulbs to represent the entry point for the energy bolts. Although the storyboards dictated close-ups of Belloq and several Nazis having their faces shatter and crumble away, the final close-ups in the movie had waxen life masks (created by Chris Walas) melting and, in the case of poor Belloq, exploding.

After the Nazis have been destroyed with a biblical blast of power and U.S. authorities lay claim to the Ark, Indy and Marion are left wondering how the government will handle this treasure of cosmic power.

The final scene reveals the Ark, once again crated up, being wheeled into a seemingly endless warehouse filled with packing crates. The final shot, which leads into the credit crawl, leaves audiences wondering what other secrets might be packed up, stored, and forgotten in the mysterious warehouse.

ILM matte painter Michael Pangrazio rendered the huge warehouse as a matte painting. The painting, with a slice of live action of the worker wheeling in the crate, was on screen for more than thirty seconds, astounding given that a few seconds is considered the optimum length of time before an audience might suspect the illusion. The expert design of the shot conceals the cinematic trickery. The eyes of the audience are naturally drawn to the light and movement of the live action insert rather than the shadowy painting of the dimly lit warehouse. Key to the shot was that Pangrazio blended the edges of his painting with the natural edges of the matted-in live-action element.

Raiders of the Lost Ark became one of the most successful films ever, generating $242,374,454 in domestic box office and finishing first in the top ten movies for 1981. It was an auspicious beginning for both the swashbuckling Indiana Jones character and the collaboration of George Lucas and Steven Spielberg. For the next installment Lucas and Spielberg would take Indy to India for an encounter with occult forces.



Government warehouse, storyboard

Government warehouse, matte painting, 191 x 84 cm.

TREASURE OF SHIVA

INDIANA JONES
AND THE TEMPLE OF DOOM

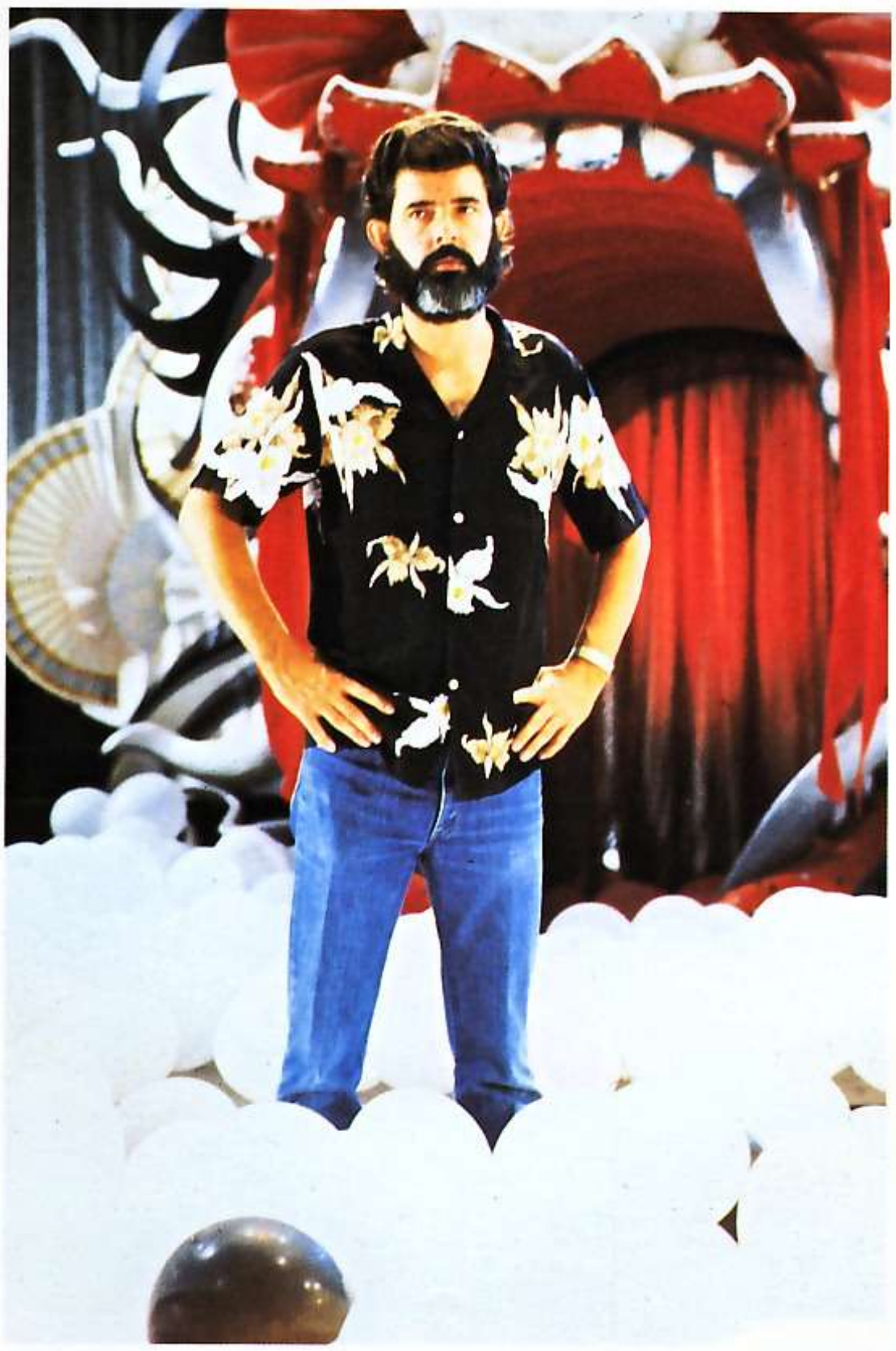
(Lucasfilm/Paramount) 1984

HOORAY FOR HOLLYWOOD!

In *The Temple of Doom*, the Lucasfilm production goal was to surpass the original in thrills and spectacle. The ambitious number of effects shots to be undertaken by Industrial Light & Magic also necessitated as much in-camera work as possible, avoiding the potential production bottleneck of optically compositing elements.

To set the appropriate over-the-top tone, the movie opens with an "Anything Goes" production number set in "Club Obi Wan," a Shanghai nightclub. To choreograph the dance number with all the wild exuberance of the classic Hollywood musical, as well as pay homage to a lost entertainment art, the preproduction research team studied the old movie musicals themselves, particularly the MGM Busby Berkeley numbers that set the standard for glorious excess.

Willie Scott (Kate Capshaw) leads the Club Obi Wan dancers in a big production number



George Lucas surveying Club Obi Wan set

Indiana Jones and the Temple of Doom, release poster, 69 x 102 cm.

CLUB OBI WAN

The Obi Wan nightclub (its name another in-joke aimed at *Star Wars* fans) is the scene of a battle of wills between Indiana and local crime lord Lao Che (played by Roy Chiao). A straight trade-up—a funerary urn holding the ashes of Lao's ancestor, Nurhache, in Indy's possession for a diamond Lao holds and Indy covets—turns treacherous as Lao slips poison into Indy's champagne. Indy manages to grab the antidote from the crimelord and drink the saving serum, but only after a furious gun battle provides an early "last call" for the patrons of Club Obi Wan.

The funerary urn prop, built at Elstree Studios in England where the *Temple* set work was staged and filmed, was inspired by classic Chinese jade work of the Manchu period.

Vial with antidote, prop, 2 x 2 x 9 cm.

Ashes of Nurhache, storyboard sequence

LOW ANGLE TABLE — INDY PUSHES ORNATE BOX TOWARD LAOS TREMBLING HAND... CAM FOLLOWS BOX AS LAO PULLS IT ACROSS THE TABLE TOWARD HIM...

SN-47a

CLOSE ON LAO AND HIS HENCHMEN CROWDED AROUND HIM AS HE OPENS THE SACRED BOX... "AT LAST I HAVE THE ASHES OF MY ANCESTOR. (CUT TO)

SN-48

Funerary urn with Nurhache's remains, prop, 9 x 7 x 16 cm.

THE EVIL OF PANKOT PALACE

Indiana begins his big adventure, with his sidekick Short Round (played by Ke Huy Quan) and nightclub performer Willie Scott (actress Kate Capshaw) along for the ride, with a fateful flight from Shanghai airport. (There are a number of cameos in the scene, which was filmed at a closed Air Force base in Marin County, including comedian and actor Dan Aykroyd as an airport staff member.) But unbeknownst to our hero, the Ford tri-motor plane he and his friends have boarded belongs to crime lord Lao. Once airborne the pilot empties the fuel tanks and parachutes to safety. Indy cheats death again by disembarking with his friends in a rubber life raft, moments before the low-flying tri-motor crashes into a snowy mountainside.

Although the actual plane crash and explosion would be accomplished with a smaller model rigged with pyrotechnics, the shots of the plane heading toward impact required a scale tri-motor model and a miniature snowscape set. The model, a precise replica with a three-foot wingspan built by ILM model makers Michael Fulmer and Ira Keeler, and a snowy mountain set were filmed in natural sunlight on the roof of ILM's main stage. A carriage above the snowscape was rigged, the model suspended from wires, and the tri-motor "flown" into the mountain.

By a strange twist of fate, Indy and company are delivered to a village where a shaman tells them of the travails ever since the disappearance of the village's sacred stones:

Tri-motor at Shanghai Airport, production photo

Ford tri-motor airplane, model, 122 x 99 x 43 cm.

Shanghai airport set

withered crops, dead animals, and children who have mysteriously disappeared. A scrap of a Sanskrit cloth painting arouses Indiana's archaeological interest and leads him and his friends to look for the sacred stones at Pankot Palace.

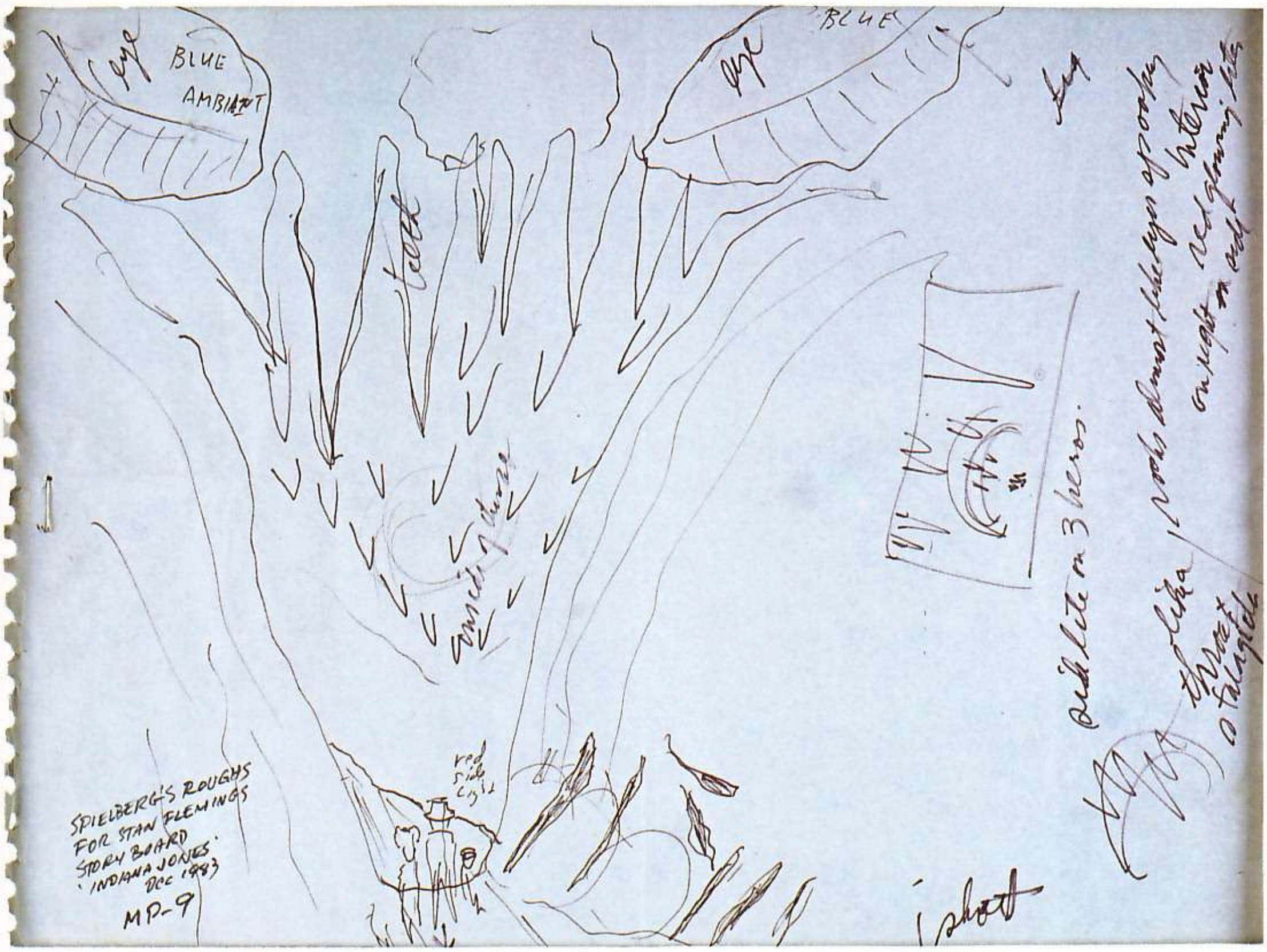
Instead of building an expensive Pankot Palace set, and because filming restrictions in India precluded finding and shooting a real location, it was decided to conjure up the exterior palace scenes with matte paintings. The matte-painted establishing shot reproduced here was substituted for another shot in the final movie. "The hardest thing to do is to make a matte painting establishing shot look real," says Craig Barron, the matte camera supervisor for the movie. "We didn't think this front-lit shot looked realistic enough, so we did a back-lit matte painting of the Palace at sunset."

The design of the exterior, with its shadowy walls and courtyard hinting at the evil within, as well as a foreboding cave beneath the palace began with Spielberg's rough sketches (or "hieroglyphics" as he calls them) and were developed as production sketches prior to the matte artist's brush and oil work. Artist Frank Ordaz's Pankot cave painting, faithful to Spielbergian hieroglyphics depicting a stalactite- and stalagmite-ridged chasm, was dubbed "Jaws IV" by the ILM matte department.

ILM films tri-motor airplane crash

Sanskrit cloth painting, prop, 20 x 15 x 0.5 cm.

Pankot Palace, matte painting, 193 x 85 cm.



Spielberg sketch for Pankot Palace cave

Pankot Palace courtyard, matte painting, 191 x 84 cm.

"Jaws" cave beneath Pankot Palace, matte painting, 191 x 84 cm.

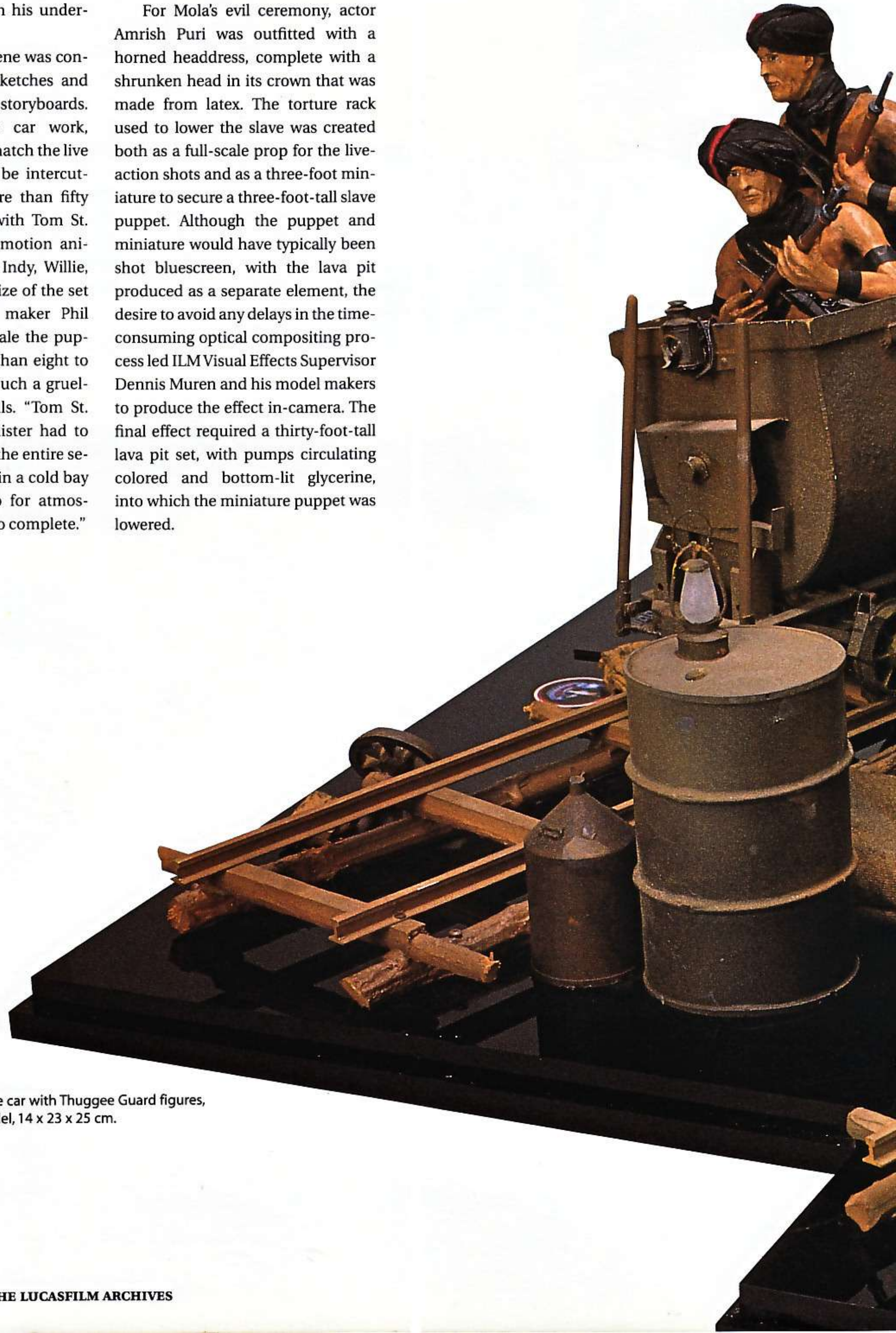
TEMPLE OF DOOM

The dark secret of the palace is how the evil Mola Ram, a high priest of the Thuggee cult, controls the young Maharajah and has enslaved the village children to work in his underground mines.

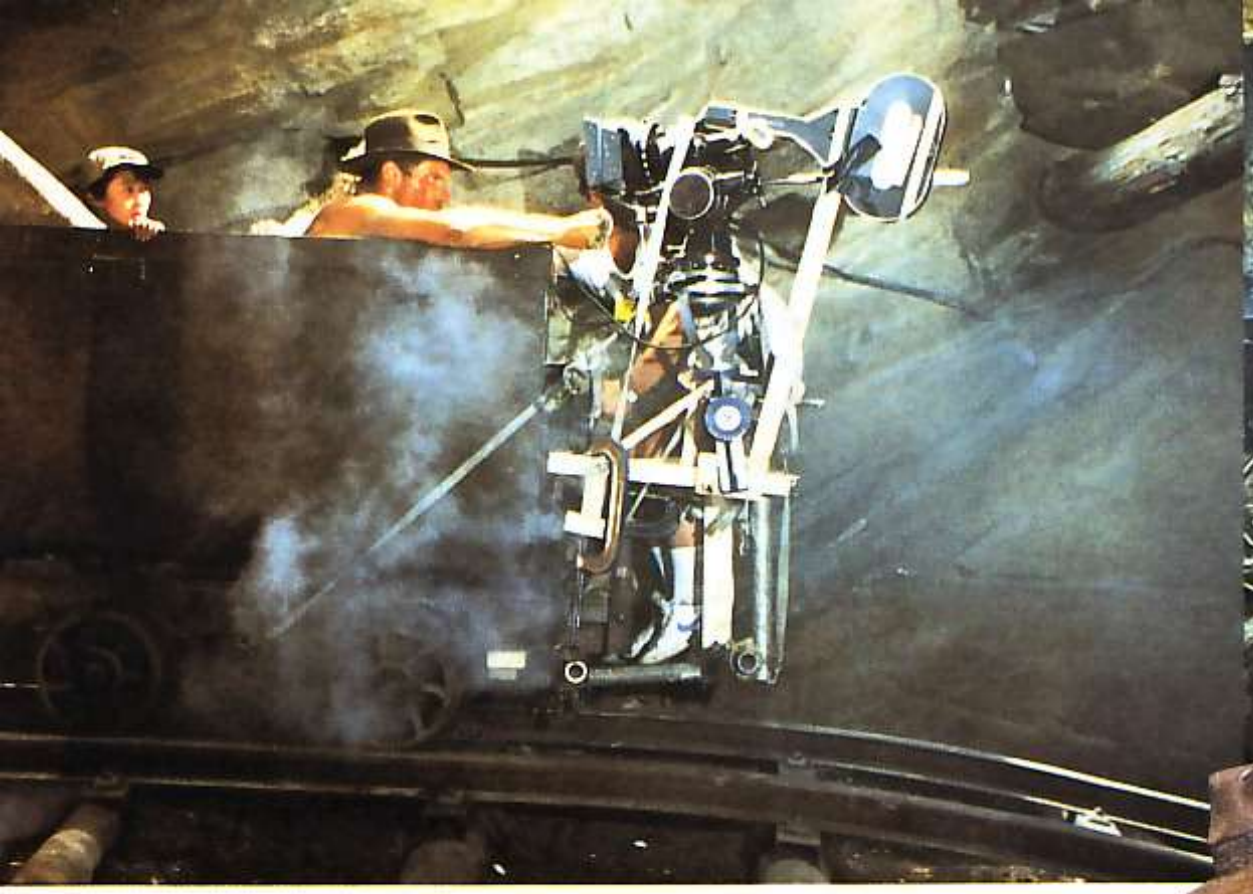
A mine car chase scene was conceived with Spielberg sketches and finalized as detailed storyboards. ILM's miniature mine car work, which had to perfectly match the live action scenes it would be intercutting with, required more than fifty feet of miniature set, with Tom St. Amand providing stop-motion animation for puppets of Indy, Willie, and Short Round. The size of the set dictated that creature maker Phil Tippett and his crew scale the puppet figures to no more than eight to ten inches tall. "It was such a grueling shot," Tippett recalls. "Tom St. Amand and Mike McAlister had to stop-motion and shoot the entire sequence frame by frame in a cold bay with the set fogged up for atmosphere—it took months to complete."

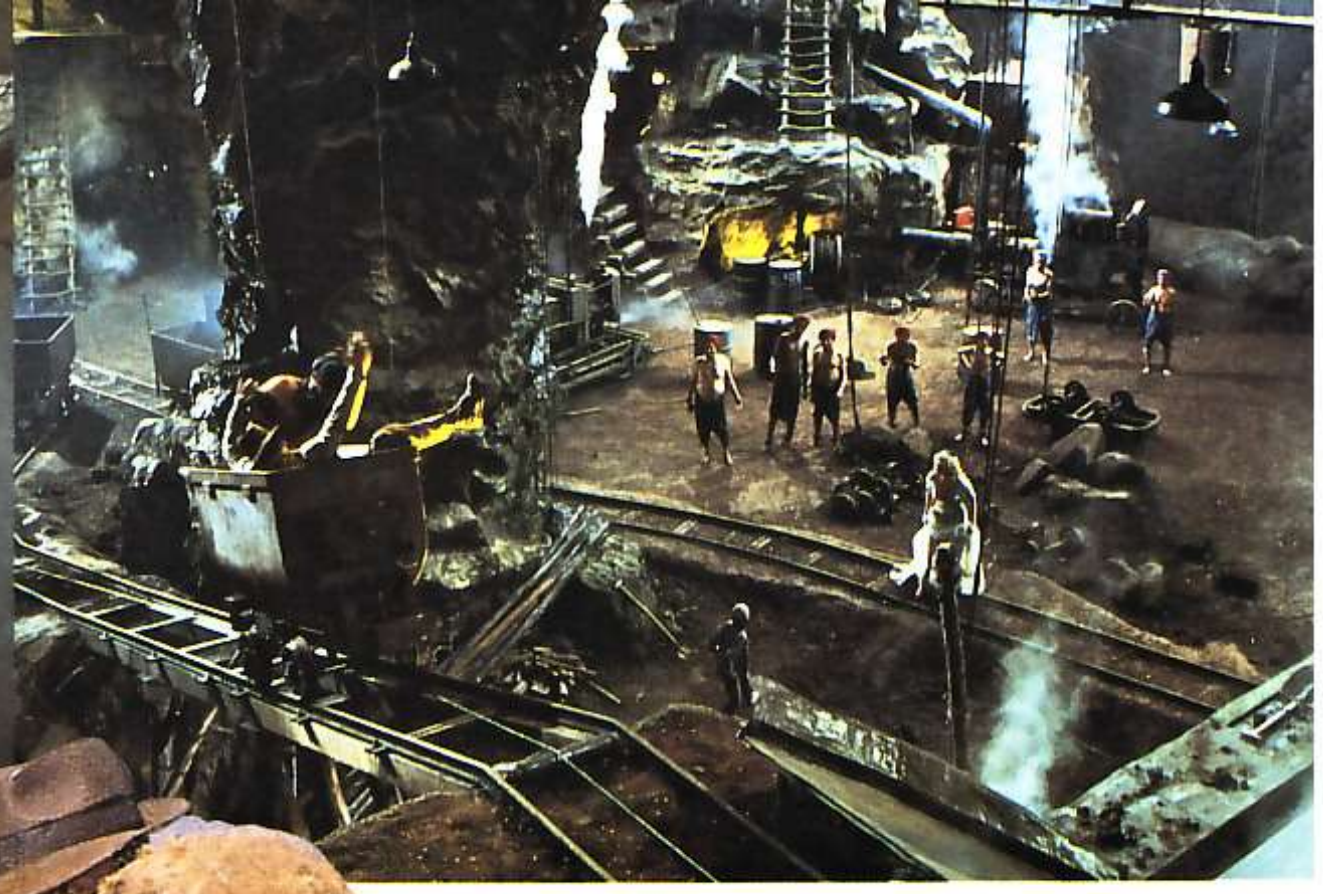
The full evil of the Temple of Doom is revealed earlier when Ram conducts a bloody sacrifice to the goddess Kali.

For Mola's evil ceremony, actor Amrish Puri was outfitted with a horned headdress, complete with a shrunken head in its crown that was made from latex. The torture rack used to lower the slave was created both as a full-scale prop for the live-action shots and as a three-foot miniature to secure a three-foot-tall slave puppet. Although the puppet and miniature would have typically been shot bluescreen, with the lava pit produced as a separate element, the desire to avoid any delays in the time-consuming optical compositing process led ILM Visual Effects Supervisor Dennis Muren and his model makers to produce the effect in-camera. The final effect required a thirty-foot-tall lava pit set, with pumps circulating colored and bottom-lit glycerine, into which the miniature puppet was lowered.



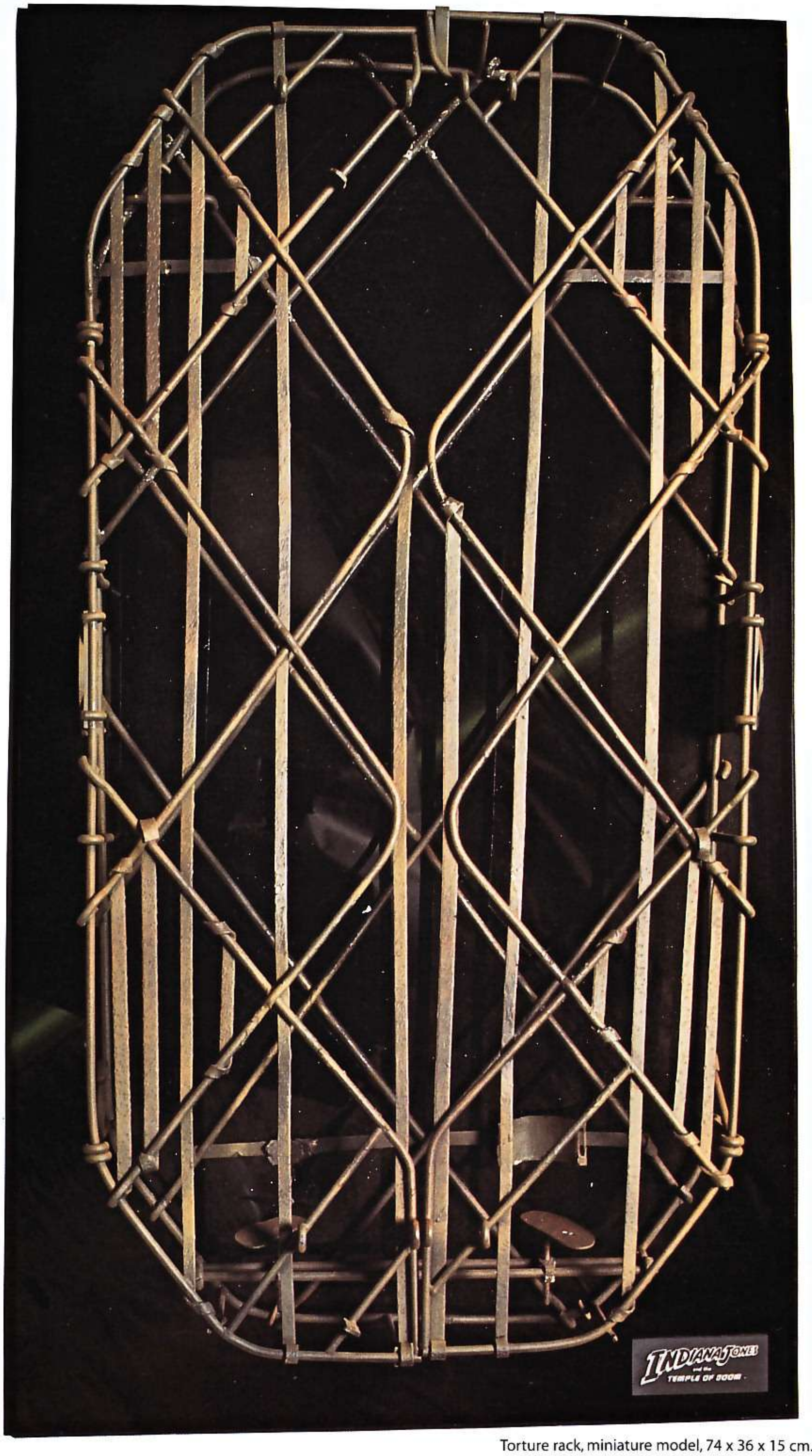
Mine car with Thuggee Guard figures, model, 14 x 23 x 25 cm.





ne Car live action

Mine Car with Indy, Short Round, and Willie figures, model, 14 x 23 x 25 cm.

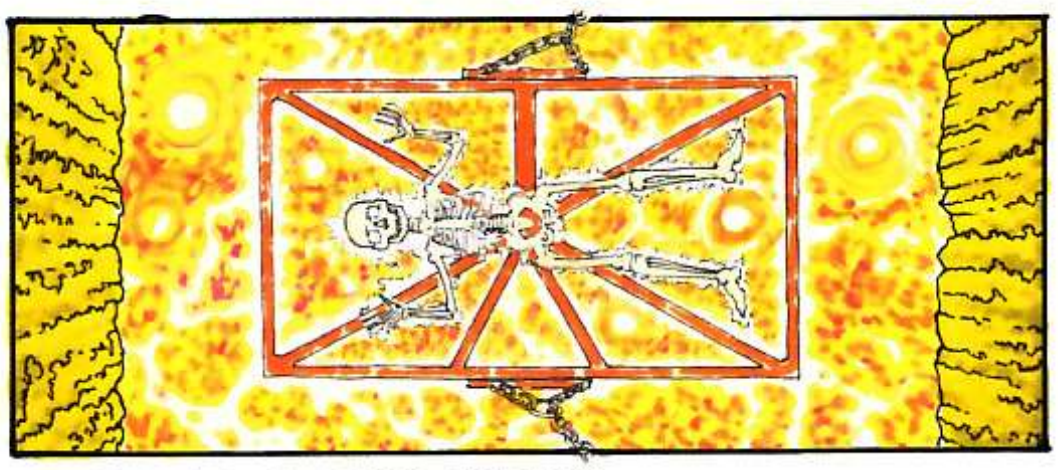


Torture rack, miniature model, 74 x 36 x 15 cm.

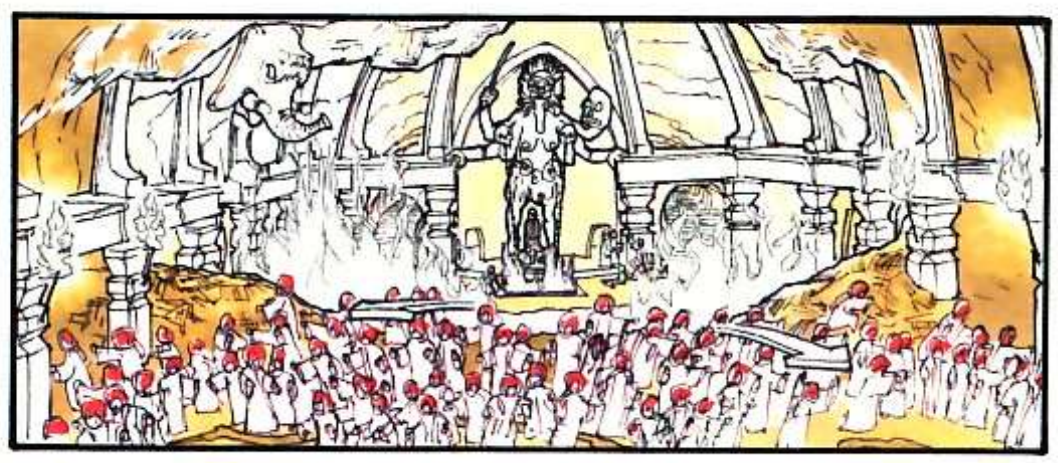
Mola Ram ceremonial headdress, costume, 80 x 33 x 45 cm.

Sacrifice in the Temple of Doom, storyboard sequence

ANGRY UP ANGLE — LAVA LIGHT REFLECTED UNDER STATUE.

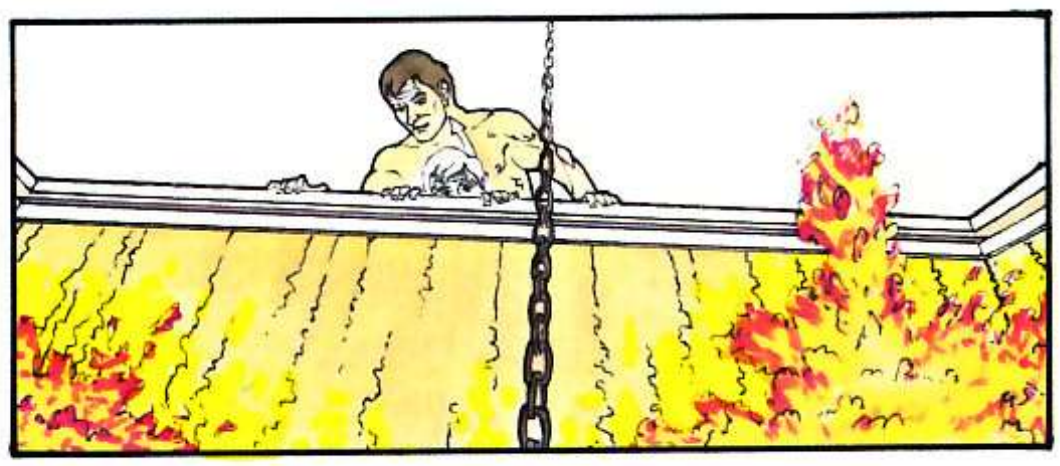


.... THE BURNING SKELETON OF CHATTER L'AL.



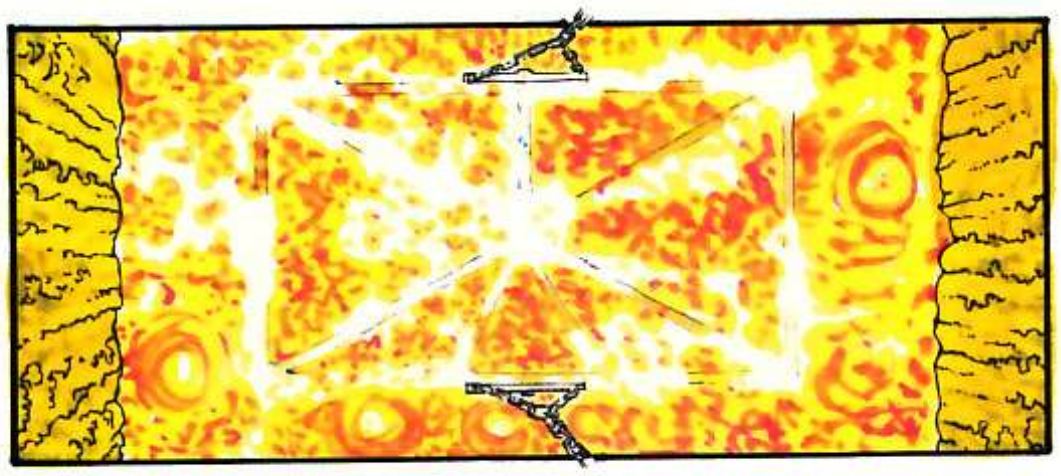
BURST OF LAVA FOUNTAIN AND FIRE FROM PIT AND CREVASSE. BELIEVERS BACK OFF.

.... AND RIGHT SIDE TOO.



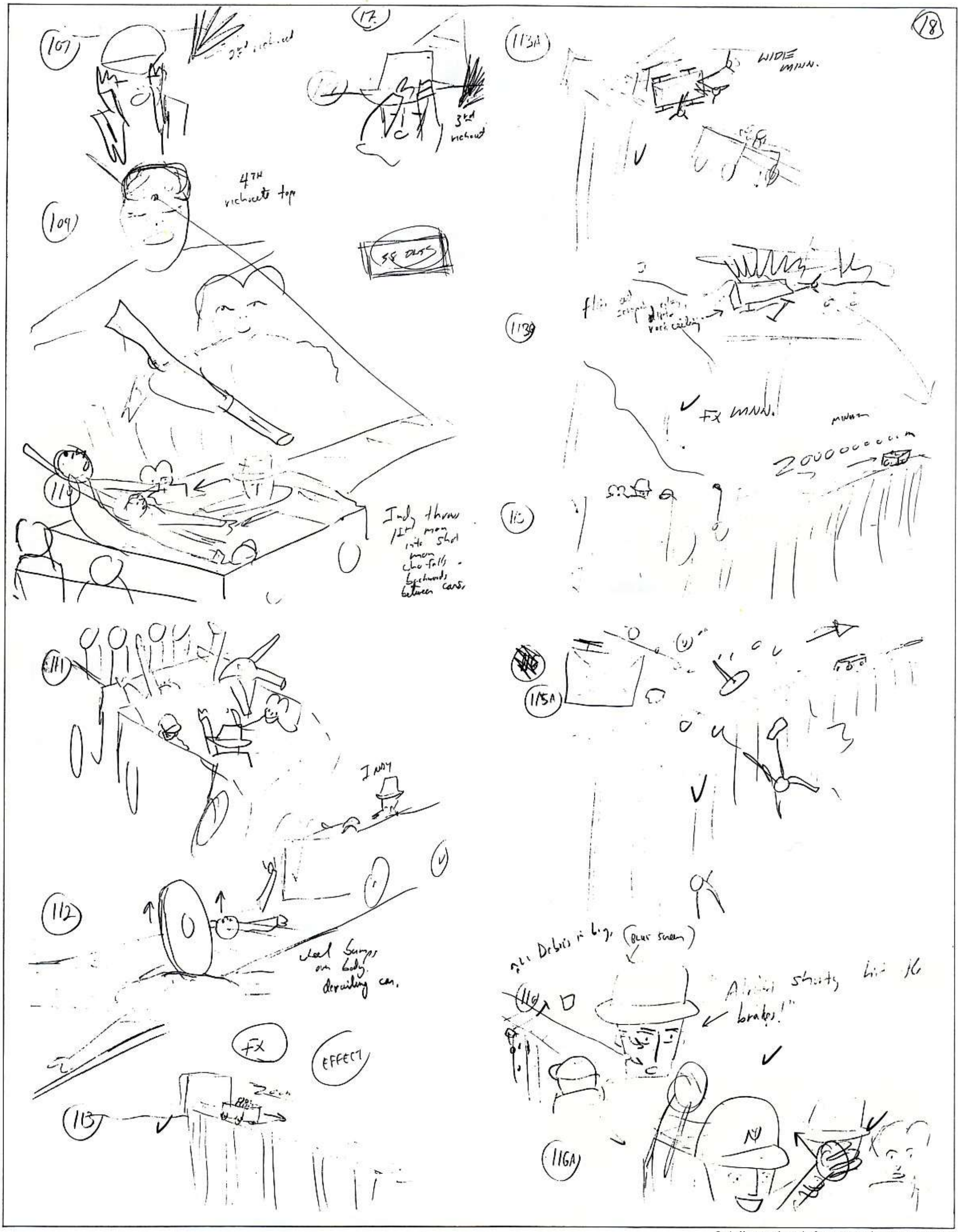
INDY PEEKS OVER THE EDGE OF THE PIT.

MOLA RAM TAKES THE SACRED STONES.



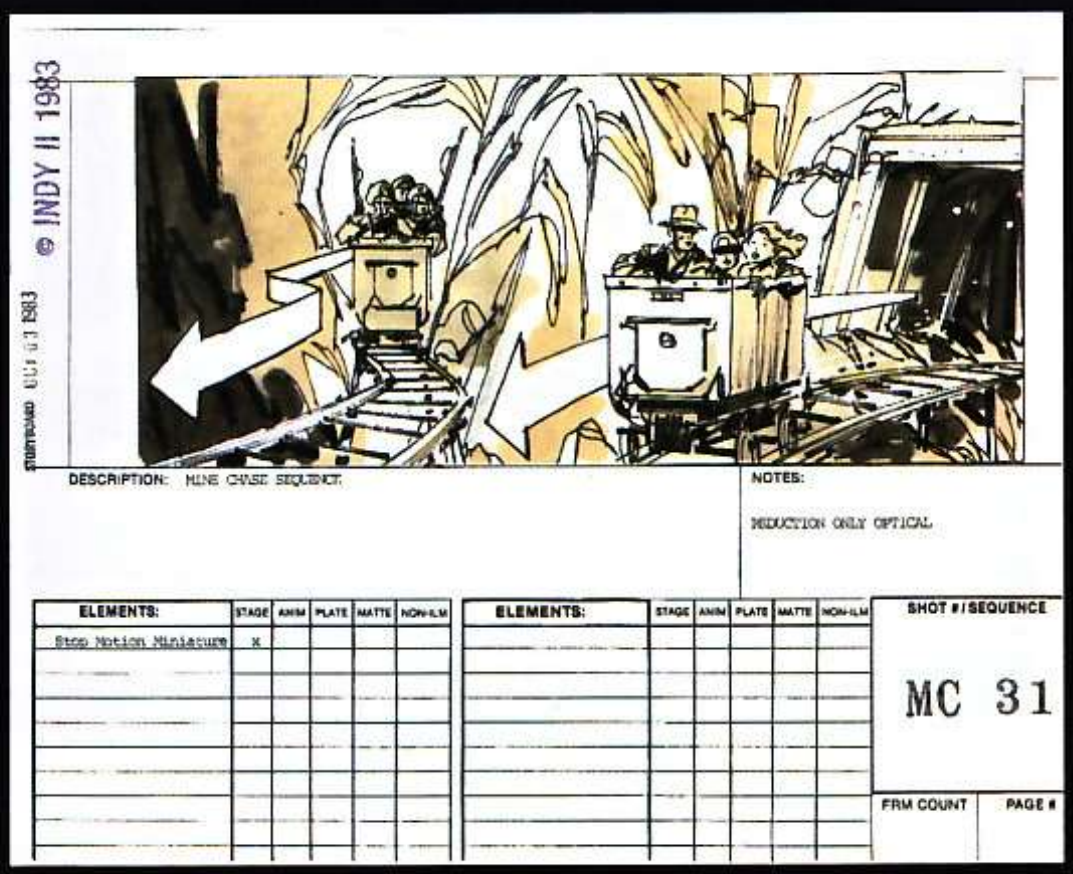
THE GRILL EMERGES FROM UNDER THE LAVA — BRINGING WITH IT....

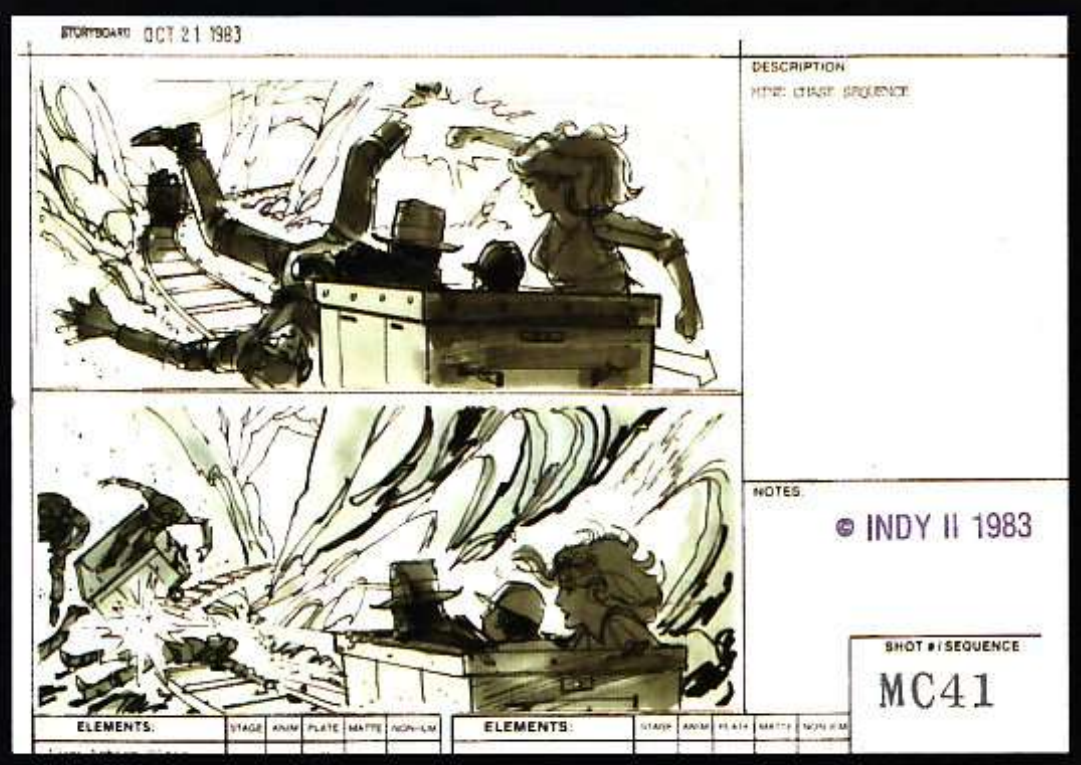
MOLA RAM EXITS TO THE LEFT AS WE ....

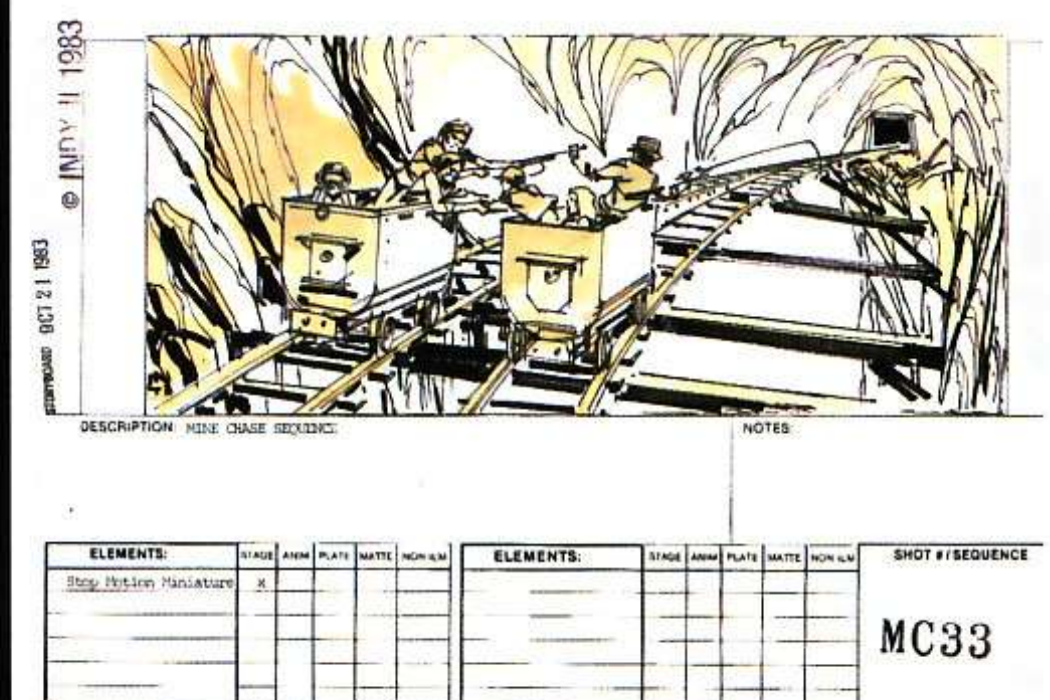


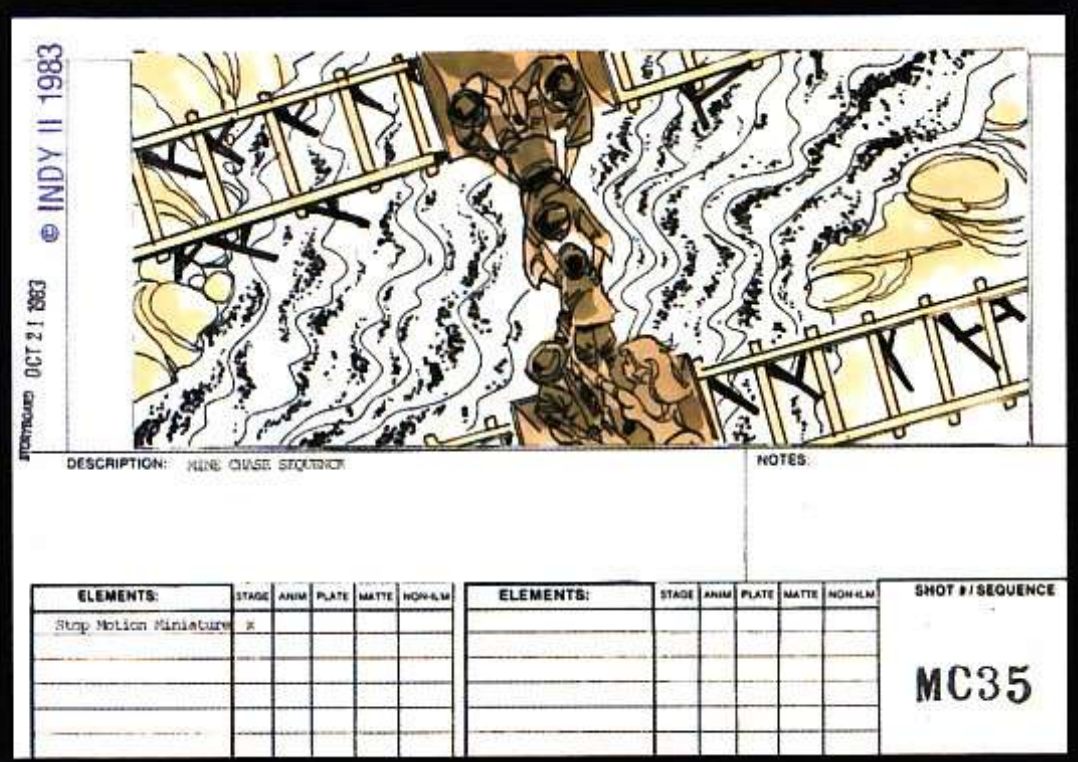
Spielberg sketch for mine chase sequence

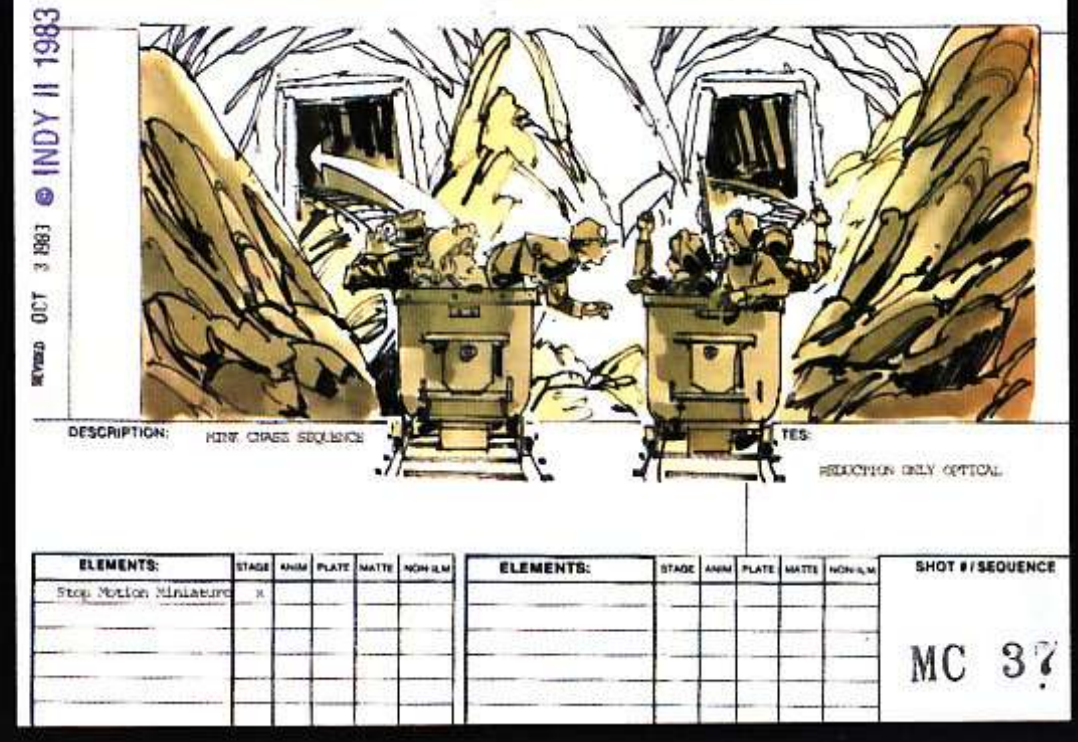
Mine chase sequence, storyboards

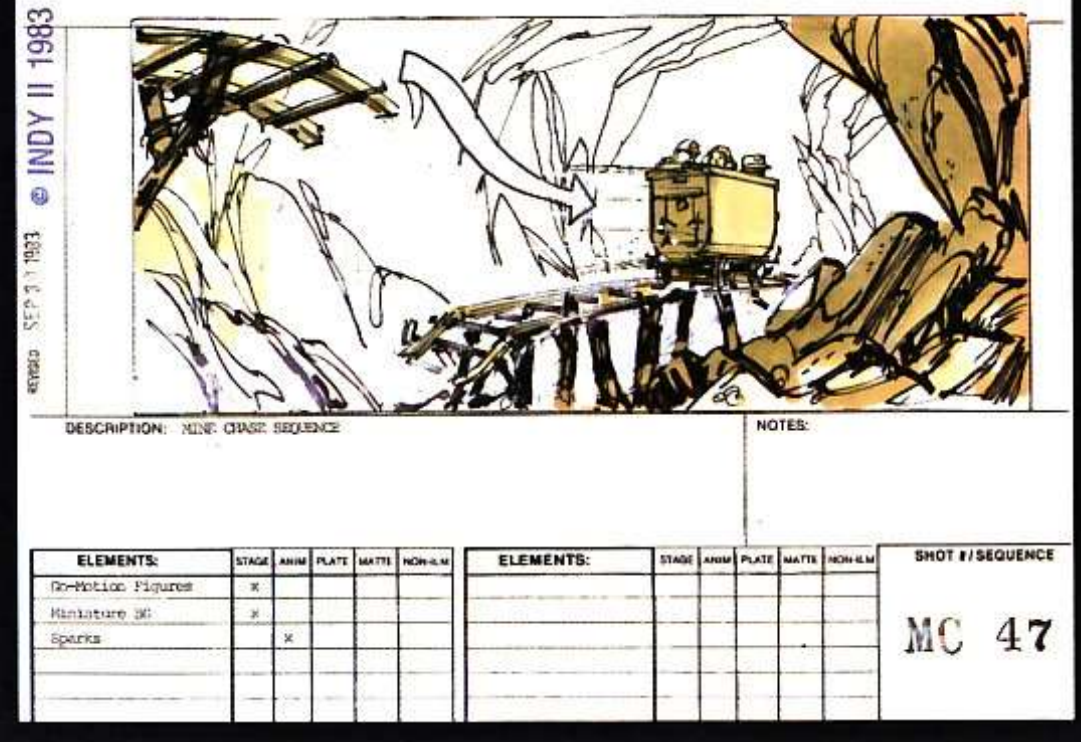












FINAL BATTLE AND AFTERMATH

The Sankara Stones, modeled after the linga symbol of the deity Shiva (but realized as plastic props with light bulbs inside for illumination), are finally captured by Indiana, but not before a deadly battle with Thuggee warriors and Mola Ram on a precarious rope bridge.

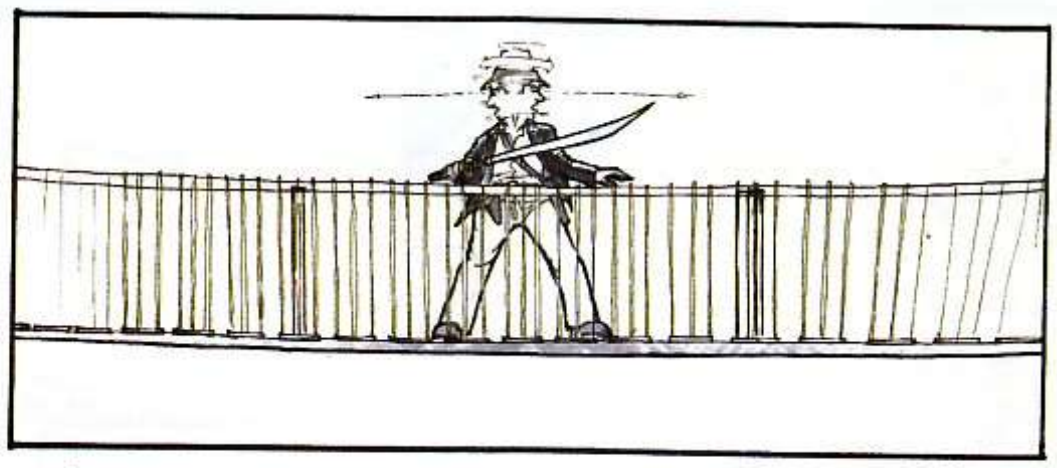
The rope bridge battle was another complicated sequence requiring intercutting of live-action stunts and effects shots. The principal photography was staged in Sri Lanka, with the production bridging a wide gorge with steel cables covered with rattan ropes. Although safety harnesses and other special precautions were used, Executive Producer Frank Marshall would recall how nervous he was, concerned for complete safety while filming hundreds of feet in the air. At another bridge location shoot in Sri Lanka, Marshall could breathe a little easier since that set, designed for the most dangerous camera angles, was only fifteen feet above ground.

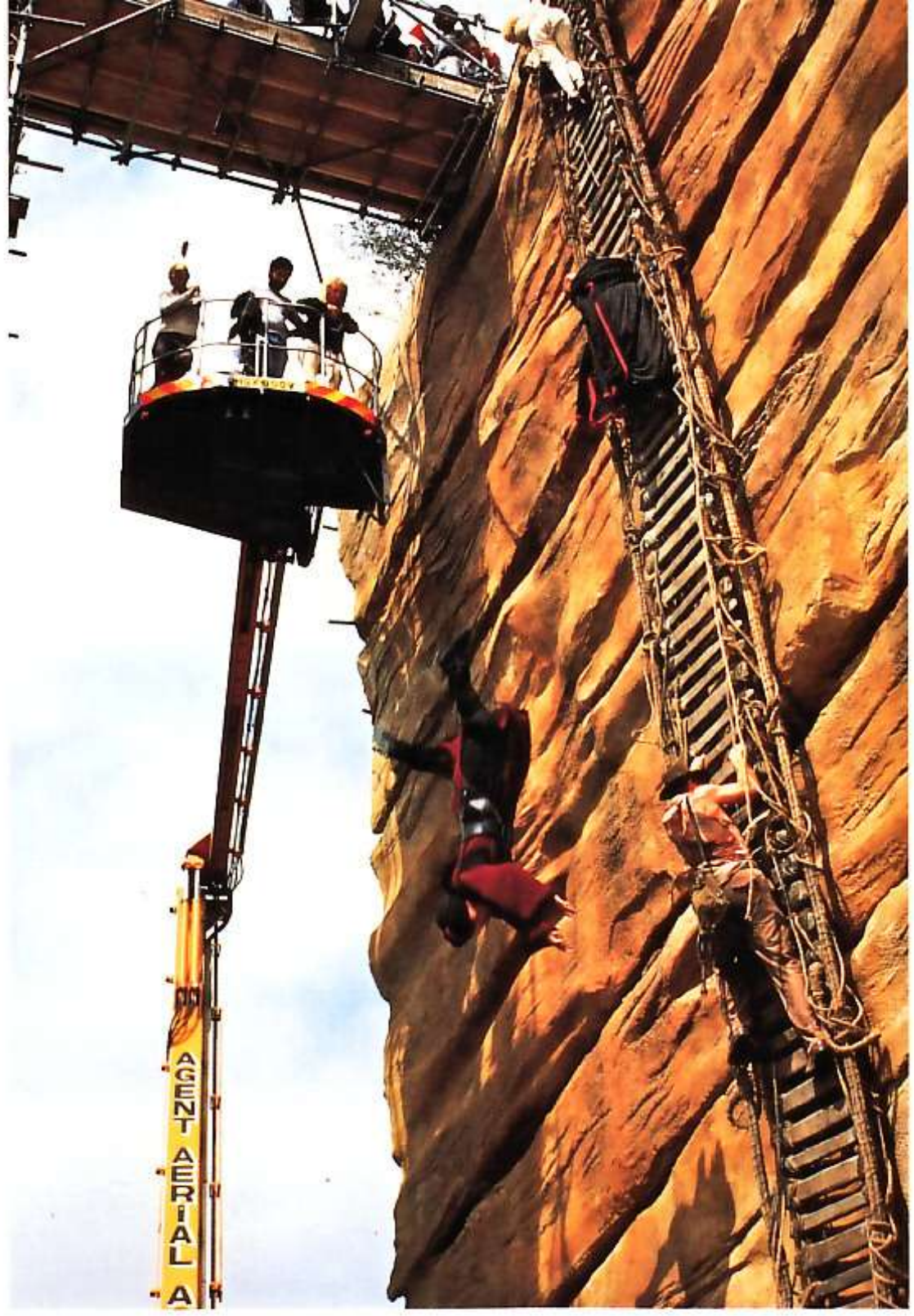
When Indy cuts the rope bridge, sending Ram's henchmen falling into the water of the gorge below, the shots were created at a sixty-foot cliff set in England. Mechanical effects supervisor George Gibbs took ordinary tailor's dummies, made molds of them, and filled the molds with soft foam. Internal pneumatic air cylinders were triggered, causing the dummy limbs to flail about, perfectly simulating human movement.

Although the return of the sacred stones and the kidnapped children

Site for rope bridge, photo collage, location work in Sri Lanka

Rope bridge standoff, story board sequence





Rope bridge shoot, set work

Sankara Stones, props, 8 x 8 x 13 cm.

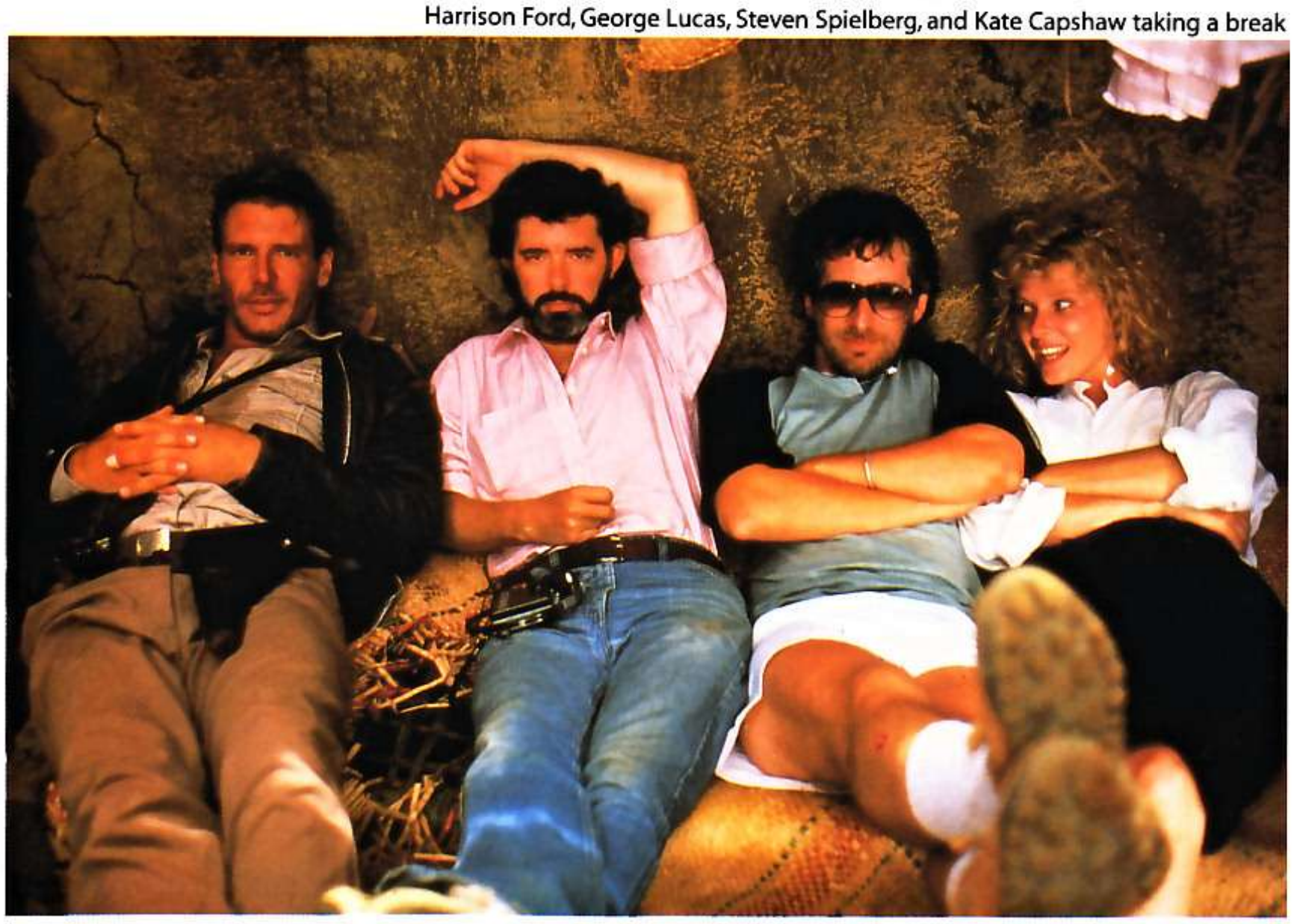
to the village bursts with happy endings—the land flowering in all its fertile glory, Indy and Willie linked in a lingering kiss—the dark themes of the movie troubled some critics and audience members. Some even felt that the shrill Willie Scott character, so different from the tough, tomboyish Marion of *Raiders*, was not the type of female the headstrong likes of Indiana Jones would have cared to be with.

In a 1989 interview with writer Ben Fong-Torres, Lucas admitted there was a conscious decision to make the film much darker than the first. But although Lucas felt *Temple of Doom* was, on balance, no more violent than *Raiders*, he did acknowledge that many fans were dismayed at the kind of violence Indy found in India.

Despite the controversy, it was another success for the Lucas/Spielberg team. Between their creative team-up for the Indiana Jones series, Lucasfilm's *Star Wars* trilogy, and Spielberg's own films, the duo had stature as the most commercially popular filmmakers in the history of the movies.

As planning went into the third installment it was decided to return to the dynamics of the first film. Once again Indy would be racing Nazis to obtain a sacred relic—the Holy Grail, the sacred chalice Jesus Christ used at the Last Supper—but this time with Indiana's father (played by Sean Connery) along for the ride.

Harrison Ford, George Lucas, Steven Spielberg, and Kate Capshaw taking a break



THE FINAL QUEST

INDIANA JONES AND THE LAST CRUSADE

(Lucasfilm/Paramount) 1989

CROSS OF CORONADO

The Last Crusade opens in the time of Indy's boyhood. On an Eagle Scout hike in the rugged wilderness of Utah, the young Indy discovers a group of fortune hunters digging up the Cross of Coronado. Incensed that the artifact is not heading for a museum, Indy swipes the relic and leads the fortune hunters on a wild chase through a circus train.

Although the relic was named after the fifteenth-century Spanish explorer Francisco Vásquez de Coronado, who led his army through present-day Arizona and New Mexico in a fruitless search for the legendary Seven Cities of Gold, the cross itself was a fictional prop.

The circus train chase was storyboarded as a tour de force, with each car presenting some new obstacle to be hurdled. (A pair of giraffes watching the wild chase were mechanically animated creations.) Maquettes provided a crude, but effective, means for visualizing the three-dimensional look of the circus train, as well as the Cross of Coronado dig site, the Portuguese cargo ship where a full-grown Indy has another fateful encounter with the relic, and an interior for scenes at the college where Indiana lectures.

Dr. Henry Jones (Sean Connery) and Dr. Indiana Jones (Harrison Ford), production photo

Cross of Coronado, prop, 22 x 17 x 2 cm.

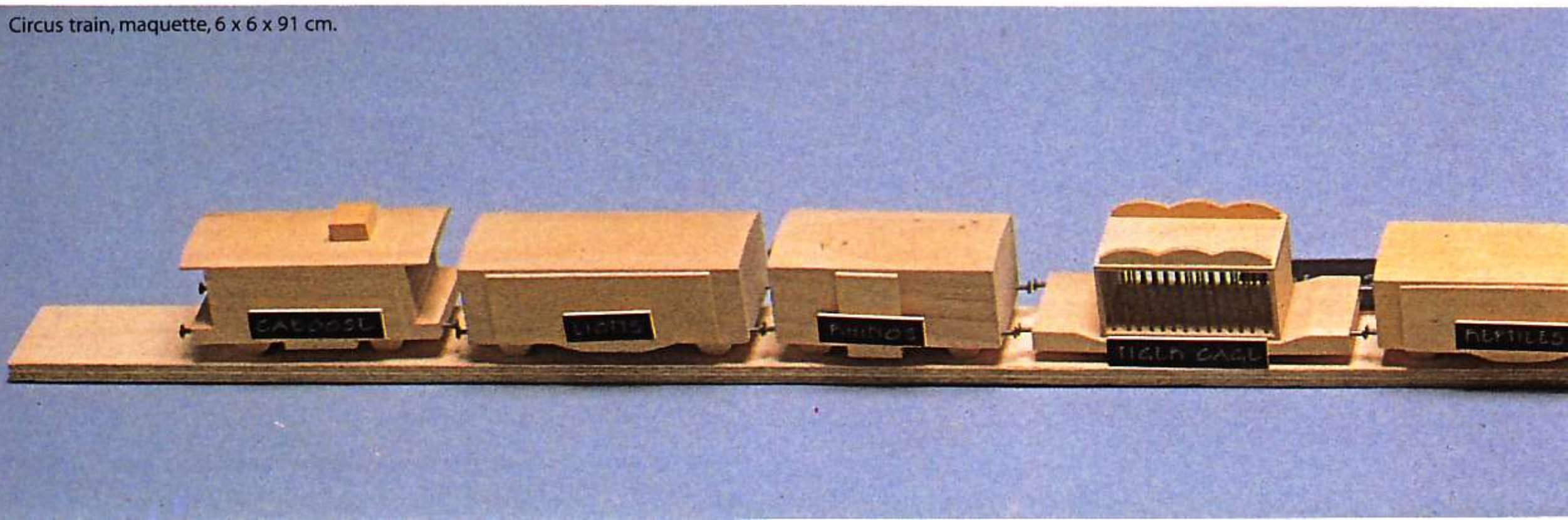
Indiana Jones and the Last Crusade, release poster, 61 x 91 cm.

Eagle Scout Award, prop, 8 x 9 x 3 cm.

Young Indy (actor River Phoenix)

Cross of Coronado dig site, maquette, 27 x 18 x 16 cm.

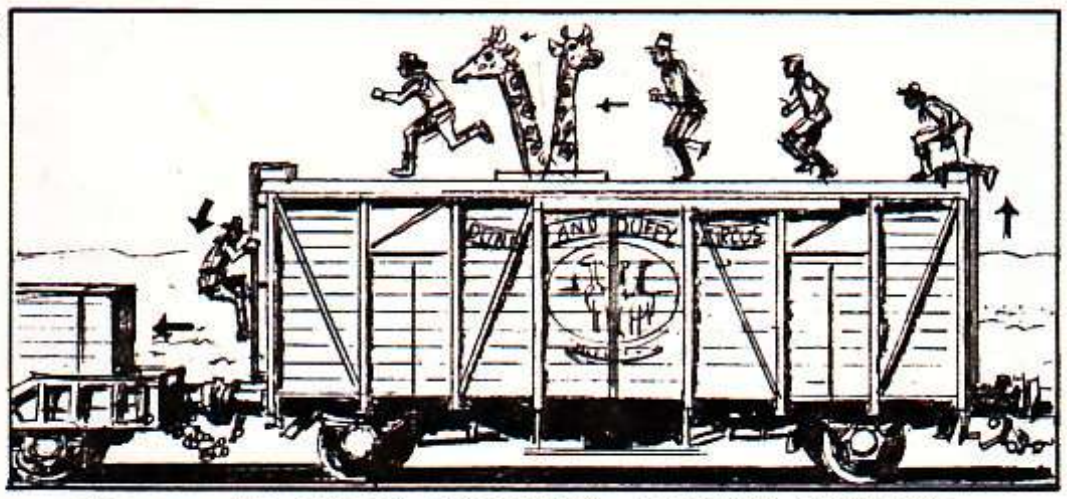
Circus train, maquette, 6 x 6 x 91 cm.



Young Indy and the circus train chase, storyboard sequence

Rev. 4/11/88

(B)



INDY CLIMBS DOWN THE NEXT LADDER, EVERYONE RUNNING PAST THE GIRAFFES WHO TURN THEIR HEADS TO WATCH ---

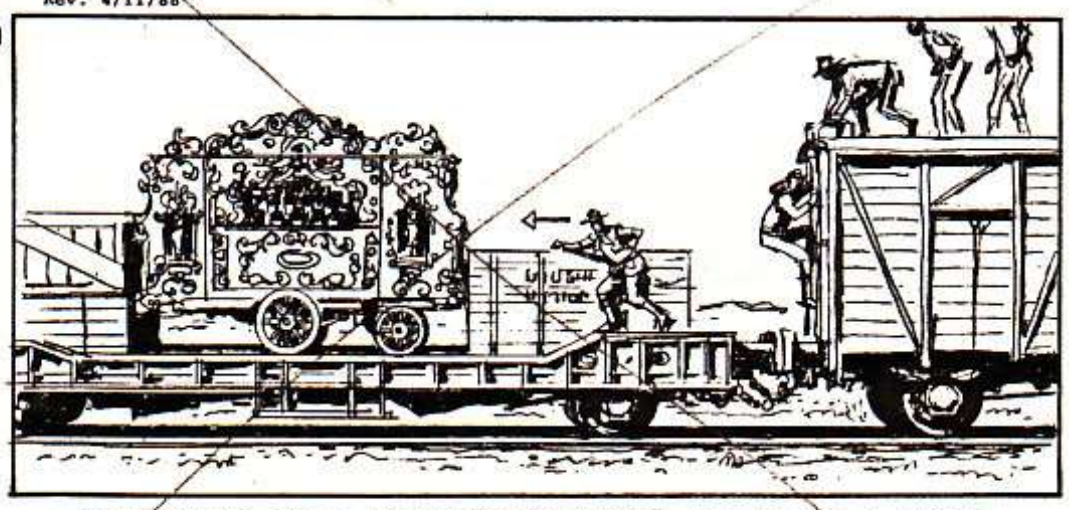
Rev. 4/11/88

TSR-2-10B

HIS P.O.V. - THE INDIAN IS ALMOST ON HIM, NOW JUST GETTING TO THE ORGAN PIPES, WITH "FEDORA" ON HIS HEELS (CUT TO)

Rev. 4/11/88

(C)



INDY CLIMBS ONTO THE NEXT FLATCAR ALONGSIDE A LARGE CRATE TOWARD A STEAM CALLIOPE AS THE GANG STARTS DOWN THE LADDER -- (CUT TO)

Rev. 4/11/88

TSR-2-10C

CLOSE ON INDY - HE LOOKS AT THE CLOWN FIGURE MOUNTED ON THE CALLIOPE, PERCEIVES ITS SIGNIFICANCE, AND PULLS DOWN ON THE SALUTING ARM (CUT TO)

Rev. 4/11/88

TSR-2-10D

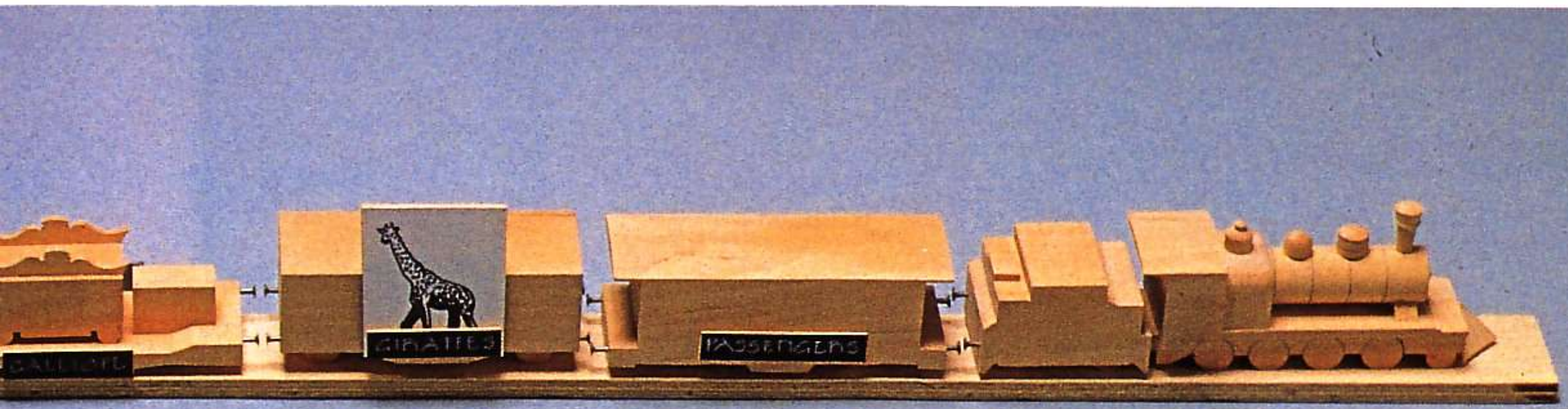
REVERSE ON INDY - PAST CALLIOPE PIPES - HE STOPS AT SMALL MECHANICAL CLOWN FIGURE, TURNS BACK TOWARD HIS PURSUERS (CUT TO)

Rev. 4/11/88

TSR-2-10E

ANGLE-ON THE INDIAN AND OTHER THREE - WITH A GREAT BLAST OF STEAM AND A PIERCING SHRIEK, THE CALLIOPE GIVES FORTH, STOPPING THE PURSUERS IN THEIR TRACKS - (CUT TO)

CT 30

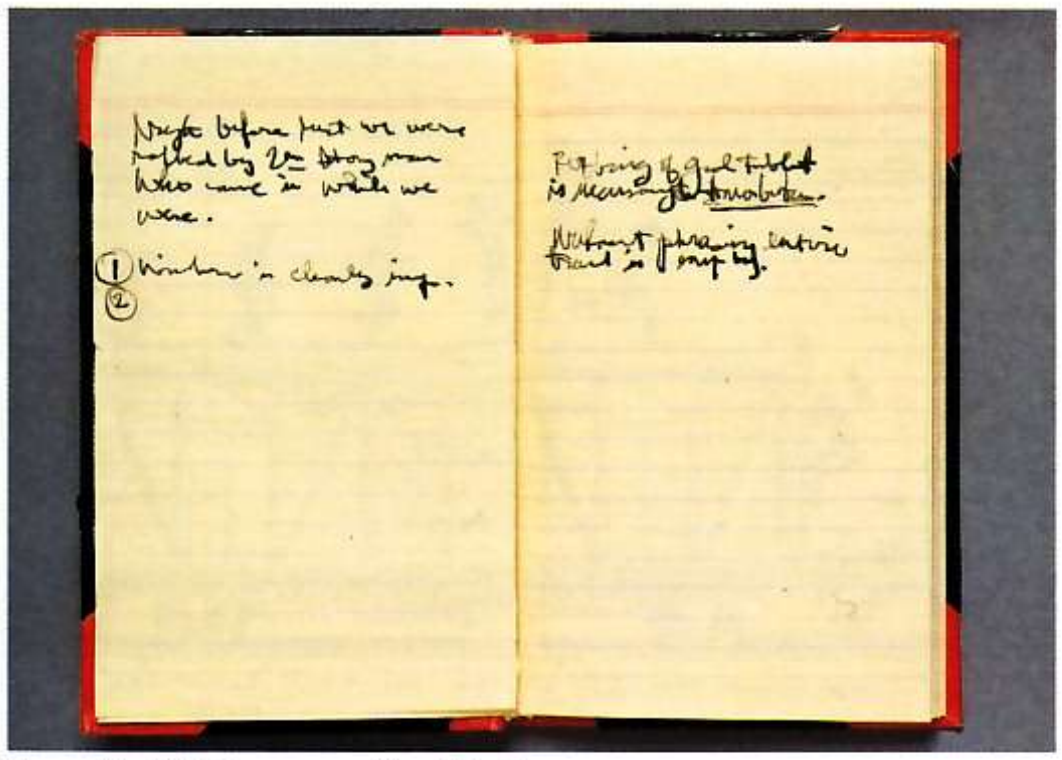


THE GRAIL LEGENDS

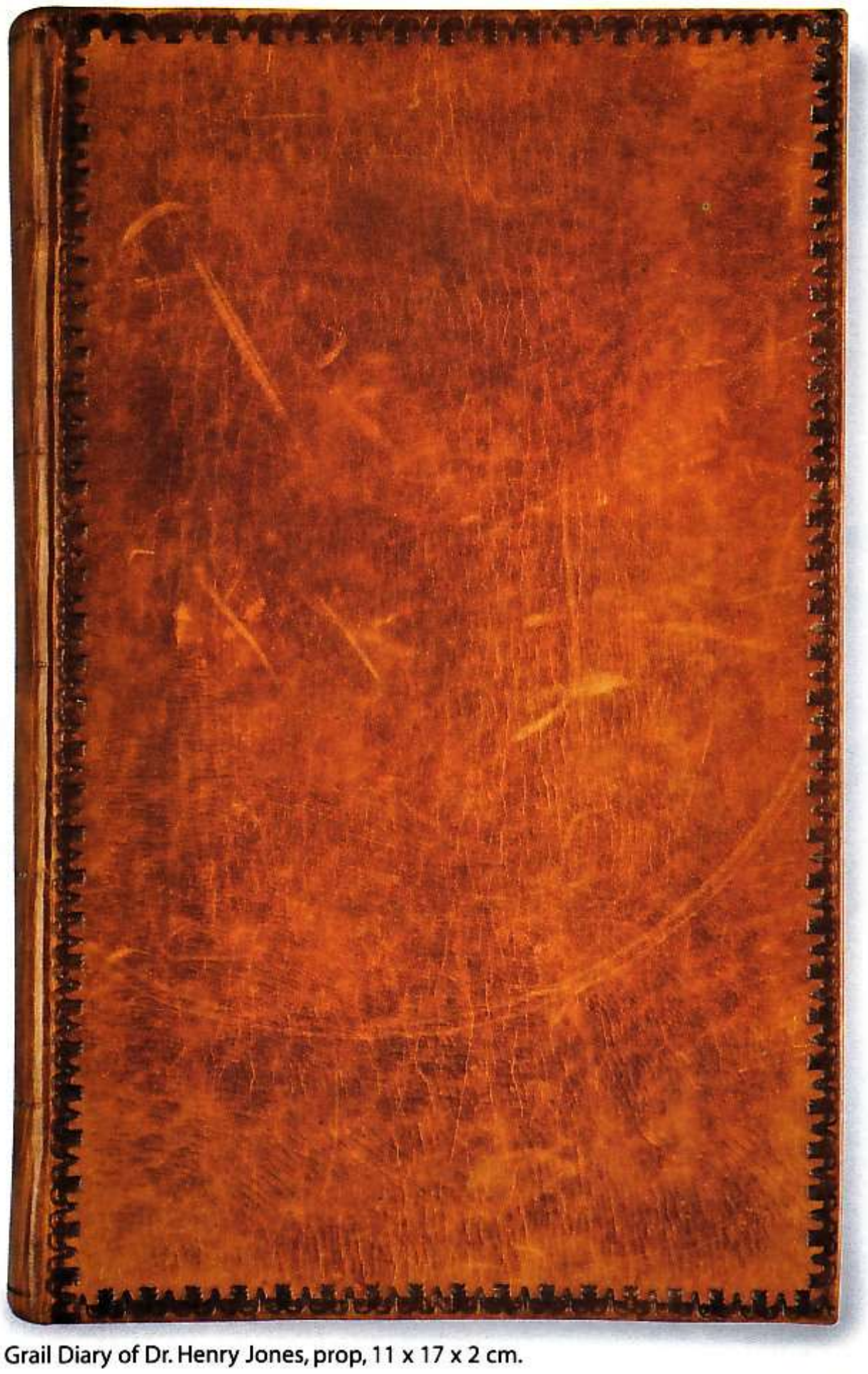
As the movie reveals, Dr. Henry Jones's life has been spent in not only a search for the Grail but a humble contemplation of its mysteries. It's also been the obsession that has driven a wedge between himself and the young Indiana. The villain of the piece, the mysterious millionaire Walter Donovan (played by Julian Glover), identified as Chandler in some of the early maquettes of his lavish apartment, has also spent his life indulging a passion for antiquities. But as the Jones boys discover, Donovan (who longs to drink from the Grail and receive its legendary gift of immortal life), is one of the many hydra-heads of Hitler's army.

Henry's 1912 Grail diary, full of clues to the whereabouts of the lost relic, is a particularly inventive prop, full of scribbled notes, sketches, data, all the musings of an intellectual in pursuit of a legend of history. Other props include an ancient book in Donovan's apartment that faithfully recreates an illuminated manuscript from medieval times.

Throughout the movie the Arthurian legends are recalled, particularly those crusading knights whose battles for Christianity included the mystic, and sometimes bloody, quests for

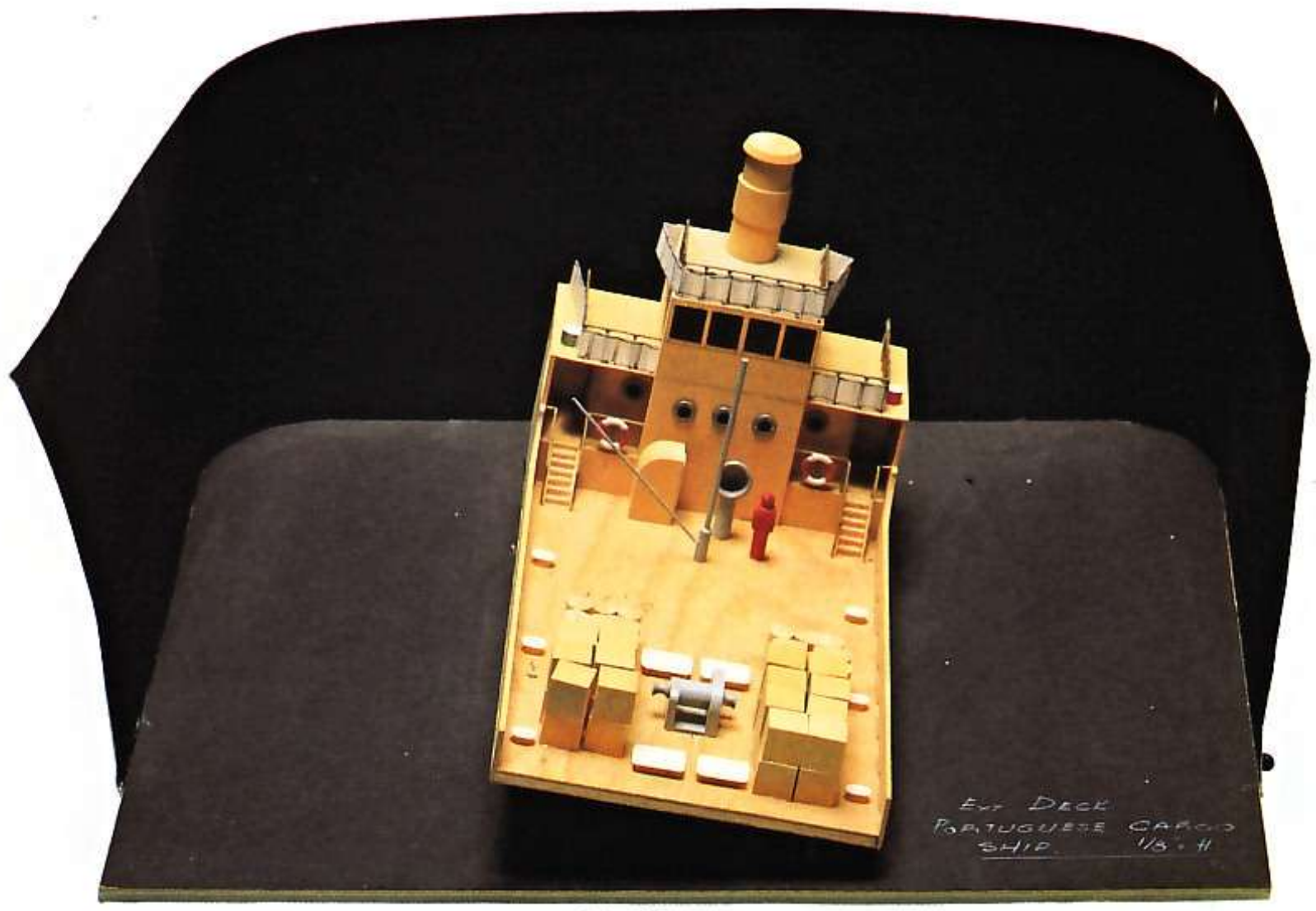


Young Indy's Diary, prop, 11 x 17 x 1 cm.

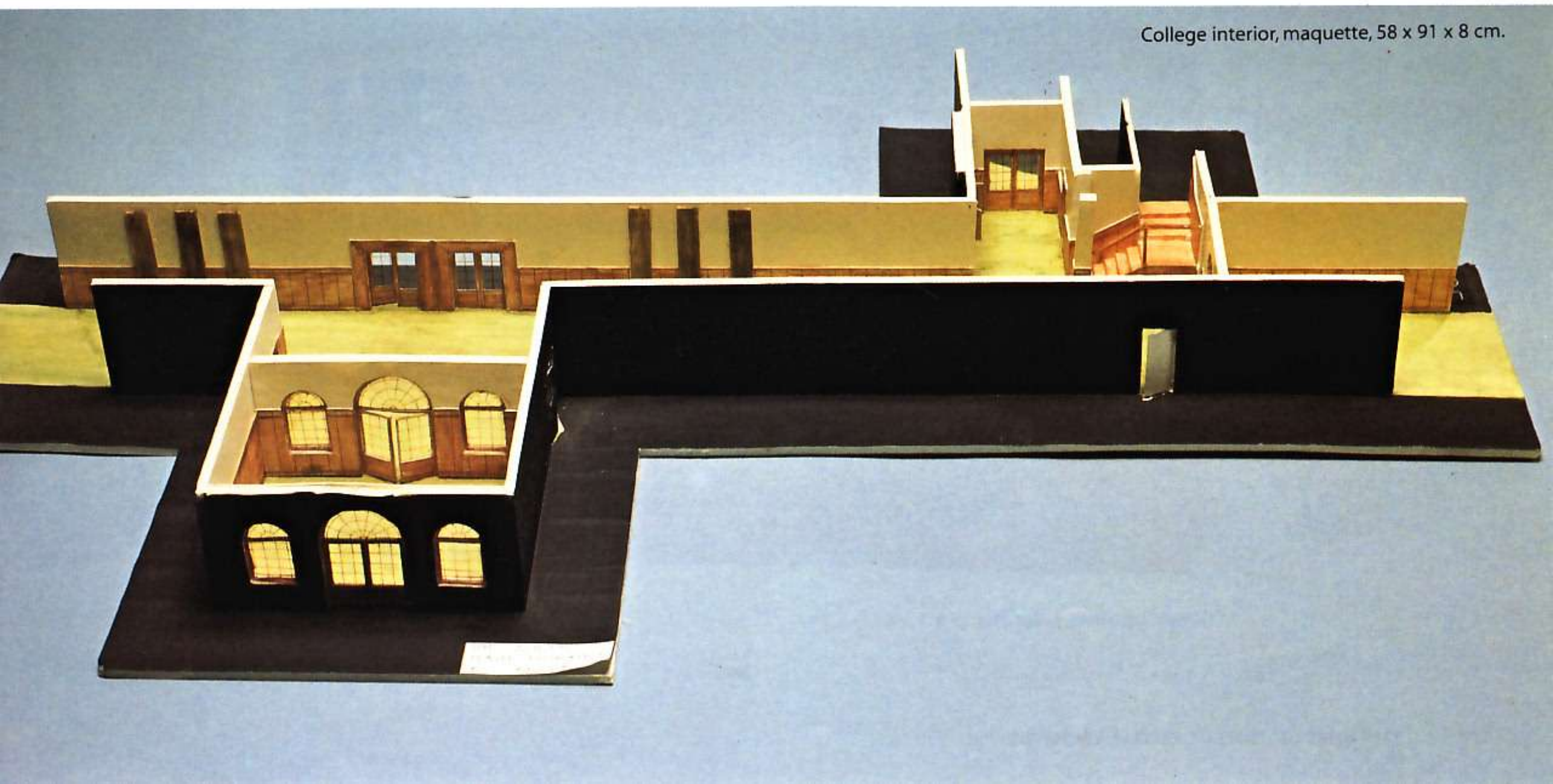


Grail Diary of Dr. Henry Jones, prop, 11 x 17 x 2 cm.

Henry's study, set design illustration

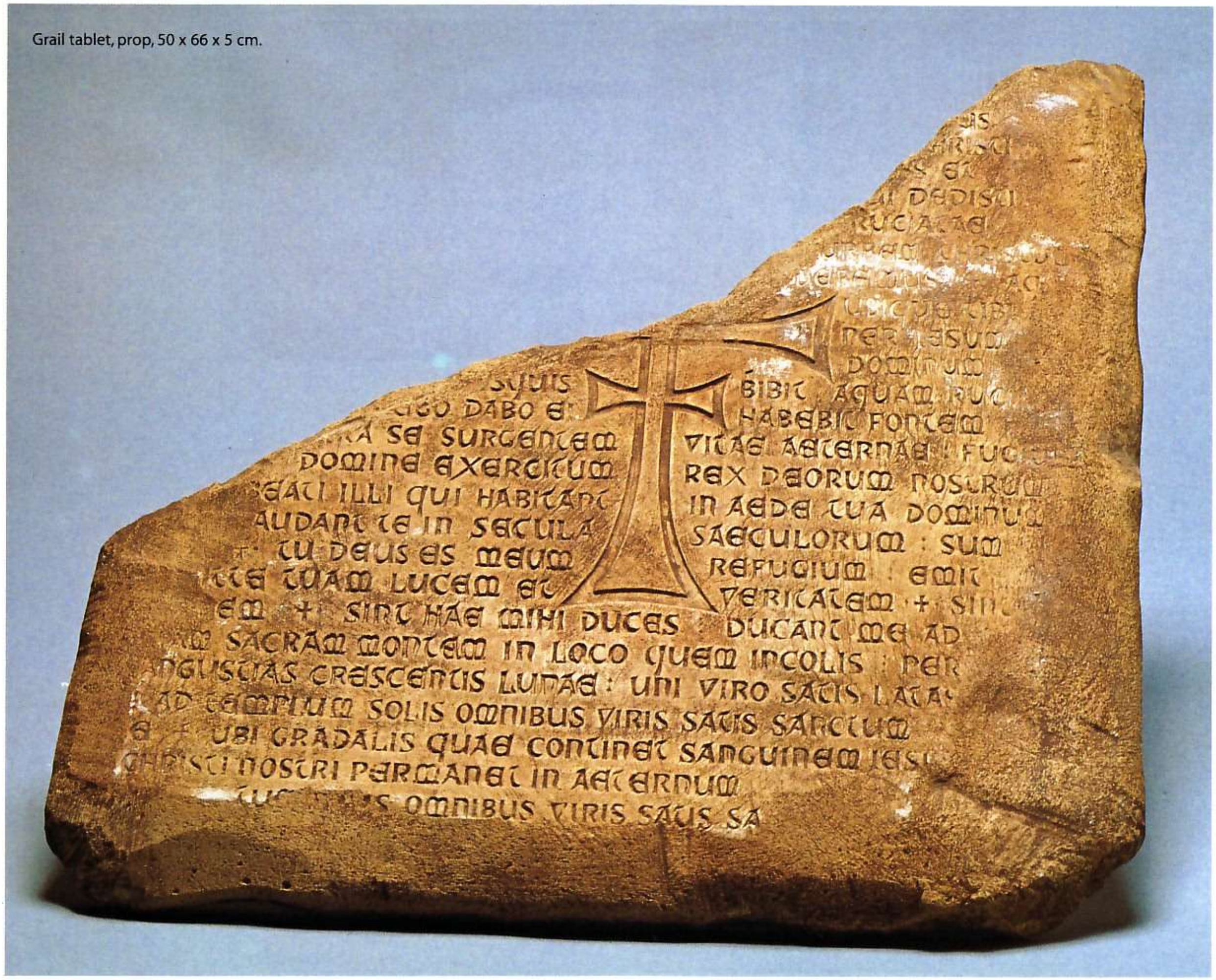


Deck of Portuguese cargo ship, maquette, 29 x 24 x 13 cm.



College interior, maquette, 58 x 91 x 8 cm.

Grail tablet, prop, 50 x 66 x 5 cm.

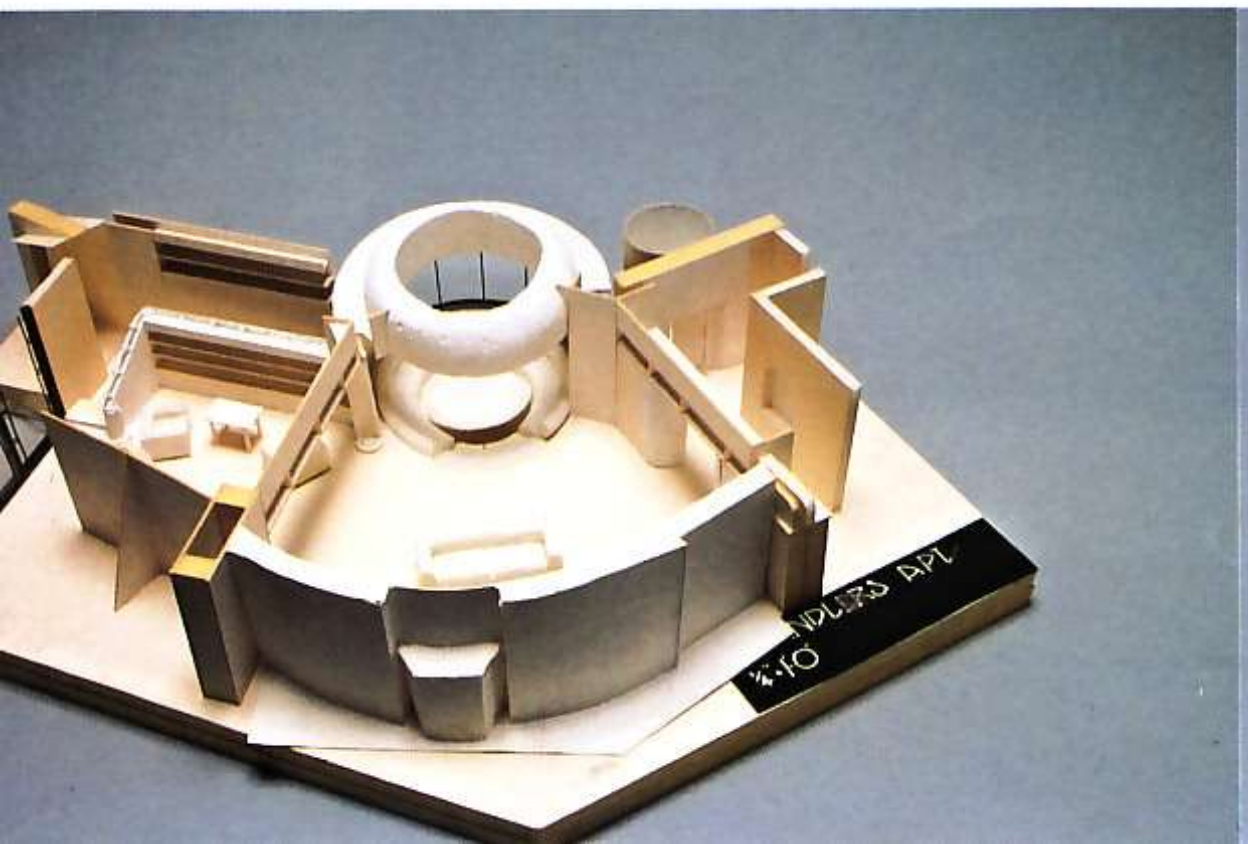


Brown wrappers, prop, 21 x 25 x 3 cm.

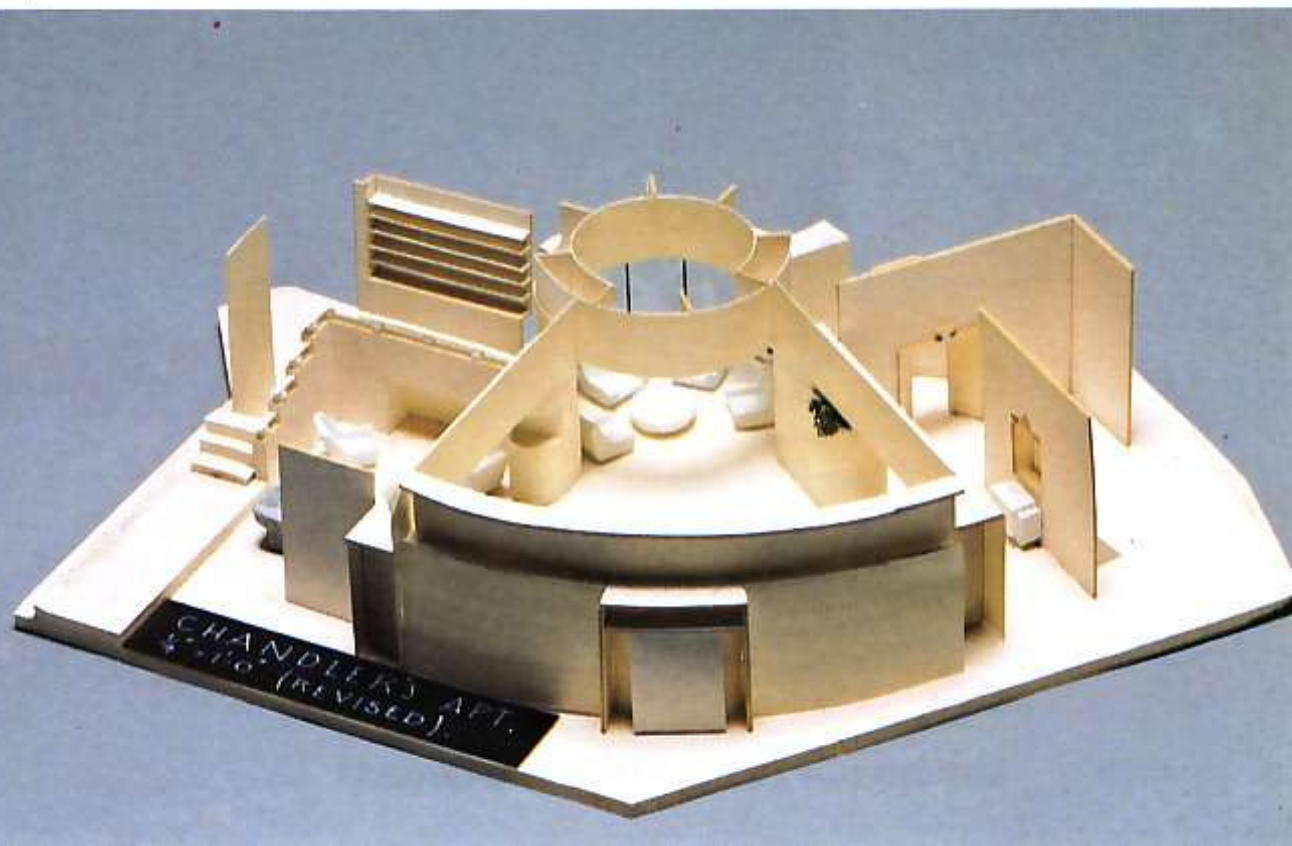
Donovan's apartment, set design illustration

Illuminated manuscript in Donovan's library, prop, 28 x 21 x 5 cm.

Donovan's (identified as "Chandler's") apartment, maquette, 32 x 53 x 10 cm.



Donovan's (identified as "Chandler's") apartment revised , maquette, 44 x 32 x 9 cm.



the lost talismans of their faith. Two props, evocative of religious paintings of the era, show the legend and power of the Grail, from the goblet receiving the blood from Christ's wound as he hung on the cross to the painted vision of a noble knight walking on air to claim the holy chalice.

In the film, Indiana has been drawn into a personal crusade to find not only the holy relic but also his missing father who has vanished in his own search for the Holy Grail.

Photos of Henry and Indy, props,
left: 7 x 10 cm.; middle: 11 x 16 cm.; right: 11 x 16 cm.

Medieval painting, prop, 40 x 46 x 5 cm.

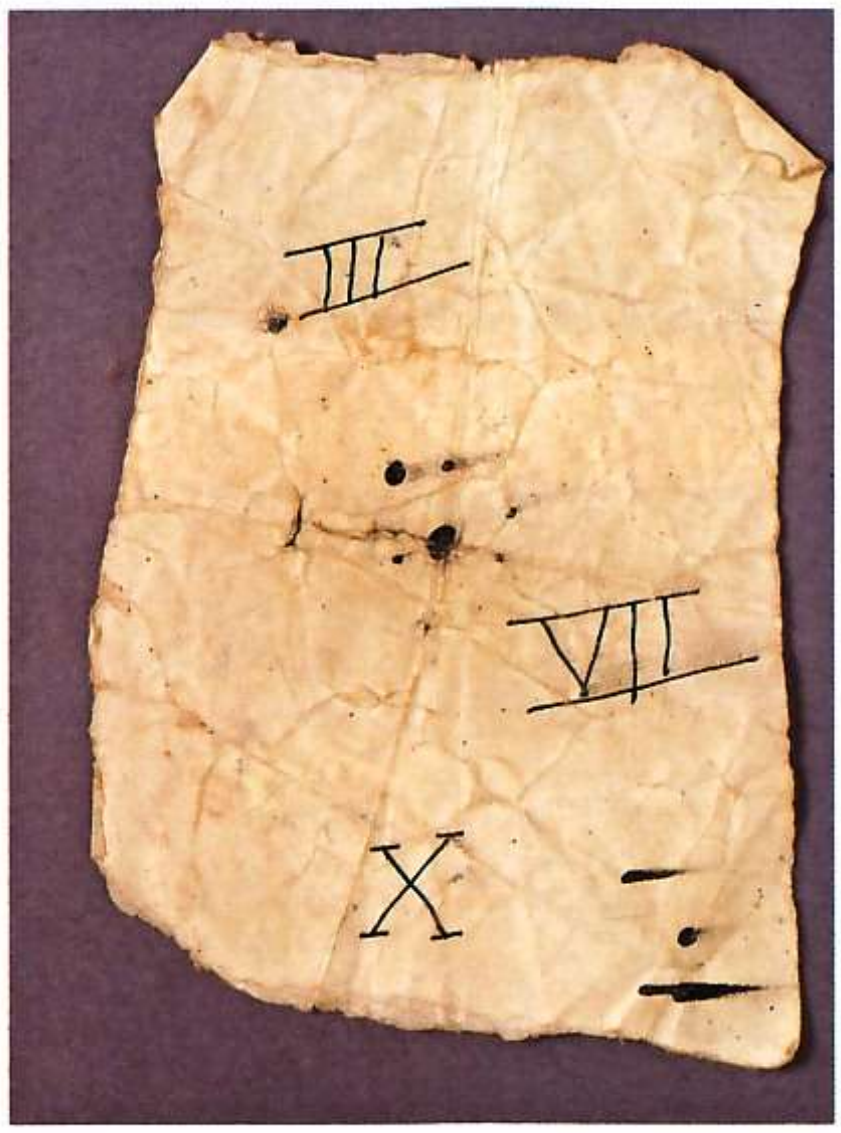
Professor Jones's house (ransacked), production illustration

Medieval painting, prop, 34 x 46 x 3 cm.

FROM CATACOMB TO CASTLE

Teaming up in Venice, Italy, with Brody (a colleague from the university, played by actor Denholm Elliott), and the mysterious Elsa Schneider (Alison Doody), Indiana searches a library for an entranceway that will lead down into forgotten catacombs and the next clue on the trail to the Grail. The clues, alluded to in Henry's Grail diary, help Indy find the secret entrance floor section. Once in the catacombs Indiana and Elsa have to

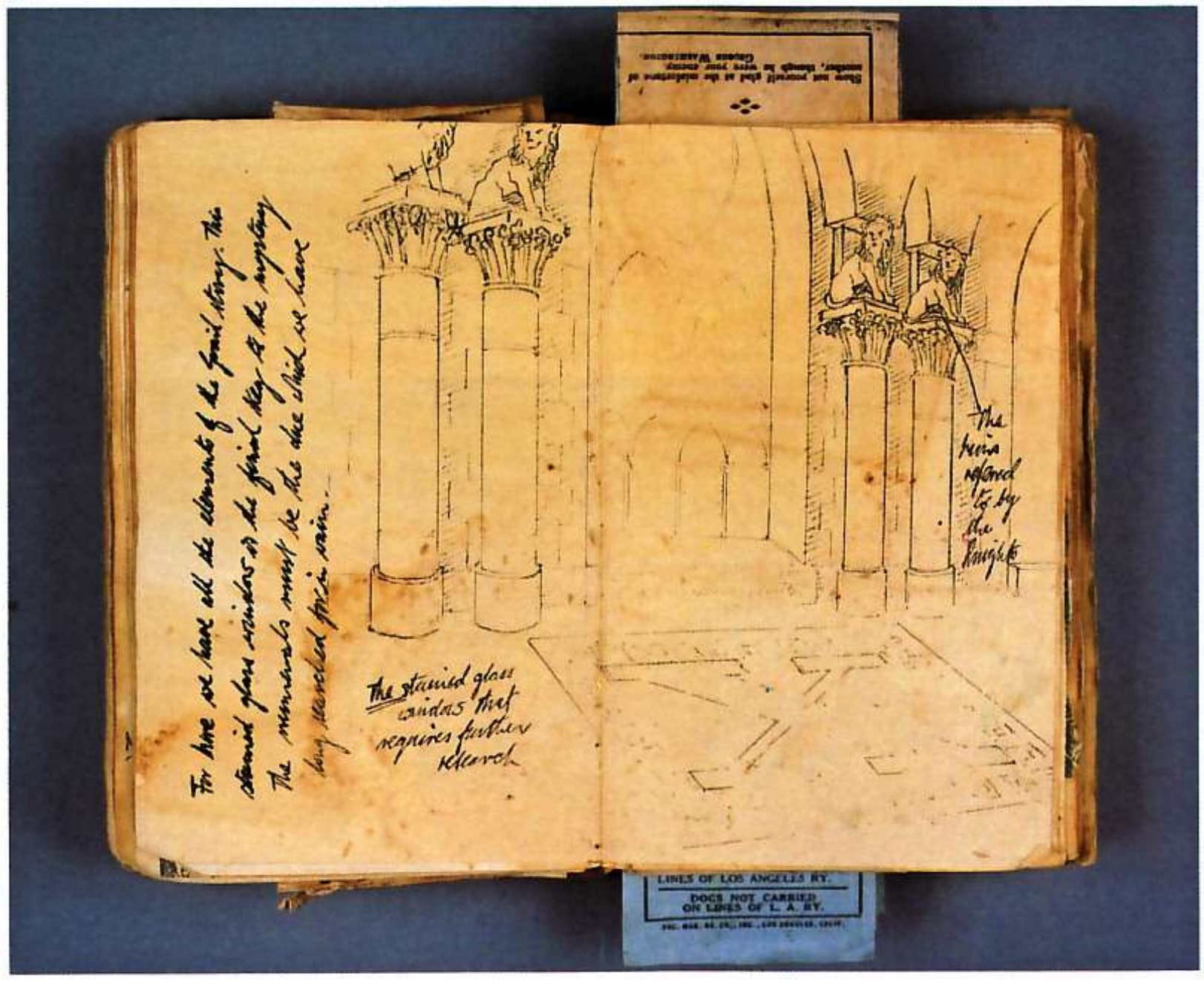
Indy suspects that below the library floor is an ancient catacomb (with Elsa and Brody looking on), still from film



Roman numerals on scrap of paper, prop, 8 x 10 cm.

Library in Venice, set design illustration

Henry's Grail Diary, drawings of medieval stained glass window and Roman numerals, which give clues to the location of the Grail



Henry's drawings of the position of clues in the Venice library

survive an army of rats and a fire attack from members of a secret brotherhood sworn to protect the sacred relic.

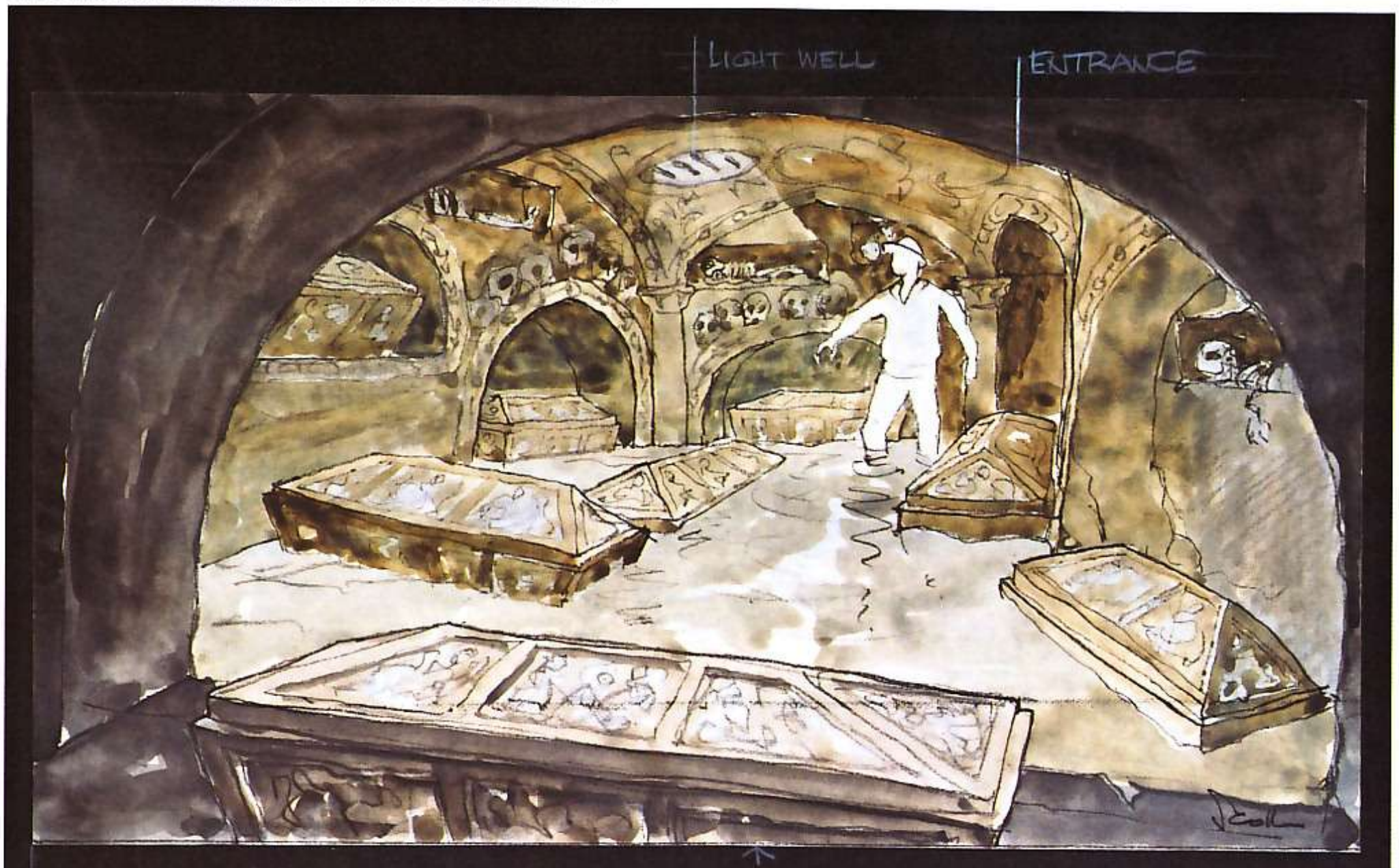
The action leads from the dank, dark world of the catacombs to a motorboat chase on the Venetian waterways and on to a castle in Salzburg, Austria. In the castle, a secret Nazi stronghold, Indiana finds his father imprisoned.

From catacomb to castle the production depended on image illustrations and maquettes to visualize and

Deep in the catacombs Indy and Elsa discover the next clue in the quest for the Grail, still from film

Catacombs, maquette, 55 x 76 x 9 cm.

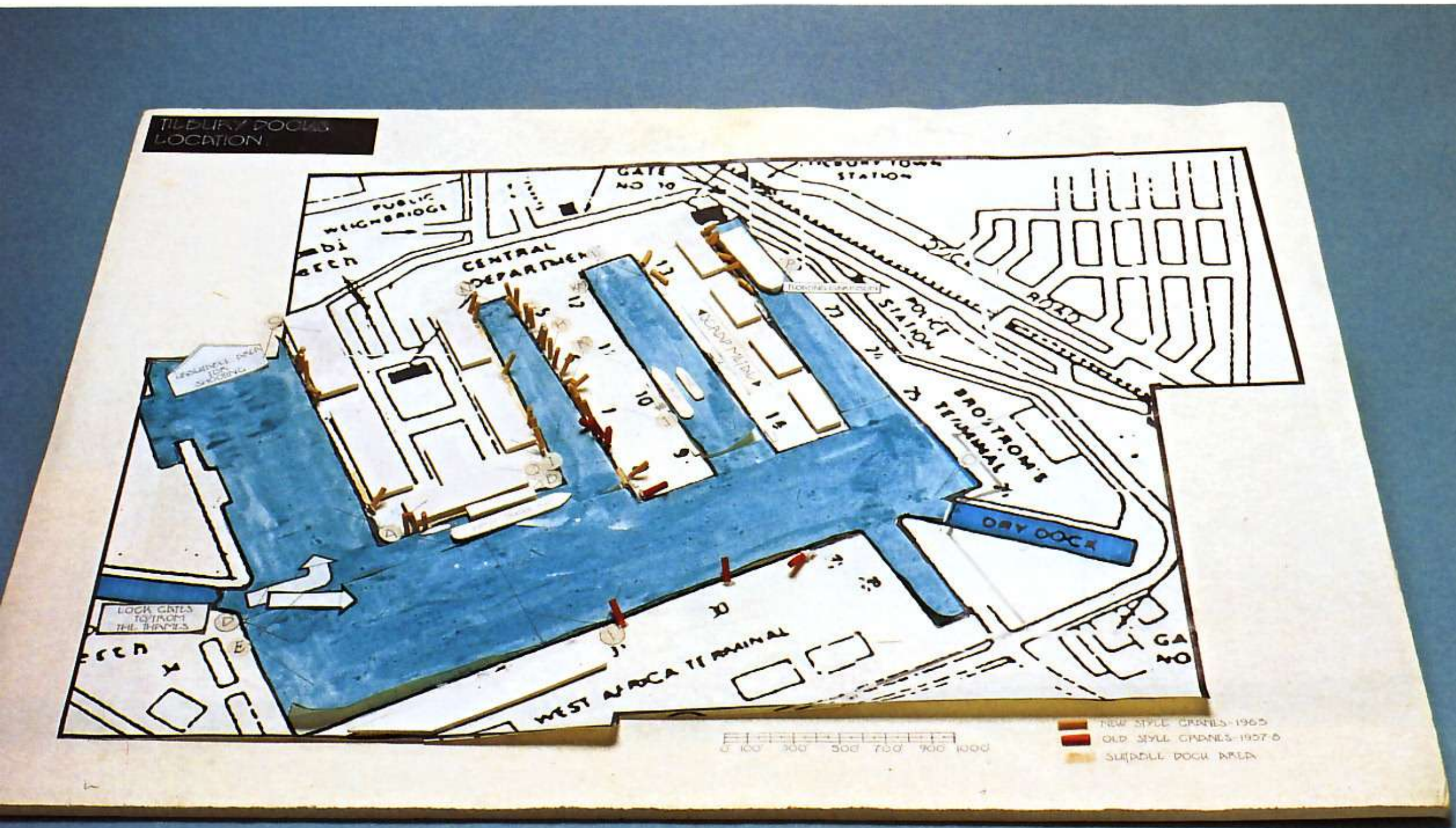
Catacomb chamber with knight's coffin, set design illustration



Folded Grail rubbings, prop, 41 x 58 cm.

Small Kazim Crosses of the Grail Brotherhood, props, 3 x 4 cm.

Venetian waterways, maquette, 57 x 76 x 3 cm.

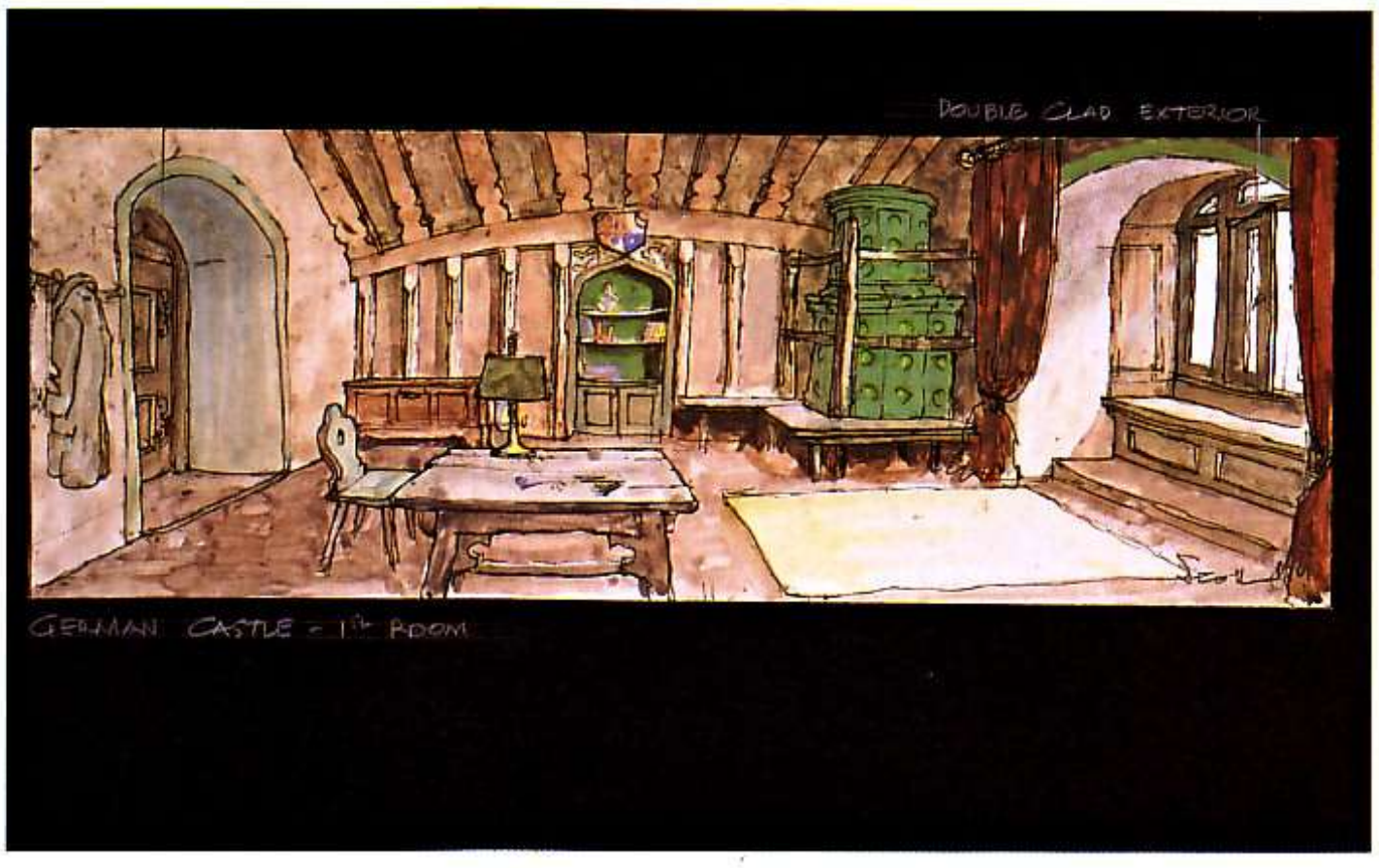


plan the final set pieces. The Nazi castle sequence also required exterior shots filmed at a real castle outside Salzburg. The set pieces for the castle interior included the room where Henry Jones is held prisoner, the hidden radio room used by the Nazis, and the baronial hall where the Nazis turn up the heat on the Jones boys.

Escape from the Nazi castle, still from film

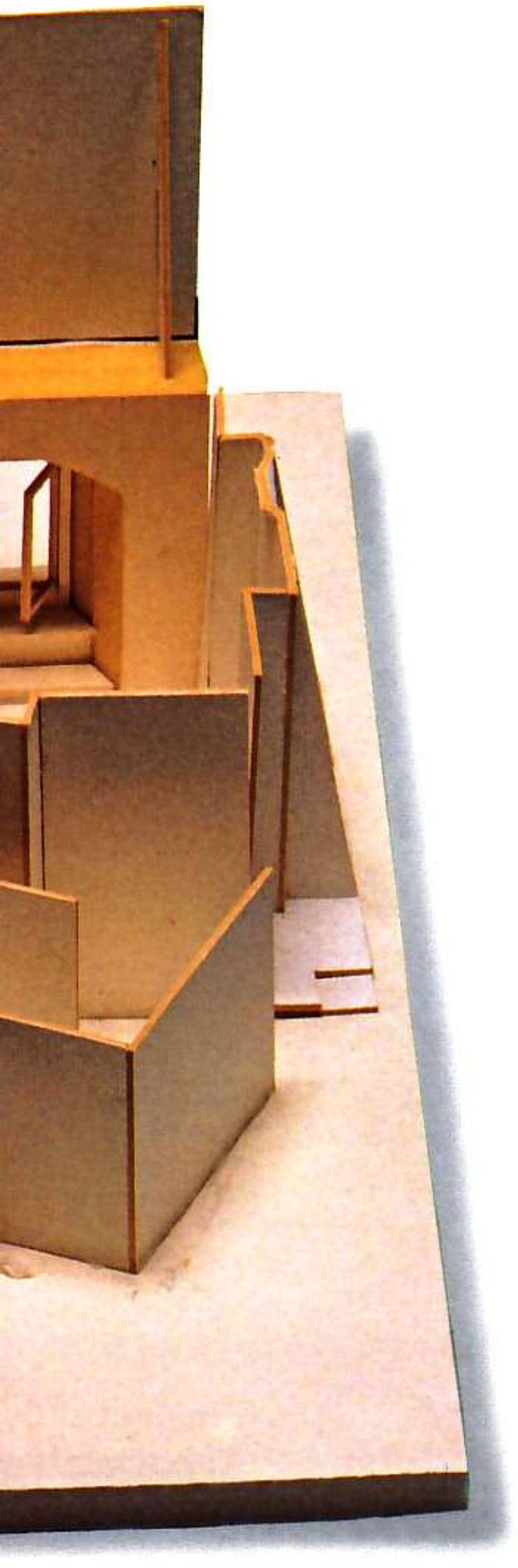
Nazi castle interior, maquette, 48 x 41 x 17 cm.

Castle (upstairs corridor), set design illustration



Castle (first room), set design illustration

Castle (Henry's room), set design illustration



Nazi castle (baronial hall), set design illustration

Castle (burning hall and radio room), maquette, 41 x 44 x 14 cm

Castle (radio room), set design illustration

Elsa's lighter, prop, 5 x 2 x 6 cm.

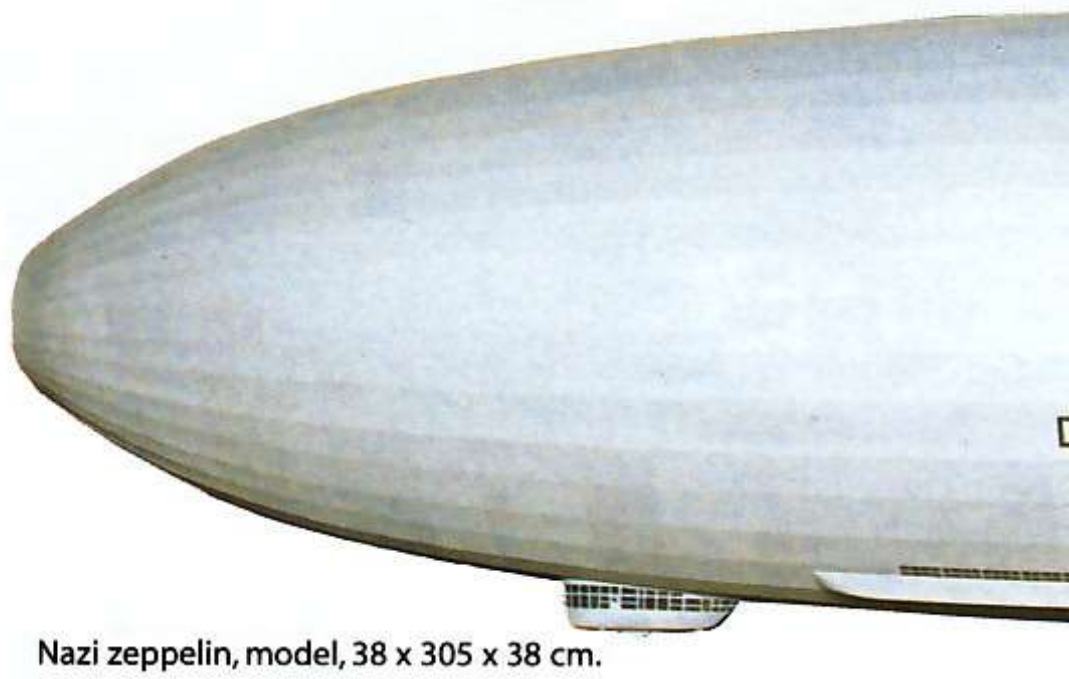
The Jones boys feel the heat, still from film

THE CHASE

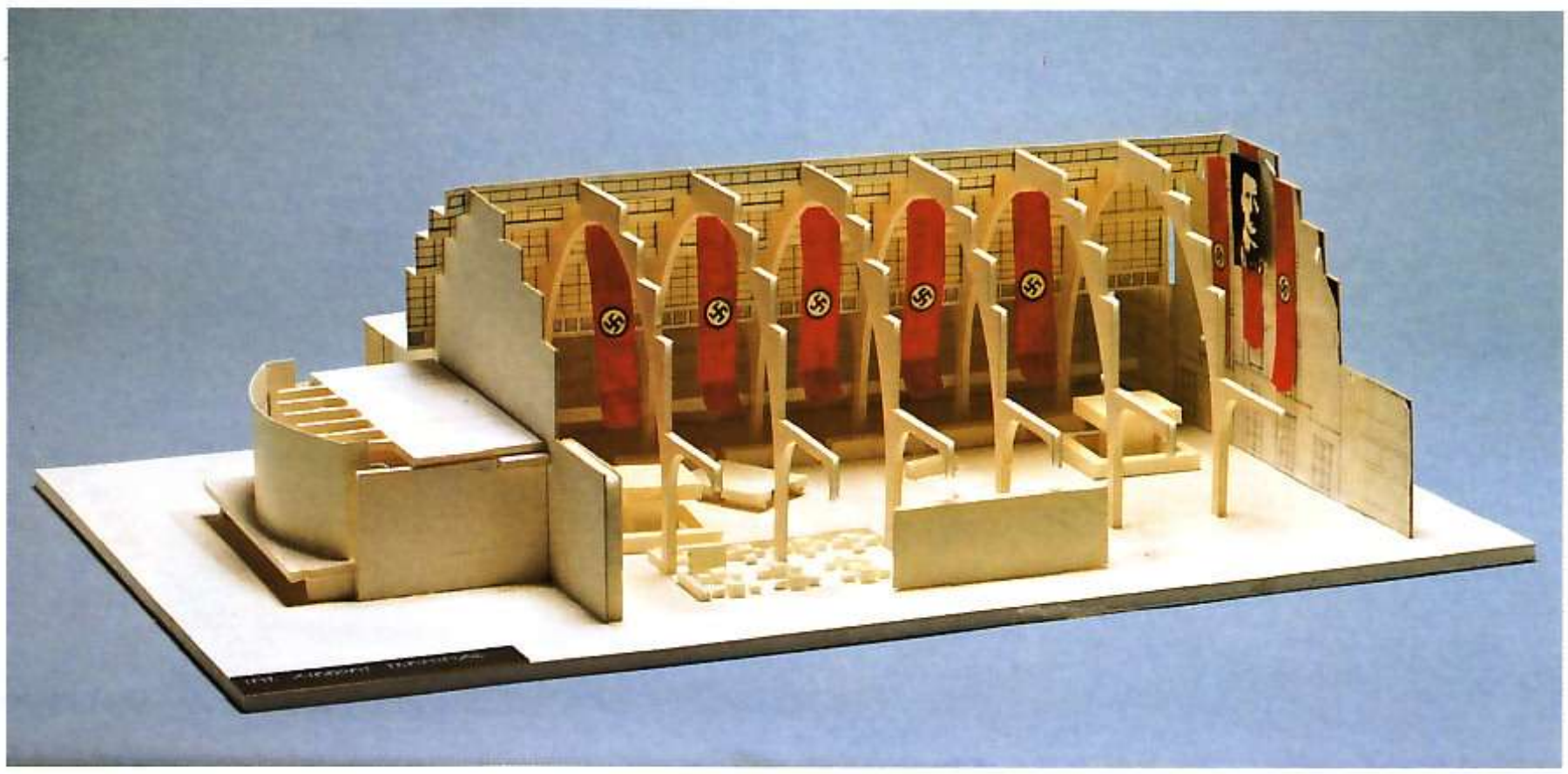
It wouldn't be an Indiana Jones movie without a wild chase and *Last Crusade* provides a dandy, if deadly, sequence in which Nazi fighter planes pursue Indy and his father in the air and on the ground. Other than a major set piece of the Berlin air terminal, from where Indy and Henry leave the city in a zeppelin (after retrieving Henry's Grail diary from the slinky Elsa), much of the ensuing action required ILM effects artistry. Although portions of the airship were built as full-scale sets, most of the zeppelin action was created as optical composites, with an eight-foot airship model shot with motion control in front of bluescreen and composited into a sky background plate.

When the zeppelin is called back to Berlin, Indy and Henry make their escape in a biplane they steal from the underside of the airship. For their biplane flying scenes the two actors were filmed against a bluescreen inside a full-scale mock-up.

When the chase leads to ground level, the two swipe a car and are pursued by Nazi fighter planes. The finale, in which the Jones's car enters a tunnel followed by the pursuing plane, which crashes and burns, was a complicated effects sequence that intercut miniature sets and models, bluescreen work, and live-action pyrotechnics.

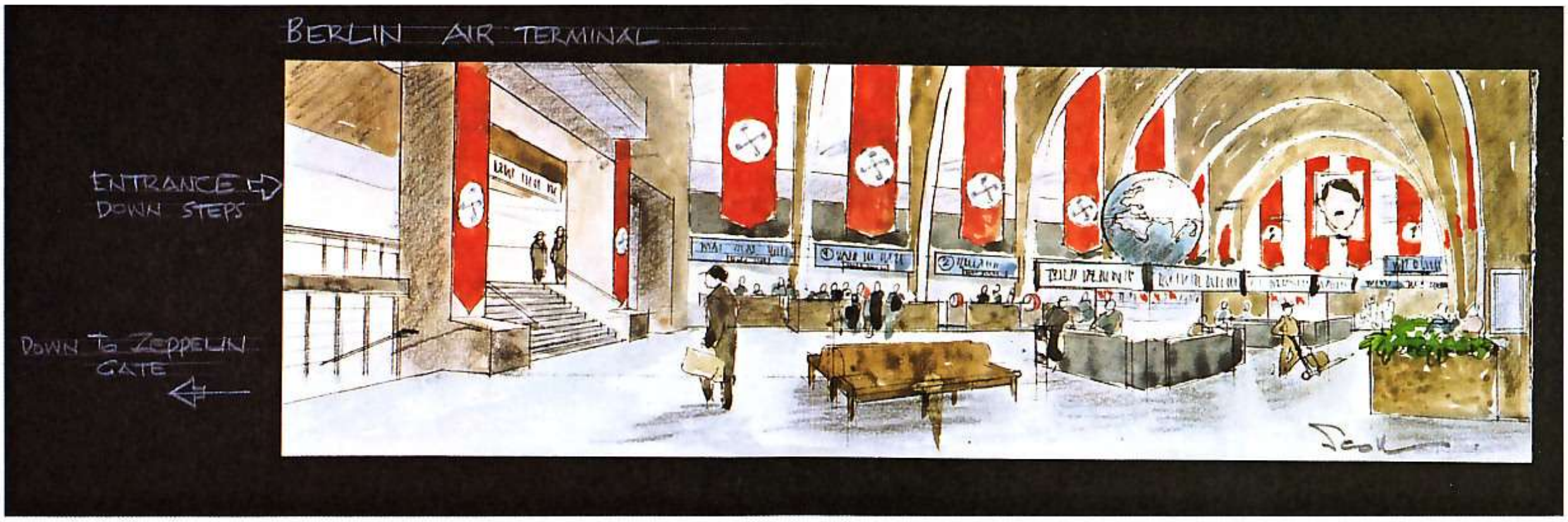


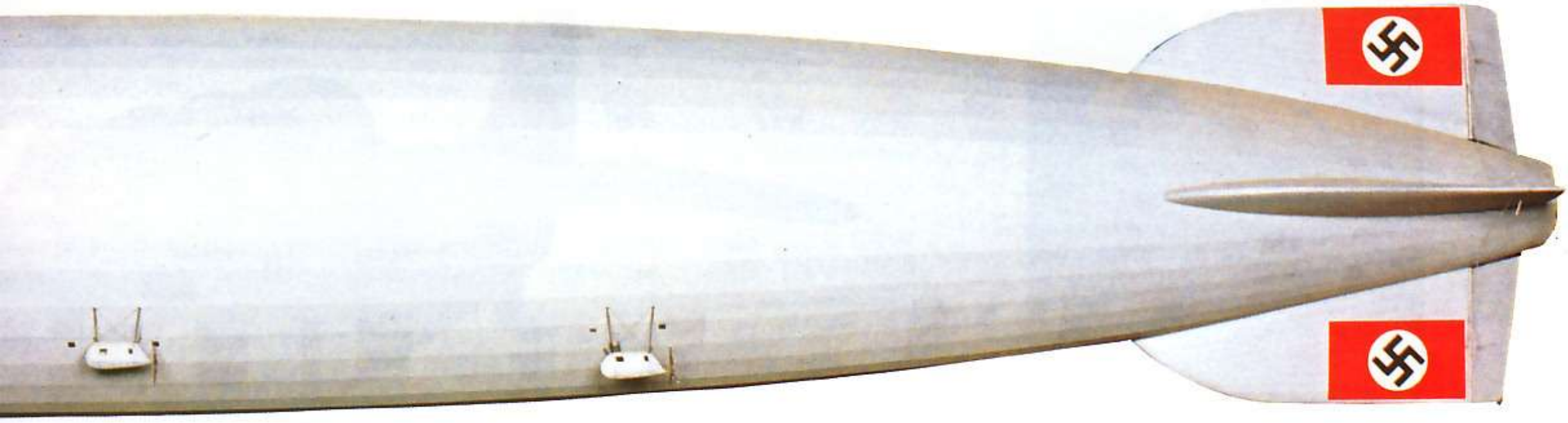
Nazi zeppelin, model, 38 x 305 x 38 cm.



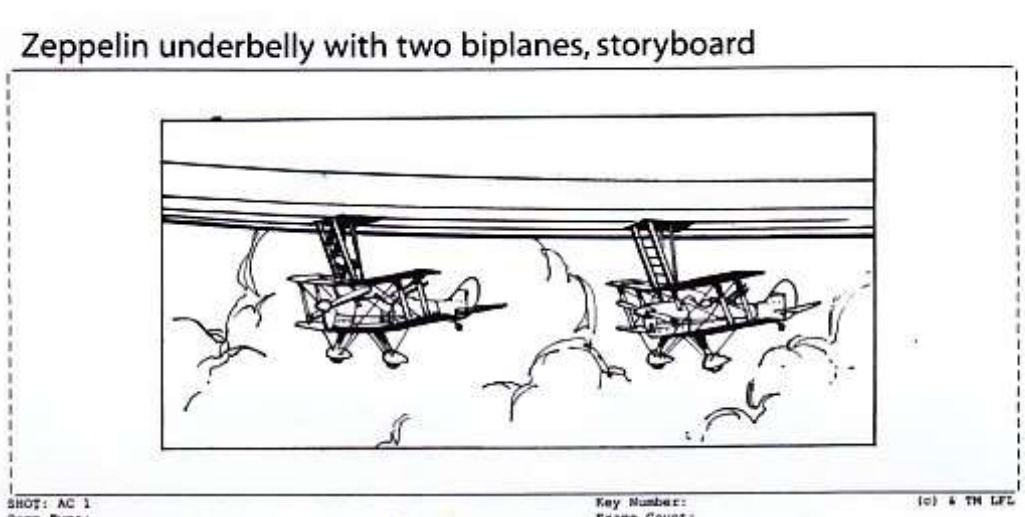
Berlin air terminal, maquette, 76 x 49 x 20 cm.

Berlin air terminal, set design illustration





Zeppelin underbelly with two biplanes, storyboard



SHOT: AC 1
Comp Type:
Description:
EXT-ZEPPELIN-DAY
LONG SHOT OF ZEPPELIN'S UNDERBELLY WITH TWO BIPLANES SUSPENDED FROM CRANES.

Key Number:
Frame Count:
Notes:

(c) & TM LFL

ELEMENTS	TYPE	ELEMENTS	TYPE	ELEMENTS	TYPE
BG sky plate - NO PLANES	plate	Zeppelin	stage	Biplane #1	stage
Biplane #2	stage	Zeppelin G-Matte	animRT	Biplane #1 G-Matte	animRT
Biplane #2 G-Matte	animRT				

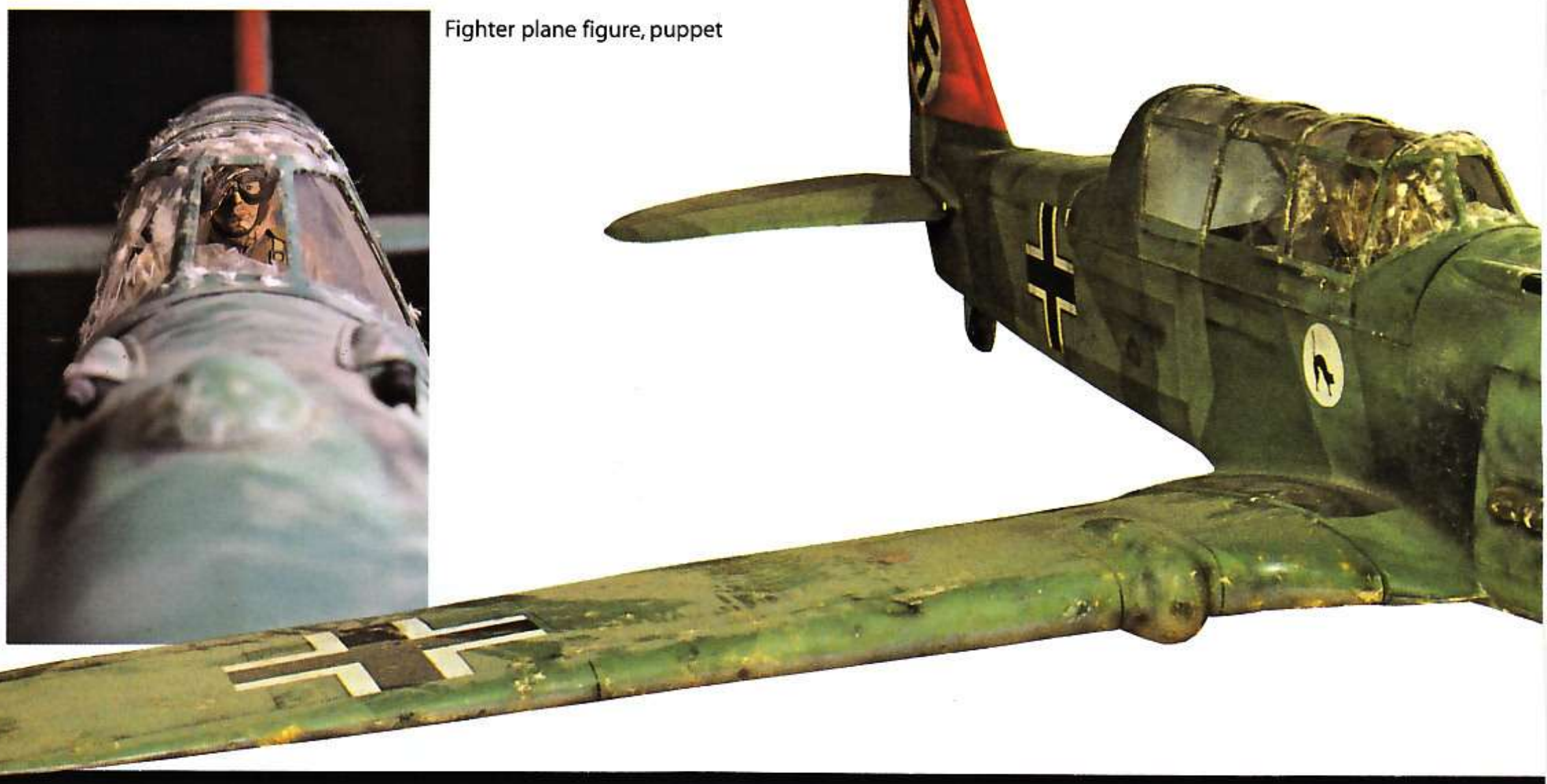
(27 Oct 88)
Agreed to and accepted by:_____ Date: _____

SHOT: AC 1

Henry's pocket watch, prop, 10 x 10 x 3 cm.

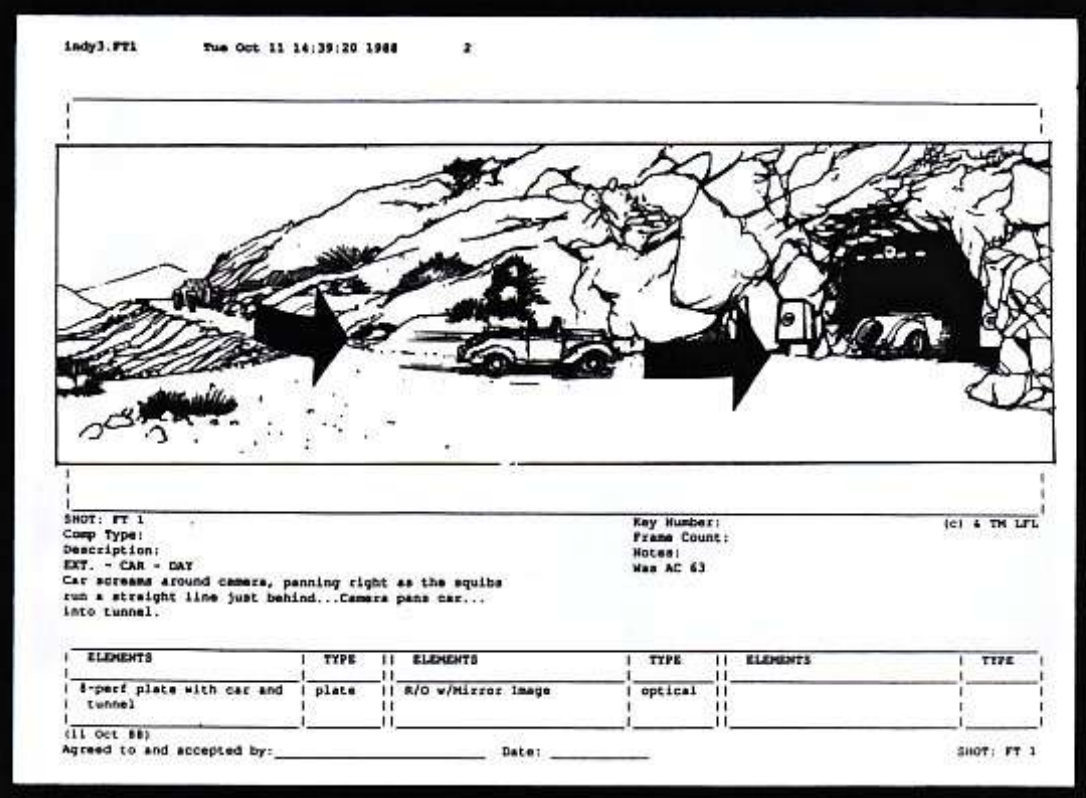
Henry's umbrella, prop, 90 x 13 x 6 cm.

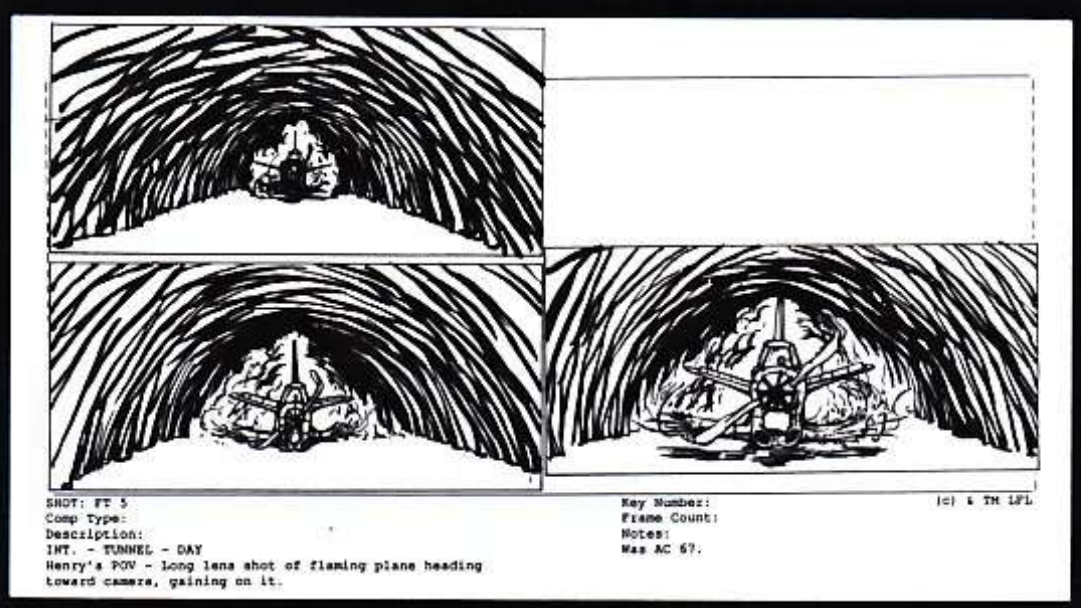
German biplane, model (with figure), 66 x 53 x 23 cm.

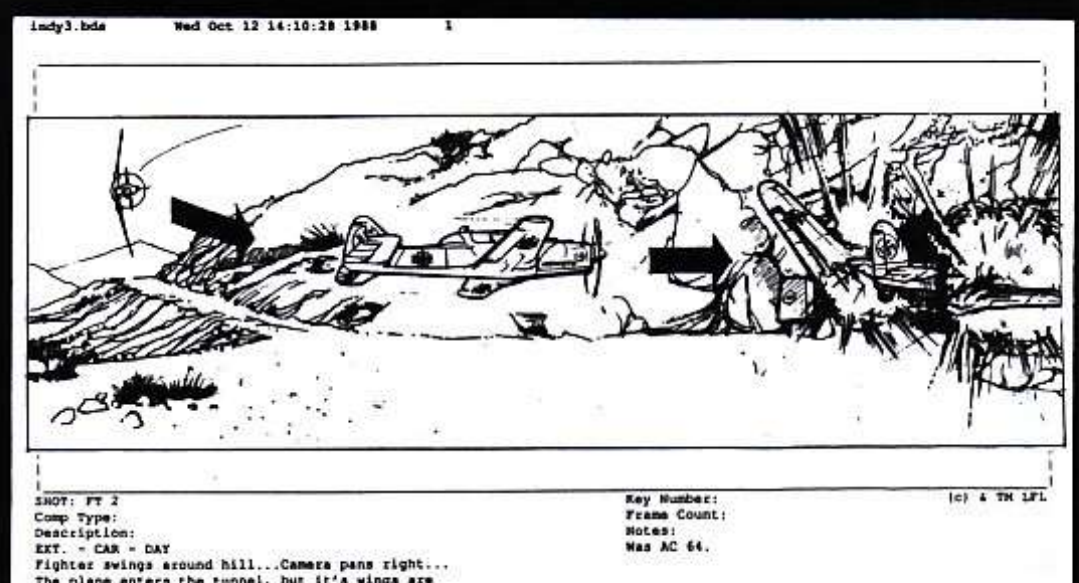


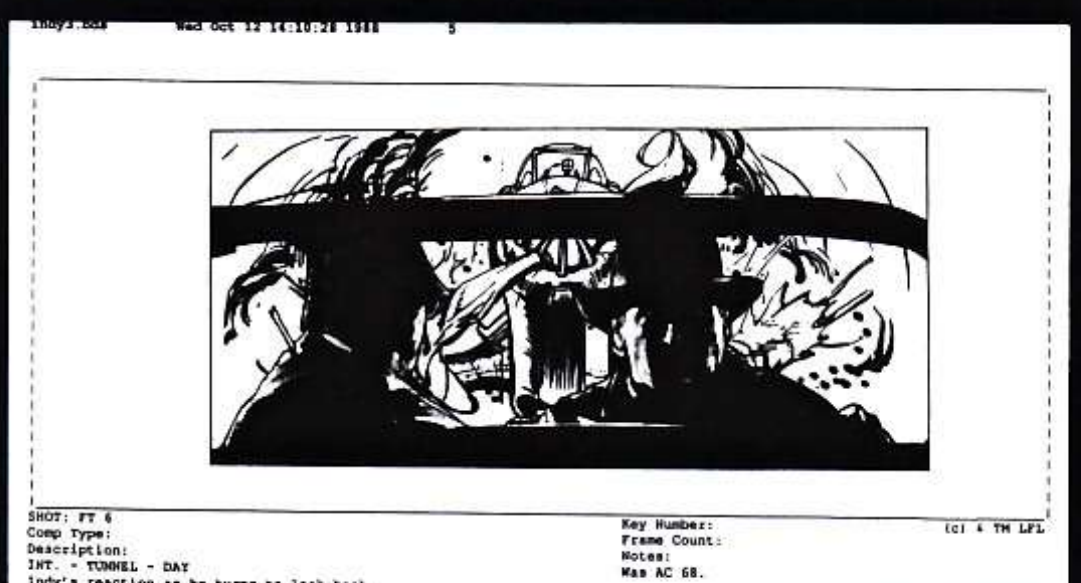
Fighter plane figure, puppet

Tunnel chase, storyboard



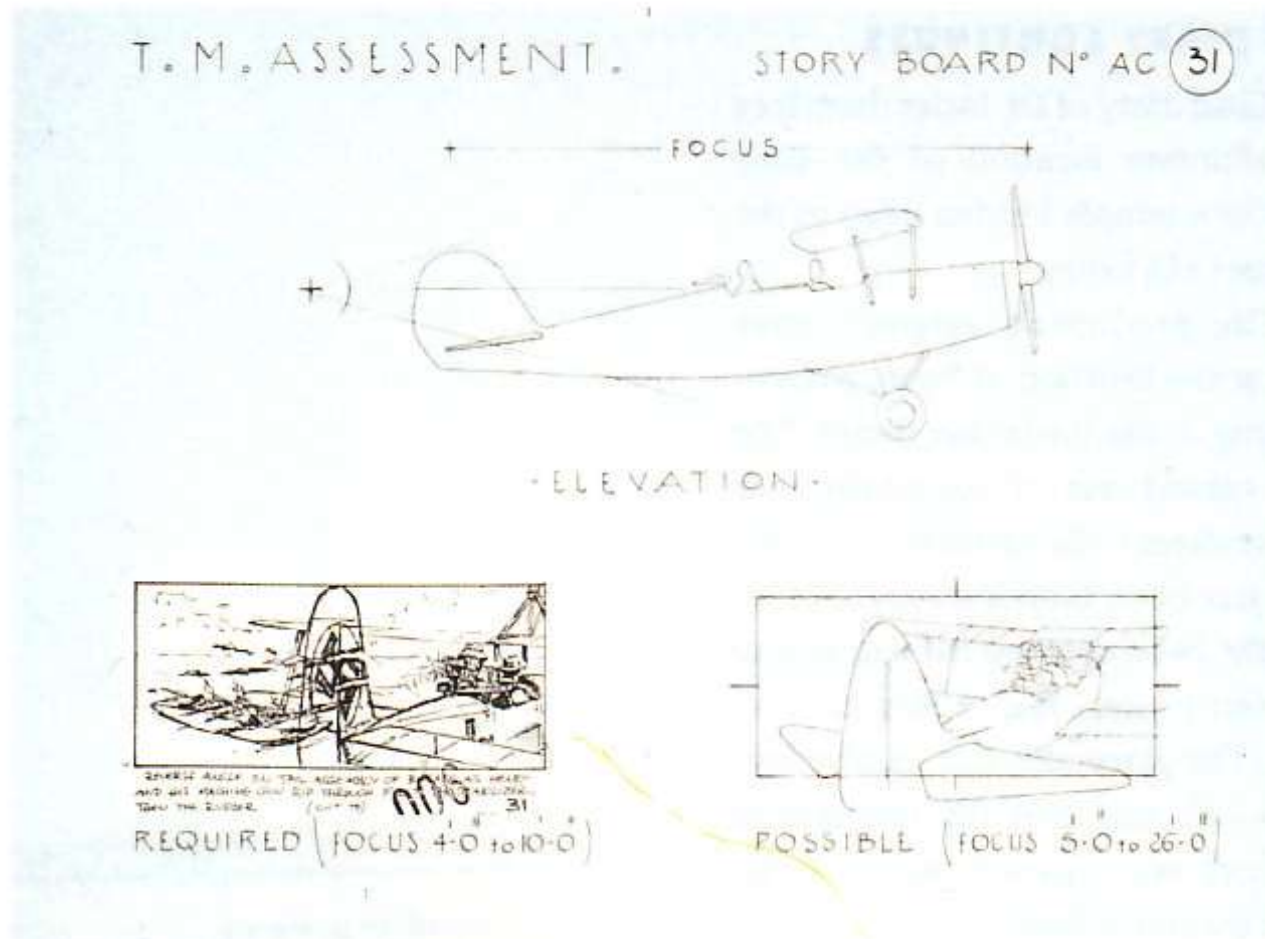




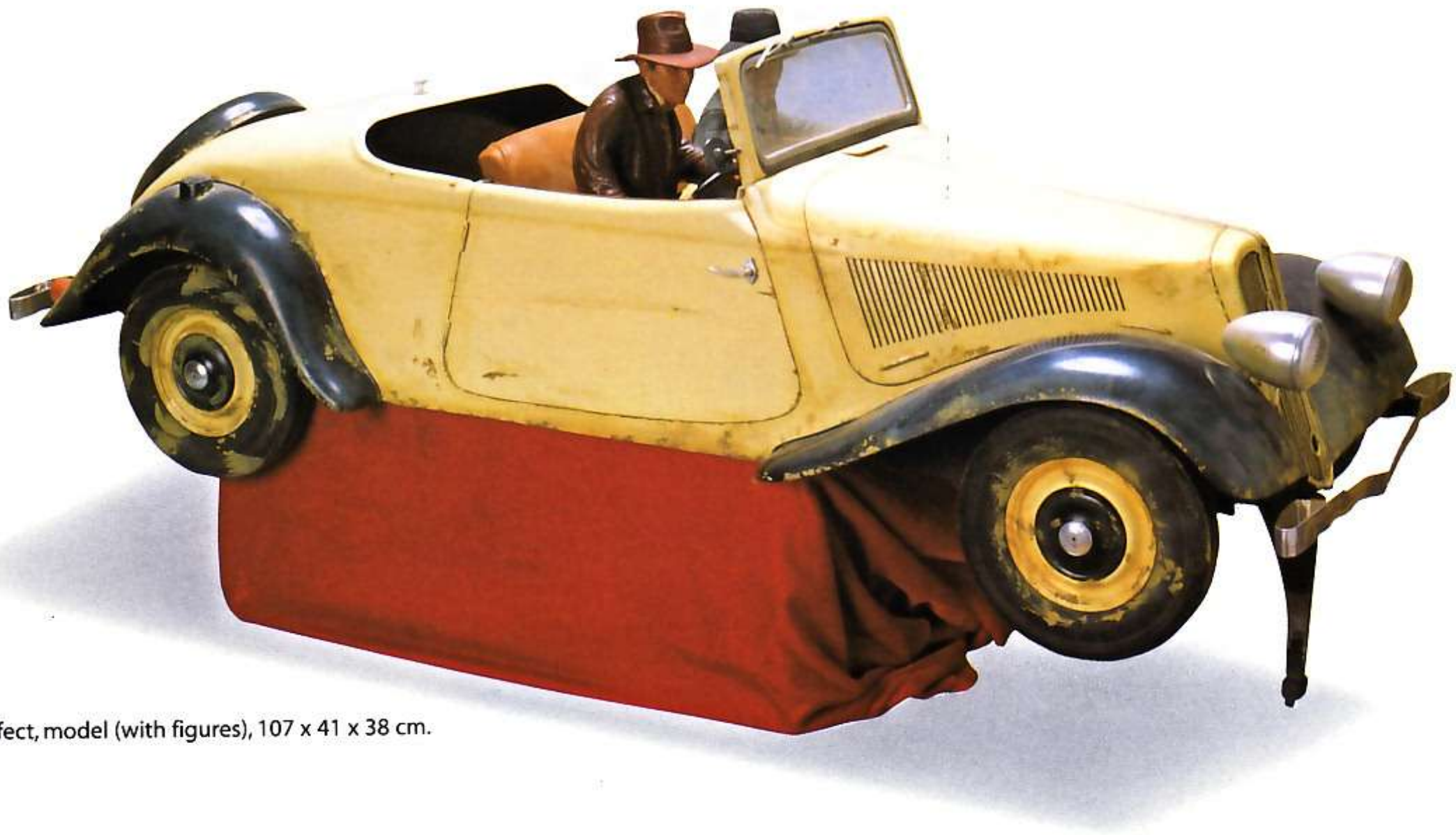


Pilatus Nazi fighter plane, model, 224 x 224 x 56 cm.

Pilatus Nazi fighter plane, model, 74 x 61 x 15 cm.



Biplane, storyboard with technical references

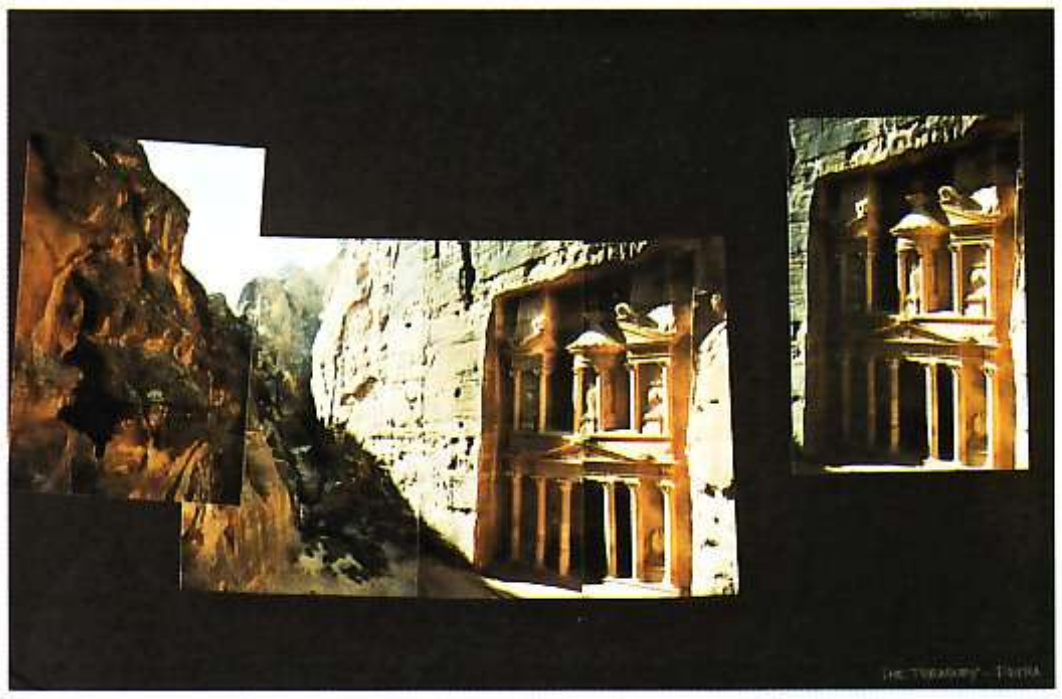


Car for fire tunnel effect, model (with figures), 107 x 41 x 38 cm.

THE DIARY CONTINUES

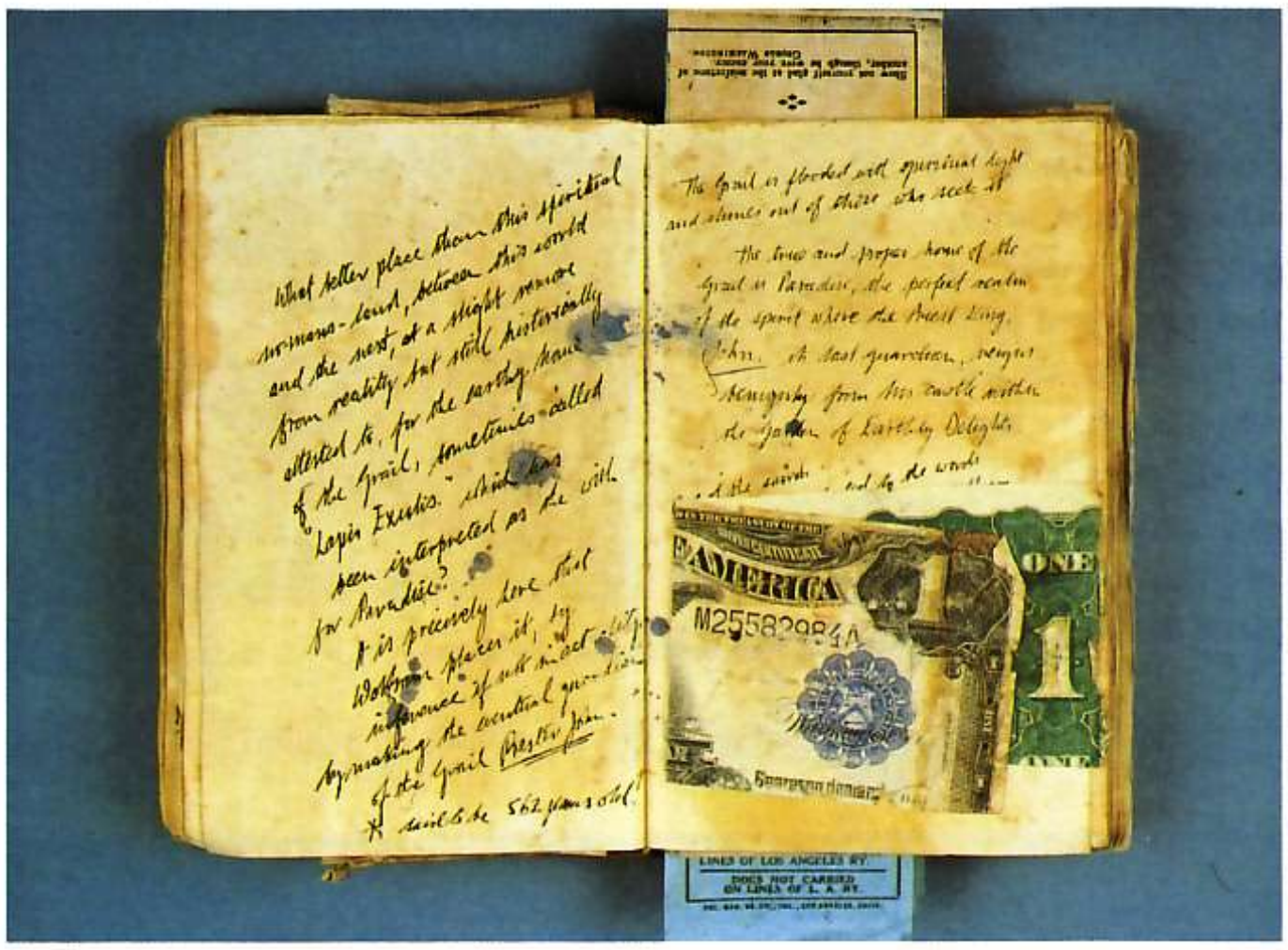
The Grail diary of Dr. Jones describes the ultimate location of the Holy Grail in a temple hidden deep in the crevices of a valley.

The production exteriors were shot at the location of Petra, a once-lost city in the Jordanian desert. The city, carved out of mountain rock whose sheer walls rise three hundred feet, has been both a stronghold for bandits (who coveted its nearness to caravan routes) and a Roman outpost. The place also has its own legends—it's said that the crevasse in the rock was opened with a strike from the rod of Moses.

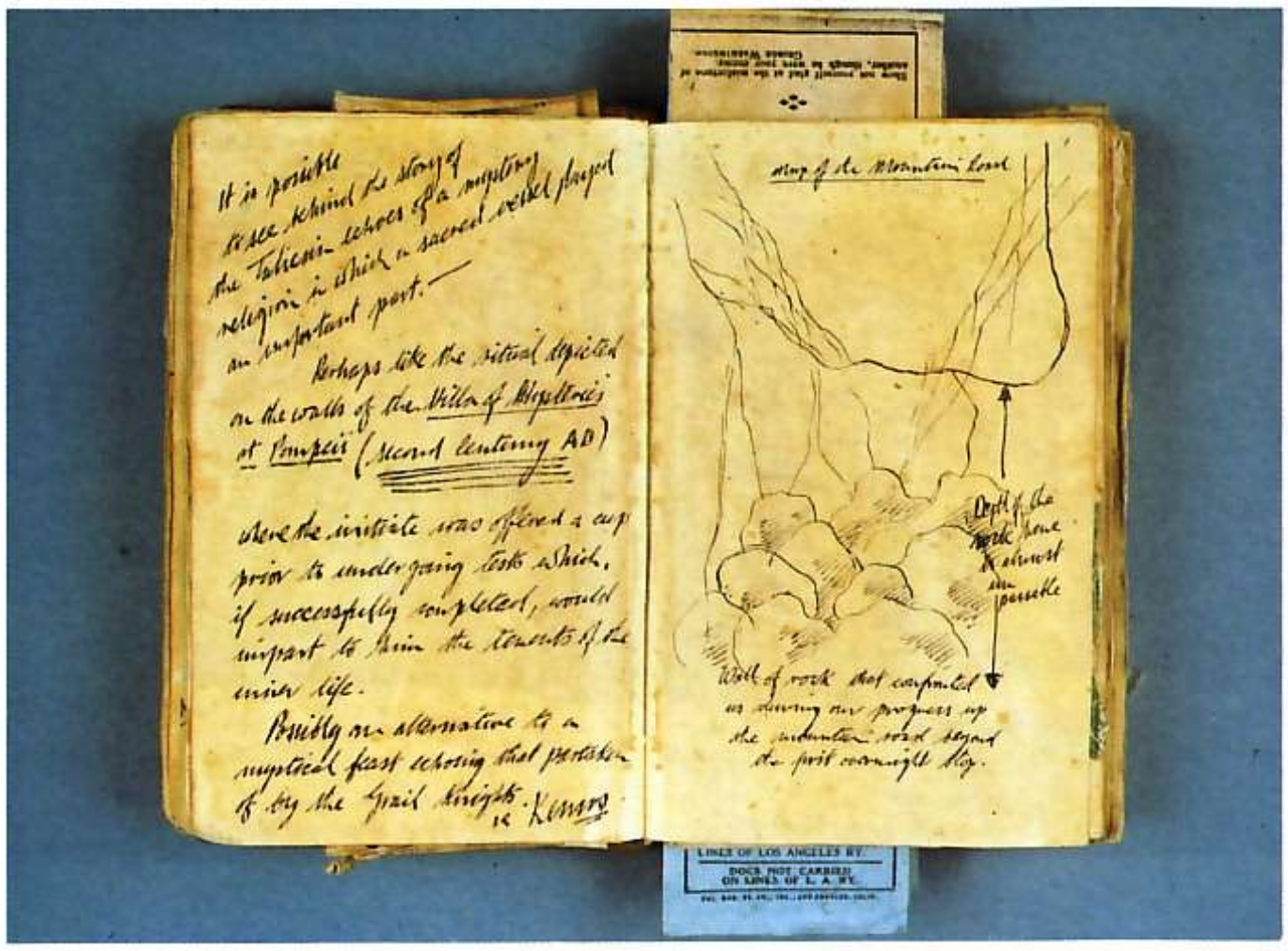


Petra, Jordanian desert, photo collage of location shoot

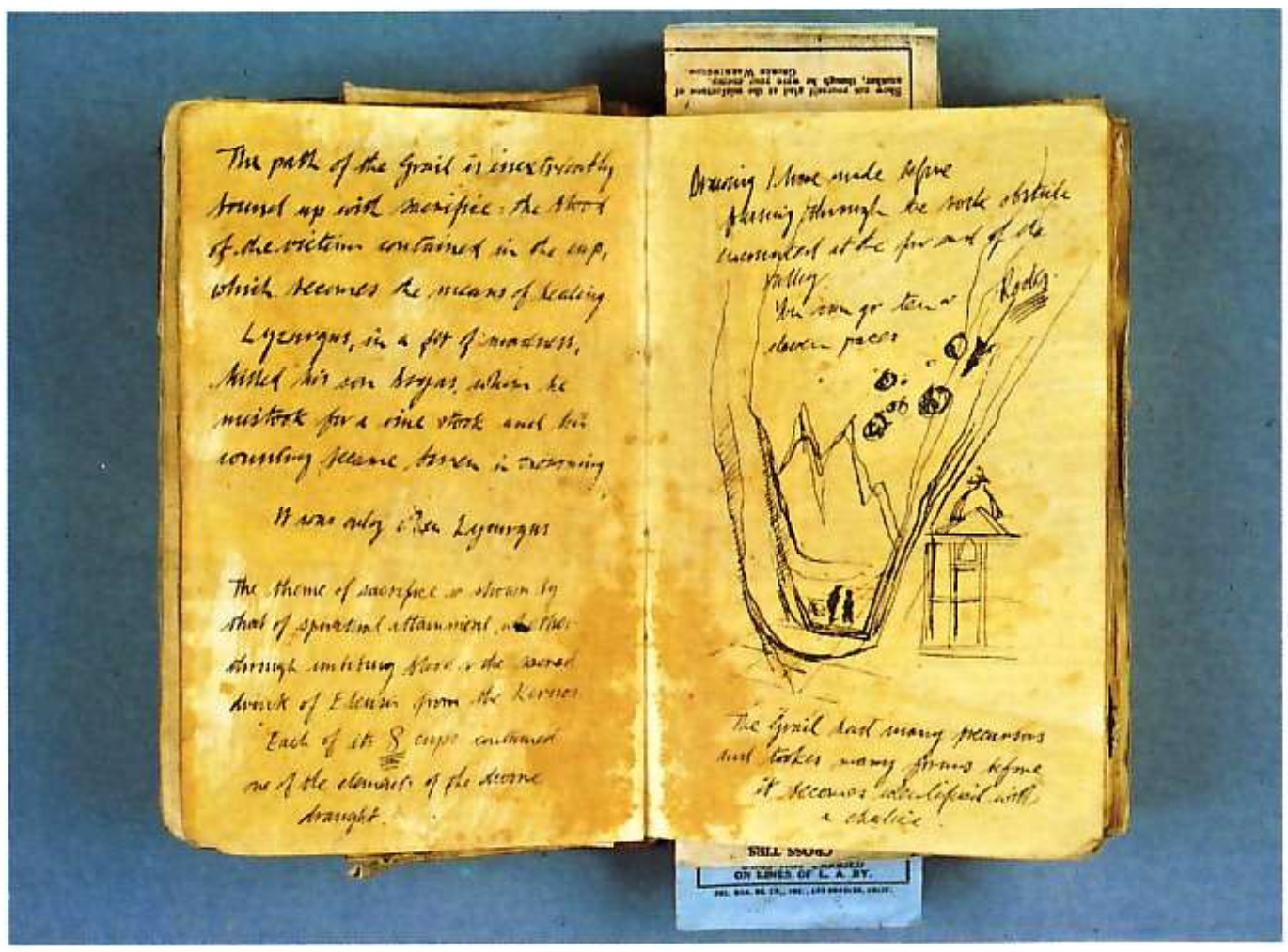
Henry's Grail Diary, prop, 10 x 17 x 3 cm.



Henry's Grail Diary, notes on Prestor John and Grail legends



Henry's Grail notes with "Map of the mountain road"



Henry's sketch of one of the obstacles to the Grail

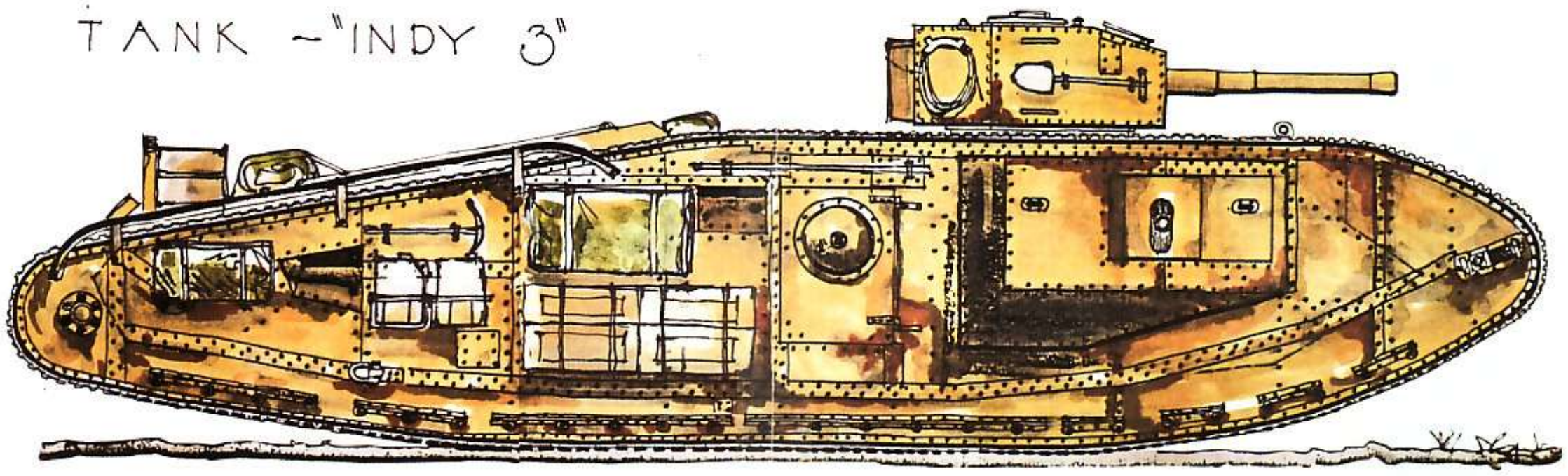
THE TANK

A tank chase, shot on location in Spain, required the construction of a motorized replica of a Mark 7 German tank from World War I. Only eight such tanks had actually been built for the war, and with the only surviving tank a nonfunctioning museum piece, mechanical effects supervisor George Gibbs and his crew had to construct their full-scale replica from scratch.

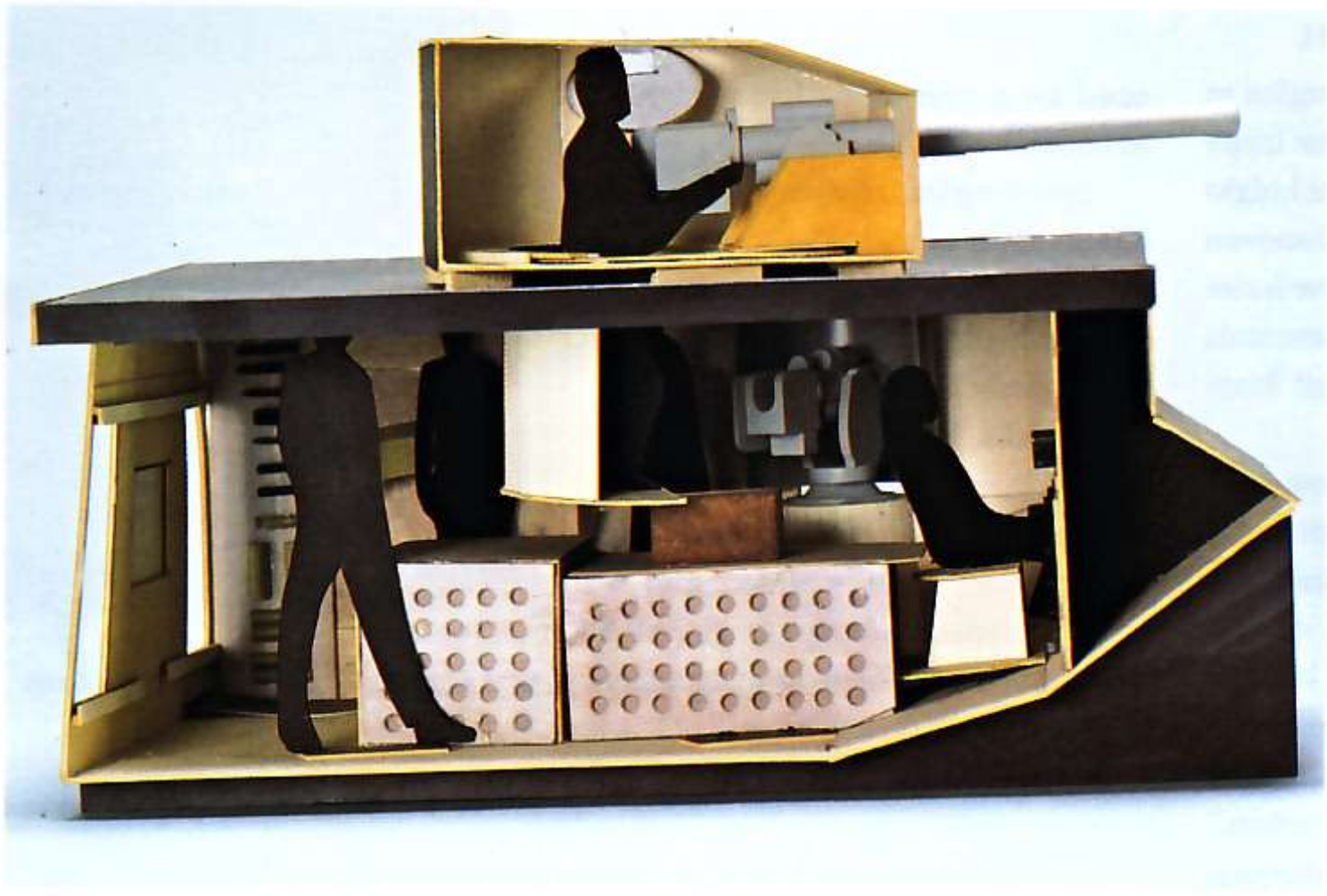
A realistic recreation was built, down to the lack of suspension systems characteristic of the original construction. Actual steel was used, ensuring the vehicle would withstand the rugged three weeks of shooting. The final, motorized period reproduction was thirty-six feet long and weighed twenty-nine tons. (A lesser prop played a key role in the tank battle scene: one of Henry's pens blinds a Nazi with ink and allows the good doctor to gain control of the tank's gun.)

Henry's pens, prop, 13 x 2 x 2 cm.

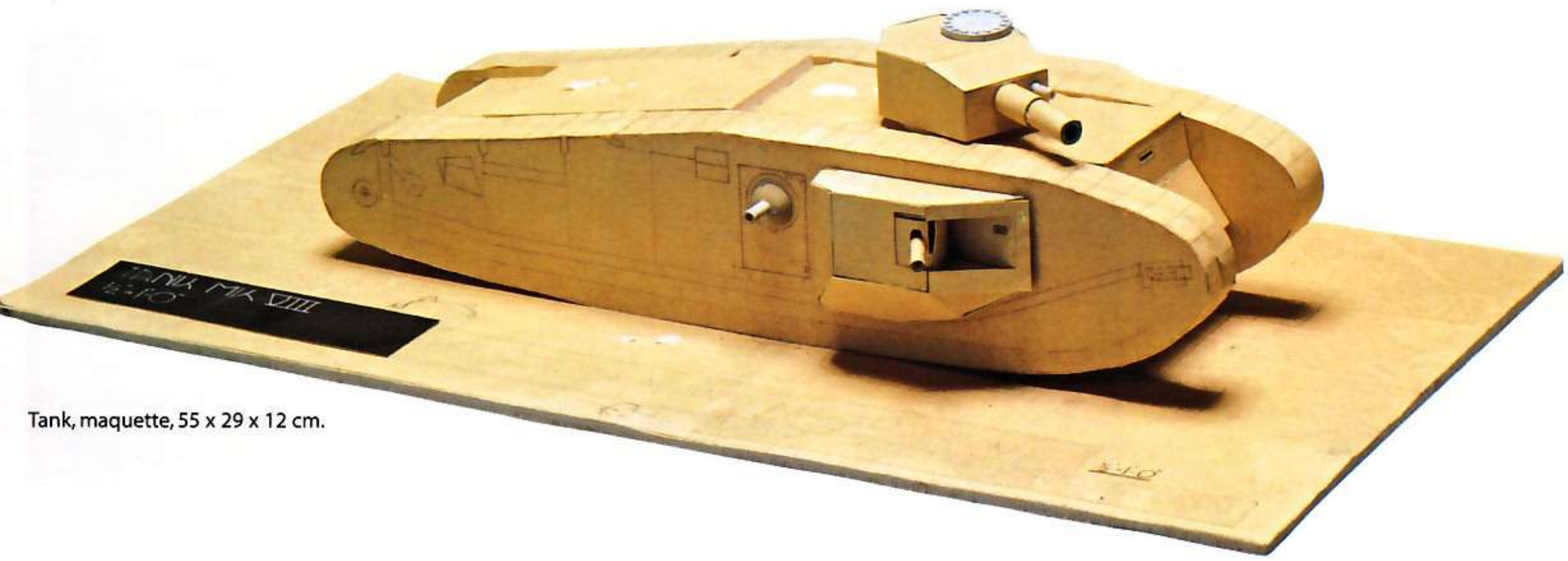
Indy 3 Tank, photo collage



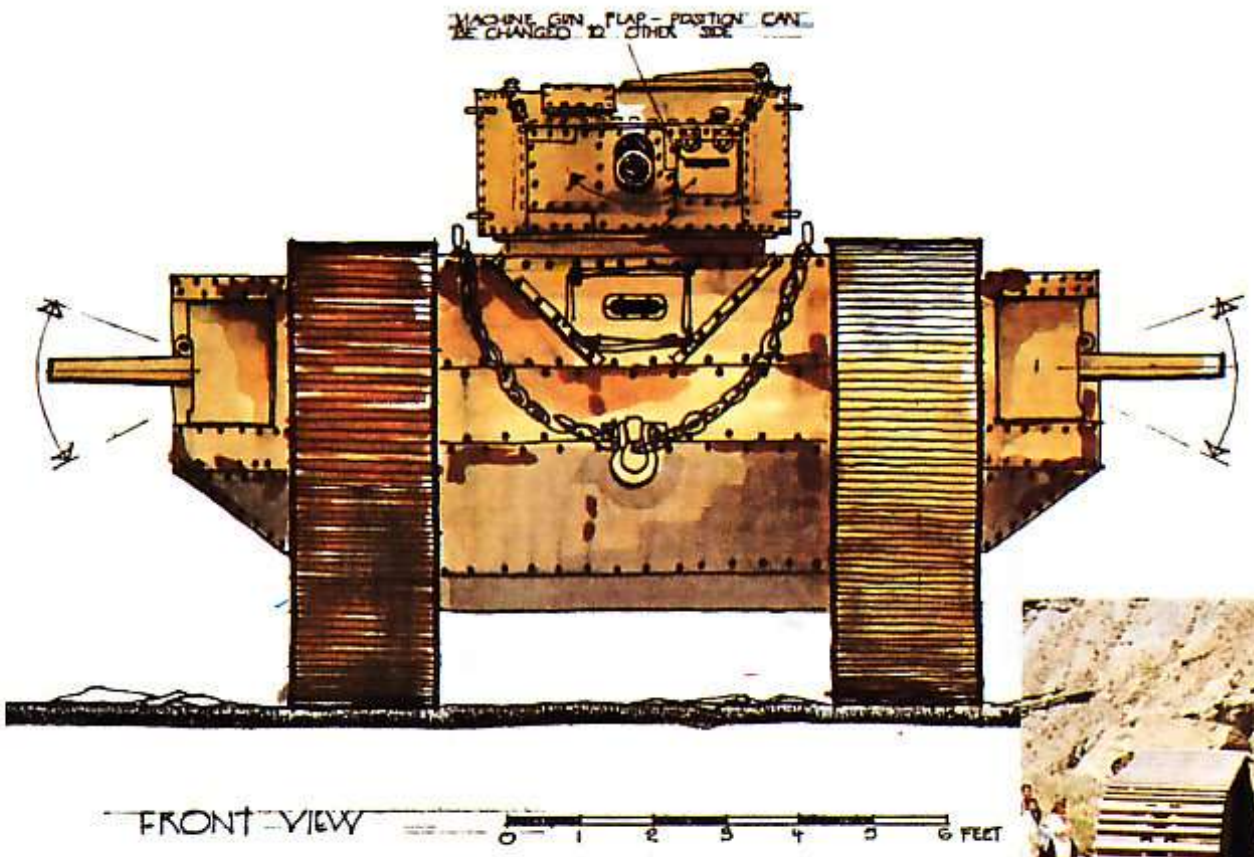
Tank, production illustration



Tank interior, maquette, 38 x 23 x 38 cm.



Tank, maquette, 55 x 29 x 12 cm.



Tank front view, production illustration

Rubber rocks, prop, 30 x 30 x 11 cm.

Tank, production photo

CHAMBER OF THE GRAIL

After penetrating all the obstacles in his path, Indiana arrives at the inner Grail temple where an ancient knight stands guard. But the evil Donovan has also followed Indy into the inner sanctum and, at gunpoint, demands the right to choose the Grail from among an array of chalices.

Donovan picks a glittering gold cup, dips it into a font of water, and drinks. Donovan instantly discovers he has selected the wrong chalice and is blown into eternity as he ages in seconds, his skeletal shape finally exploding into ash. The effect, tagged at ILM as "Donovan's Destruction," marked a technological breakthrough in effects work: it was the first shot completely composited in a computer and scanned back out to film. It also utilized the computer image processing technique of morphing developed for a transformation sequence in Lucasfilm's "Willow".

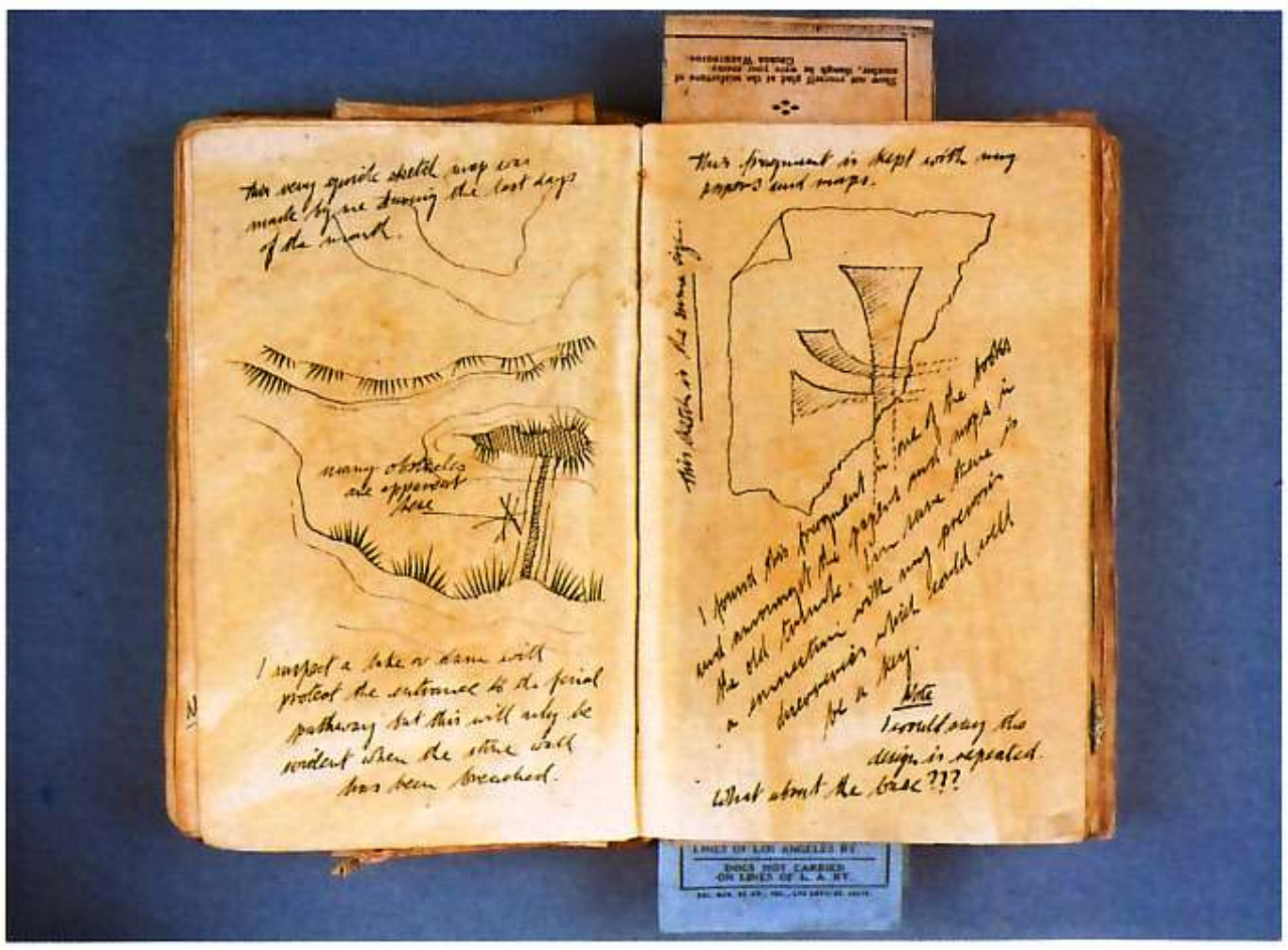
Spielberg had challenged the ILM effects team to show the scene without the usual cutaways during which an actor's physical transformation is traditionally advanced by makeup or other tricks. To create the effect, ILM created lifesize puppets representing various phases of deterioration. The images were then scanned into a computer where a computer graphics team processed them to seamlessly blend into each other.

Grail Knight's book, prop, 32 x 25 x 6 cm.

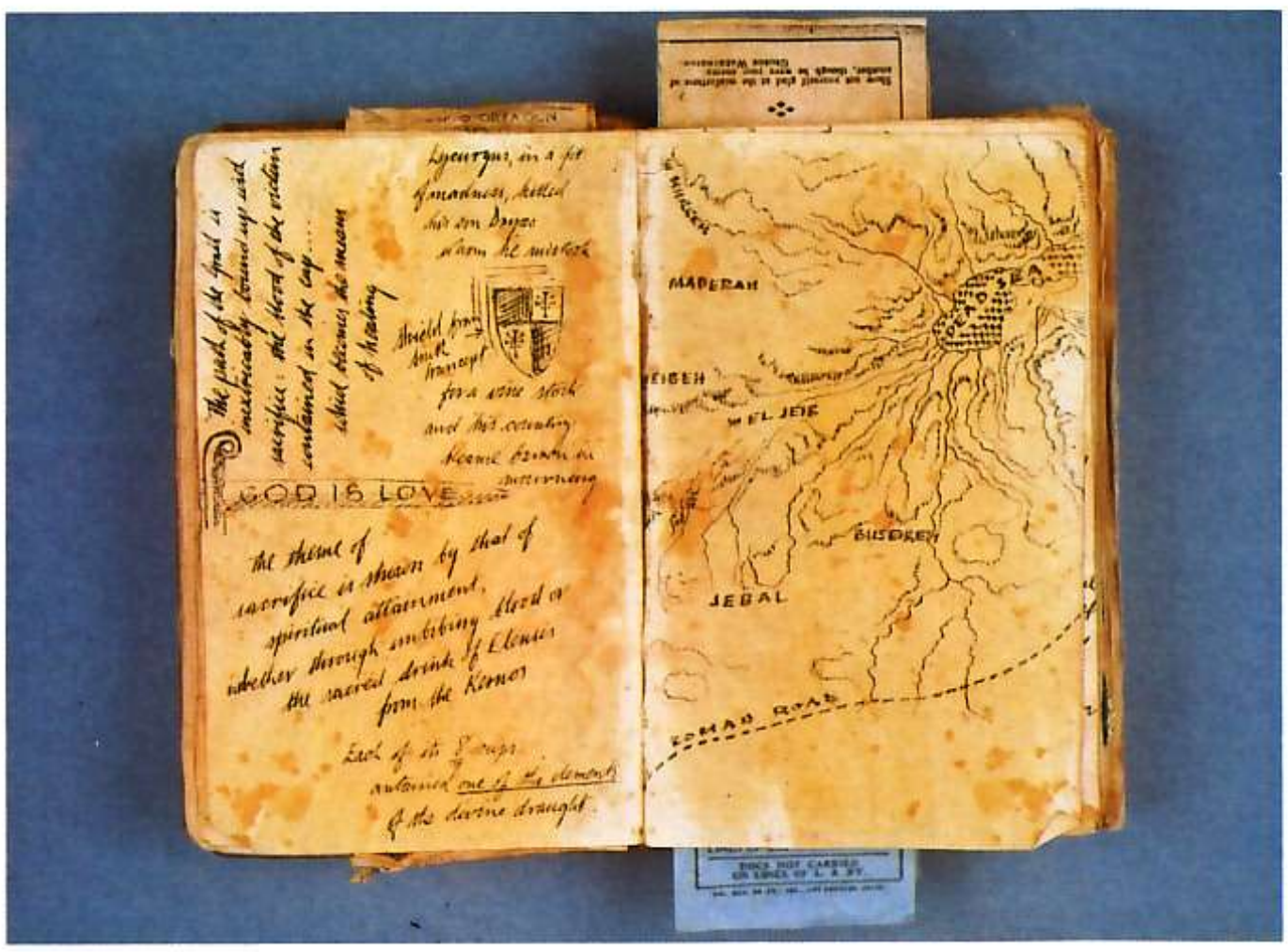
Inner Grail Temple, set design illustration

Inner Grail Temple, maquette, 50 x 23 x 38 cm.

Henry's Grail Diary, speculation on the spiritual properties of the Grail



Maps and other fragments of research leading to the Grail

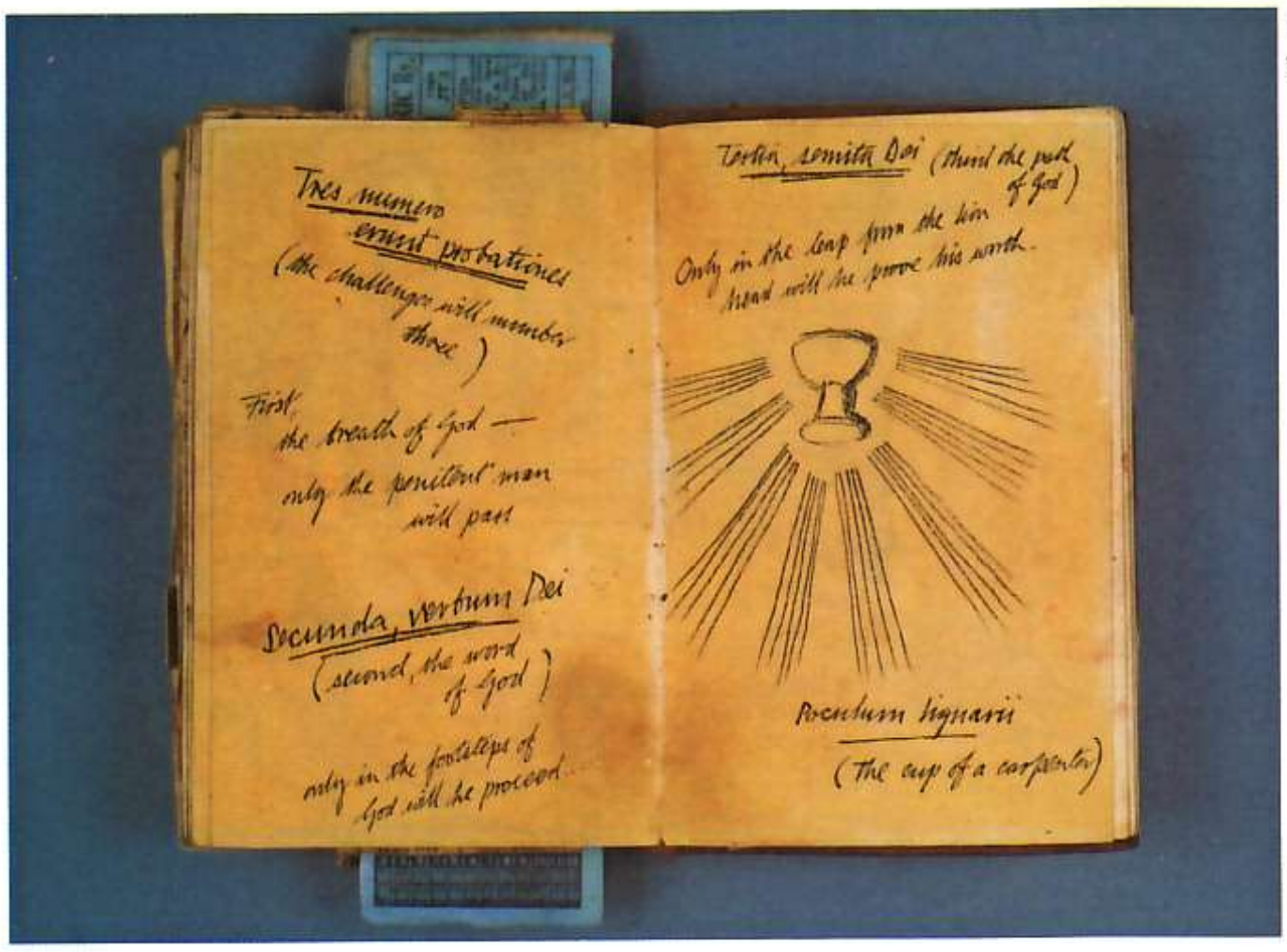


Maps and other fragments of research leading to the Grail

Henry's Grail Diary, research notes on the Grail's "promise of immortality"

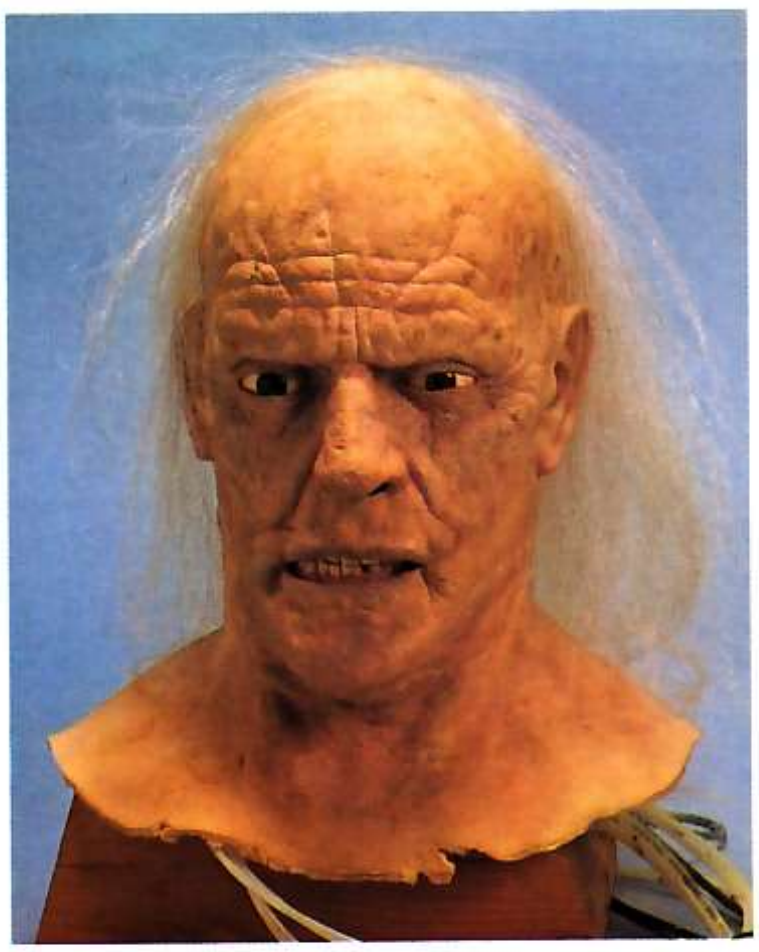
Research notes on the Grail's history and power

False Grail, prop, 15 x 15 x 21 cm.



Henry's Grail Diary, detailing the final three challanges of the Quest

Henry's Grail Diary, notes on Knights of Maltese tradition



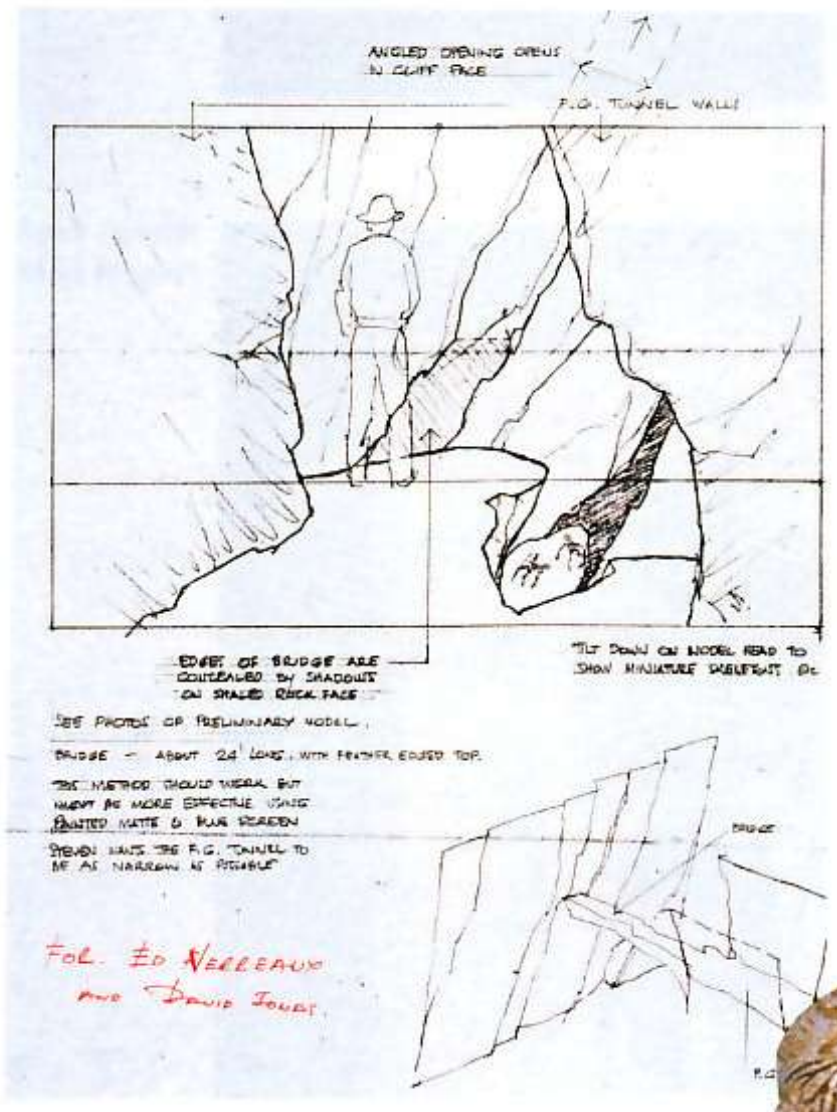
Donovan's Destruction, articulated puppets used in computer image processing sequence, 29 x 28 x 38 cm.

THE GRAIL

Unlike the doomed Donovan, Indy, whose heart and soul have been fortified by his quest for the Grail and his reunion with his father, selects the true Grail: a simple clay cup for the son of a humble carpenter. Indy uses the chalice's holy waters to heal the nearly fatal gunshot wound Henry has suffered from the Nazis. But Elsa, seduced by the magic of the Grail, tries to take it out of the temple confines against the warning of the guardian knight, causing the entire temple to shake and collapse.

At the movie's end Indiana and his father mount horses and ride off into the sunset, closing the third installment of the Indiana Jones trilogy. At the time of its release, the film was billed as the final Indiana Jones adventure that would be produced by the team of Lucas, Spielberg, and Ford. Only time will tell if Indiana Jones will ride again.

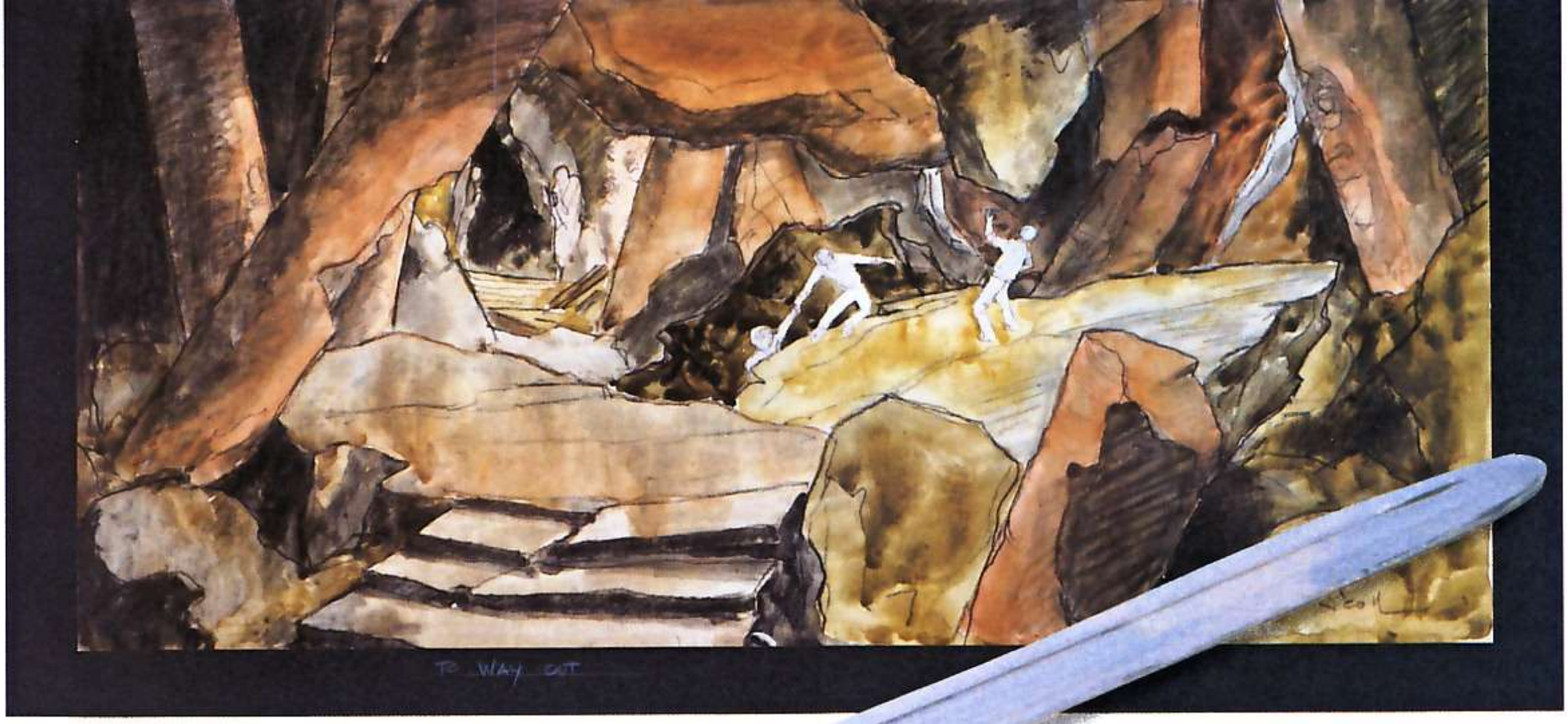
The Temple collapses, still from film



Indy faces the third challenge, storyboard

Grail Knight sword, prop, 99 x 20 x 3 cm.

Henry's Grail Diary, additional maps and clues to the location of the Grail



Outer Grail Temple collapsing, production illustration

Outer Grail Temple in ruins, maquette, 76 x 76 x 28 cm.

Henry's Grail Diary, information on the knight who guards the Grail

Holy Grail, prop, 11 x 11 x 15 cm.

FUTURE DREAMS

By 1989, when Indiana Jones was on his *Last Crusade,* the first ripples of the coming wave of computer image processing and graphics animation began to arrive.

Today at ILM, digital technologies have already replaced brush-and-oil matte painting and photochemical compositing. Traditional model making and creature work have lost a significant chunk of business to synthetically produced models, props, and creatures. There is even serious acknowledgment that celluloid film itself is coming to the end of its life span perhaps to be replaced by digital data.

For nearly a century moviemaking has been a machine-age craft, its production means involving machined tools, gears and sprockets, physical materials, photochemical processes. When Lucas named his ILM effects company in the mid-1970s he was acknowledging the "Industrial" realities. But two decades later, the digital era has dawned. In 1993, during a restructuring of his company, Lucas reorganized ILM under a new division—Lucas Digital Ltd.

The treasures in the Lucas Archives represent precious artifacts that document crafts that are vanishing or have been diminished. The Lucas Archives do hold a rare physical prop from the computer-image process: the turtle-to-lion transformation puppets of *Willow* that were filmed for use in the breakthrough computer-image processing technique of "morphing," the effect used in the Donovan's Destruction scene in *The Last Crusade.*

The digital breakthroughs have, in fact, made it possible for Lucas to resume the telling of the next *Star Wars* chapters, unencumbered by the expense and physical limits of the old industrial arts of moviemaking. But for fans of the movies there is pleasure in seeing the tangible artifacts that have been blown up bigger

Turtle-Lion transformation puppets, from computer morphing scene in *Willow*, 135 x 71 x 60 cm.

General Kael, costume headgear for *Willow*, 51 x 33 x 42 cm.

than life on thousands of movie screens. They are the collective product of hundreds of movie makers, each skilled in creating the stuff of movie magic. These treasures of Lucasfilm stored in the Archives helped build Lucas's success, helped him realize his dream of Skywalker Ranch.

The ranch has prospered since the closing of the *Star Wars* and Indiana Jones trilogies, with Lucas buying two more adjoining ranches, expanding his holding to more than 4,700 acres. The ranch has developed as a nearly self-contained community with its own fire department, security, and other services. It contains a small vineyard, a vegetable garden, and a few head of cattle graze in the fields. The buildings, which house everything from administrative offices to state-of-the-art sound recording facilities, are nestled out of sight from the main road. The buildings, each with its own name and period design, were built as if Lucas had renovated the existing structures of a century-old ranch. The Main House at Skywalker Ranch is a masterpiece of Victorian architecture. A flight up a central staircase, Lucas has his office. It is a work place, a dream chamber.

Howard's planet, matte painting from *Howard the Duck*, 191 x 119 cm.

Howard the Duck, costume from *Howard the Duck*, 38 x 36 x 109 cm.

Tucker Torpedo, production illustration from *Tucker: The Man and his Dreams*

From Skywalker Ranch, Lucas's native Modesto is only a few hours drive away, but it seems farther. In the harvesting of the years Lucas has created his own mythology and reinvented the way movies are made. Along the road he's kept his feet on the earth and his mind in the stars. As Steven Spielberg has observed: "Like his creation Luke Skywalker, George Lucas continues to look into the future and dream."

Main House, Skywalker Ranch, Marin County, California

CREDITS

THX 1138 (1971)
Executive Producer: Francis Ford Coppola
Producer: Lawrence Sturhahn
Director: George Lucas
Screenplay: George Lucas and Walter Murch
Story: George Lucas
Editor: George Lucas
Art Director: Michael Haller
Directors of Photography: Dave Meyers and Albert Kihn

American Graffiti (1973)
Director: George Lucas
Producer: Francis Ford Coppola
Co-Producer: Gary Kurtz
Writer: George Lucas, Gloria Katz, and Willard Huyck
Directors of Photography: Ron Eveslage and Jan D'Alquen
Visual Consultant: Haskell Wexler
Film Editors: Verna Fields and Marcia Lucas
Sound Montage and Re-Recording: Walter Murch
Casting: Fred Roos and Mike Fenton
Art Director: Dennis Clark
Costume Designer: Aggie Guerard Rodgers

Star Wars (1977)
Executive Producer: George Lucas
Writer and Director: George Lucas
Producer: Gary Kurtz
Production Designer: John Barry
Director of Photography: Gilbert Taylor, B.S.C.
Music: John Williams
Special Photographic Effects Supervisor: John Dykstra
Special Production and Mechanical Effects Supervisor: John Stears
Film Editors: Paul Hirsch, Marcia Lucas, and Richard Chew
Production Supervisor: Robert Watts
Production Illustration: Ralph McQuarrie
Costume Designer: John Mollo
Art Directors: Norman Reynolds and Leslie Dilley
Make-Up Supervisor: Stuart Freeborn
Special Dialogue and Sound Effects: Ben Burtt

Visual Effects Produced at Industrial Light and Magic
1st Cameraman: Richard Edlund
2nd Cameraman: Dennis Muren
Assistant Cameraman: Douglas Smith, Kenneth Ralston, and David Robman
2nd Unit Photography: Bruce Logan
Composite Optical Photography: Robert Blalack (PRAXIS)
Optical Photography Coordinator: Paul Roth
Optical Printer Operators: David Berry, David McCue, Richard Pecorella, Eldon Rickman, and James Van Trees, Jr.
Optical Camera Assistants: Caleb Aschkynazo, John C. Moulds, Bruce Nicholson, Gary Smith, Bert Terreri, Donna Tracy, Jim Wells, and Vicky Witt
Production Supervisor: George E. Mather
Matte Artist: P.S.Ellenshaw
Planet and Satellite Artist: Ralph McQuarrie
Effects Illustration and Design: Joseph Johnston
Additional Spacecraft Design: Colin Cantwell
Chief Model Maker: Grant McCune
Model Builders: David Beasley, Jon Erland, Lorne Peterson, Steve Gawley, Paul Huston, and David Jones
Animation and Rotoscope Design: Adam Beckett
Animators: Michael Ross, Peter Kuran, Jonathan Seay, Chris Casady, Lyn Gerry, and Diana Wilson
Stop Motion Animation: Jon Berg and Philip Tippet
Minature Explosions: Joe Viskocil and Greg Auer
Computer Animation and Graphic Displays: Dan O'Bannon, Larry Cuba, John Wash, Jay Teitzell and Image West
Film Control Coordinator: Mary M. Lind
Film Librarians: Cindy Isman, Connie McCrum and Pamela Malouf
Electronics Design: Aivah J. Miller
Special Components: James Shourt
Assistants: Masaaki Norihoro and Eleanor Porter
Camera and Mechanical Design: Don Trumbull, Richard Alexander, and William Shourt
Special Mechanical Equipment: Jerry Greenwood, Douglas Barnett, Stuart Ziff, and David Scott
Production Managers: Bob Shepherd and Lon Tinney
Production Staff: Patricia Rose Duignan, Mark Kline, Rhonda Peck and Ron Nathan
Assistant Editor (Opticals): Bruce Michael Green

The Empire Strikes Back (1980)
Executive Producer: George Lucas
Director: Irvin Kershner
Producer: Gary Kurtz
Screenplay: Leigh Brackett and Lawrence Kasdan
Story: George Lucas
Production Designer: Norman Reynolds
Director of Photography: Peter Suschitzky,B.S.C.
Editor: Paul Hirsch
Special Visual Effects: Brian Johnson and Richard Edlund
Associate Producers: Robert Watts and James Bloom
Music: John Williams
Design Consultant and Conceptual Artist: Ralph McQuarrie
Art Directors: Leslie Dilley, Harry Lang and Alan Tompkins
Set Decorator: Michael Ford
Make-Up and Special Creature Design: Stuart Freebom
Costume Designer: John Mollo
Property Master: Frand Bruton
Sound Design and Supervising Sound Effects Editor: Ben Burtt

Visual Effects Produced at Industrial Light and Magic
Effects Director of Photography: Dennis Muren
Effects Cameramen: Ken Ralston and Jim Veilleux
Camera Operators: Don Dow and Bill Neil
Assistant Cameramen: Selwyn Eddy, Jody Westheimer, Rick Fichter, Clint Palmer, Micheal McAlister, Paul Huston, Richard Fish and Chris Anderson
Optical Photography Supervisor: Bruce Nicholson
Optical Printer Operators: David Berry, Kenneth Smith, and Donald Clark
Optical Line-Up: Warren Franklin, Mark Vargo, Peter Amundson, Loring Doyle, Thomas Rosseter, Tam Pillsbury, and James Lim
Optical Coordinator: Laurie Vermont
Laboratory Technicians: Tim Geideman, Duncan Myers, and Ed Jones
Art Director-Visual Effects: Joe Johnston
Assistant Art Director: Nilo Rodis-Jamero
Stop Motion Animation: Jon Berg and Phil Tippett
Stop Motion Technicians: Tom St. Amand and Doug Beswick
Matte Painting Supervisor: Harrison Ellenshaw
Matte Artists: Ralph McQuarrie and Michael Pangrazio
Matte Photography: Neil Krepela
Additional Matte Photography: Michael Lawler
Matte Photography Assistants: Craig Barron and Robert Elswit
Chief Modelmaker: Lorne Peterson
Model Shop Foreman: Steve Gawley
Model Makers: Paul Huston, Tom Rudduck, Michael Fulmer, Samuel Zoltheis, Charles Bailey, Ease Owyeung, Scott Marshall, Marc Thorpe, Wesley Seeds, Dave Carson, Rob Gemmel, and Pat McClung
Animartion and Rotoscope Supervisor: Peter Kuran
Animators: Samuel Comstock, Garry Waller, John Van Vliet, Rick Taylor, Kim Knowlton, Chris Casady, Nina Saxon, and Diana Wilson
Visual Effects Editorial Supervisor: Conrad Buff
Effects Editor: Michael Kelly
Assistant Effects Editors: Arthur Repola and Howard Stein
Apprentice Editor: Jon Thaler
Production Administrator: Dick Gallegly
Production Secretary: Patricia Blau
Production Associate: Thomas Brown
Production Accountant: Ray Scalice
Assistant Accountants: Glenn Phillips, Pam Traas, and Laura Crockett
Production Assistant: Jenney Oznowicz
Transportation: Robert Martin
Still Photographer: Terry Chostner
Lab Assistant: Roberto McGrath
Electronics Systems Designer: Jerry Jeffress
Systems Programming: Kris Brown
Electronic Engineers: Lary Meyer, Mike MacKenzie, and Gary Leo
Special Project Coordinator: Stuart Ziff
Equipment Engineering Supervisor: Gene Whiteman
Design Engineer: Mike Bolles
Machinists: Udo Pampel and Greg Beaumonte
Draftsman: Ed Tennler
Special Projects: Gary Platek
Supervising Stage Technician: T.E.Moehnke
Stage Technicians: William Beck, Bobby Finley, Leo Loverro, Edward Hirsh, Dick Dova, Spah, and Ed Breed
Miniature Pyrotechnics: Joseph Viskocil, Dave Pier, and Thaine Morris
Optical Printer Component Manufacturer: George Randle Co.
Camera and Movement Design: Jim Beaumonte
Special Optics Designer: David Grafton
Special Optics Fabrication: J.L. Wood Optical Systems
Optical Printer Component Engineering: Fries Engineering
High Speed Camera Movements: Mitchell Camera Corp.
Ultra High Speed Camera: Bruce Hill Productions

Return of the Jedi (1983)
Executive Producer: George Lucas
Director: Richard Marquand
Producer: Howard Kazanjian
Screenplay: George Lucas and Lawrence Kasdan
Story: George Lucas
Co-Producers: Robert Watts and Jim Bloom
Production Designer: Norman Reynolds
Director of Photography: Alan Hume, B.S.C.
Editors: Sean Barton, Marcia Lucas, and Duwayne Dunham
Visual Effects: Richard Edlund, A.S.C., Dennis Muren, and Ken Ralston
Costume Designers: Aggie Guerard Rodgers and Nilo Rodis-Jamero
Mechanical Effects Supervision: Kit West
Make-Up and Creature Design: Phil Tippett and Stuart Freeborn
Sound Design: Ben Burtt
Music: John Wiliams

Visual Effects Produced at Industrial Light and Magic
Art Director-Visual Effects: Joe Johnston
Optical Photography Supervisor: Bruce Nicholson
General Manager, ILM: Tom Smith
Production Supervisor: Patricia Rose Duignan
Matte Painting Supervisor: Michael Pangrazio
Modelshop Supervisorz: Lorne Peterson and Steve Gawley
Animation Supervisor: James Keefer
Supervising Visual Effects Editor: Arthur Repola
Effects Cameramen: Don Dow, Micheal J. McAlister, Bill Neil, Scott Farrar, Selwyn Eddy III, Michael Owens, Robert Elswit, Rick Fichter, Stewart Barbee, Mark Gredell, and David Hardberger
Assistant Cameramen: Pat Sweeney, Kim Marks, Robert Hill, Ray Gilberti, Randy Johnson, Patric McArdle, Peter Daulton, Bessie Wiley, Maryan Evans, Toby Heindel, David Fincher, and Peter Romano
Production Coordinators: Warren Franklin and Laurie Vermont
Optical Printer Operators: John Ellis, David Berry, Knneth Smith, Donald Clark, Mark Vargo, and James Lim
Optical Line-Up: Tom Rosseter, Ed L. Jones, Ralph Gordon, and Philip Barberio
Lab Technicians: Tim Geideman, Duncan Myers, and Michael Moore
Production Illustrator: George Jenson
Matte Painting Artists: Chris Evans and Frank Ordaz
Matte Photography: Neil Krepela and Craig Barron
Stop Motion Animator: Tom St. Amand
Chief Modelmakers: Paul Huston, Charles Bailey, Michael Glenn Fulmer, and Ease Owyeung
Model Makers: William George, Marc Thorpe, Scott Marshall, Sean Casey, Larry Tan, Barbara Gallucci, Jeff Mann, Ira Keeler, Bill Beck, Mike Cochrane, Barbara Affonso, Bill Buttfield, Marghe McMahon, and Randy Ottenberg
Head Effects Animators: Garry Waller and Kimberly Knowlton
Effects Animators: Terry Windell, Renee Holt, Mike Lessa, Samuel Comstock, Rob La Duca, Annick Therrien, Suki Stern, and Margot Pipkin
Visual Effects Editors: Howard Stein, Peter Amundson, and Bill Kimberlin
Assistant Visual Effects Editors: Robert Chrisoulis, Michael Gleason, Jay Ignaszewski, and Joe Class
Supervising Stage Technician: Ted Moehnke
Stage Technicians: Patrick Fitzsimmons, Bob Finley III, Ed Hirsh, John McLeod, Peter Stolz, Dave Childers, Harold Cole, Merlin Ohm, Joe Fulmer, and Lance Brackett
Pyrotechnicians: Thaine Morris and Dave Pier
Supervisor-Still Photography: Terry Chostner
Still Photographers: Roberto McGrath and Kerry Nordquist
Electronic System Designers: Jerry Jeffress and Kris Brown
Electronic Engineers: Mike MacKenzie and Marty Brennais
Computer Graphics: William Reeves and Tom Duff
Equipment Engineering Supervisor: Gene Whiteman
Machinists: Udo Pampel and Conrad Bonderson
Apprentice Machinists: David Hanks and Chris Rand
Design Engineer: Mike Bolles
Equipment Support Staff: Wade Childress, Michael J. Smith, Cristi McCarthy, and Ed Tennler
Administrative Staff: Chrissie England, Laura Kaysen, Paula Karsh, Karen Ayers, Sonja Paulsen, and Karen Dube
Production Assistants: Susan Fritz-Monahan and Kathy Shine

Raiders of the Lost Ark (1981)
Executive Producers: George Lucas and Howard Kazanjian
Director: Steven Spielberg
Producer: Frank Marshall
Screenplay: Lawrence Kasdan
Story: George Lucas and Philip Kaufman
Music: John Williams
Editor: Michael Kahn, A.C.E.
Associate Producer: Robert Watts
Director of Photography: Douglas Slocombe
Production Designer: Norman Reynolds
Stunt Co-ordinator: Glenn Randall
Costume Designer: Deborah Nadoolman
Visual Effects Supervisor: Richard Edlund
Mechanical Effects Supervisor: Kit West
Production Illustrator: Ed Verreaux
Production Artists: Michael Lloyd and Ron Cobb
Sound Designer: Ben Burtt
Sound Effects Recording: Gary Summers
Recording Technician: Howie Hammerman
Research: Deborah Fine
Assistant to Mr. Lucas: Jane Bay

Visual Effects Produced at Industrial Light and Magic
Optical Photography Supervisor: Bruce Nicholson
Production Supervisor: Thomas Smith
Art Director-Visual Effects: Joe Johnston
Matte Painting Supervisor: Alan Maley
Visual Effects Editorial Supervisor: Conrad Buff
Production Co-ordinator: Patricia Blau
Production Associate: Miki Herman
Animation Supervisors: Samuel Comstock and Deitrich Friesen
Effects Cameraman: Jim Veilleux
Camera Operators: Bill Neil and Don Dow
Assistant Cameraman: Clint Palmer
Optical Printer Operators: David Berry, Kenneth Smith, and John Ellis
Optical Line-Up: Mark Vargo, Warren Franklin, and Tom Rosseter
Assistant Art Director: Nilo Rodis-Jamero
Illustrator: Ralph McQuarrie
Matte Artist: Michael Pangrazio
Matte Photography: Neil Krepela
Matte Photography Assistant: Craig Barron
Modelshop Foreman: Lorne Peterson
Model Makers: Steve Gawley, Mike Fulmer, Wesley Seeds, Paul Huston, Charlie Bailey, Sam Zoltheis, Marc Thorpe, Bruce Richardson, and Ease Owyeung
Animators: John Van Vliet, Kim Knowlton, Garry Waller, Loring Doyle, Scott Caple, Judy Elkins, Sylvia Keulen, and Scott Marshall
Assistant Effects Editors: Peter Amundson and Howard Stein
Assistant Film Editor: Duwayne Dunham
Production Co-ordinator: Laurie Vermont
Cloud Effects: Gary Platek
Special Make-Up Effects: Christopher Walas
Laboratory Technicians: Tim Geideman, Duncan Myers, and Ed Jones
Still Photographer: Terry Chostner
Administration Assistant: Chrissie England
Production Accountants: David Kakita, Shirley Lee, and Laura Kaysen
Still Lab Technicians: Roberto McGrath and Kerry Nordquist
Electronic Systems Designer: Jerry Jeffress
Computer Engineering: Kris Brown
Design Engineer: Mike Bolles
Electronics Engineer: Mike MacKenzie, Marty Brennais, and Gary Leo
Electronic Technicians: Cristi McCarthy, Bassie Wiley, and Melissa Cargill
Equipment Engineering Supervisor: Gene Whiteman
Machinist: Udo Pampel
Special Projects: Wade Childress
Supervising Stage Technician: T.E.Moehnke
Stage Technicians: William Beck, Dick Dova, Bobby Finley III, Edward Hirsh, Patrick Fitzsimmons, John McCleod, and Peter Stolz
Pyrotechnics: Thaine Morris
Ultra High Speed Camera: Bruce Hill Productions
Color Timer: Robert McMillian

legative Cutter: Brian Ralph
dditional Optical Effects: MGM Optical and Modern Film Effects

ndiana Jones and the Temple of Doom (1984)
xecutive Producers: George Lucas and Frank Marshall
irector: Steven Spielberg
roducer: Robert Watts
tory: George Lucas
creenplay: Willard Huyck and Gloria Katz
lusic: John Williams
ditor: Michael Kahn, A.C.E.
irector of Photography: Douglas Slocombe
roduction Designer: Elliot Scott
ostume Designer: Anthony Powell
ssociate Producer: Kathleen Kennedy
horeographer: Danny Daniels
ound Designer: Ben Burtt
isual Effects Supervisor: Dennis Muren
roduction Illustrators: Edward Verreaux and Andrew G. Probert
echanical Effects Supervisor: George Gibbs
esearch: Deborah Fine
ssistant to Mr. Lucas: Jane Bay

isual Effects Produced at Industrial Light and Magic
hief Visual Effects Cameraman: Mike McAlister
ptical Photography Supervisor: Bruce Nicholson
eneral Manager, ILM: Tom Smith
roduction Supervisor: Warren Franklin
latte Painting Supervisor: Michael Pangrazio
odelshop Supervisor: Lorne Peterson
top Motion Animator: Tom St. Amand
upervising Stage Technician: Patrick Fitzsimmons
nimation Supervisor: Charles Mullen
upervising Visual Effects Editor: Howard Stein
isual Effects Cameraman: Mike Owens
ssistant Cameraman: Kim Marks, Pat Sweeney, Randy Johnson, and Joe ulmer
roduction Coordinator: Arthur Repola
tage Coordinator: Edward Hirsh
ptical Camera Operators: John Ellis, David Berry, and Donald Clark
ptical Line-Up: Tom Rosseter, Ed Jones, and Peg Hunter
ab Technicians: Tim Geldeman, Jeff Doran, and Louis Rivera
ffects Creative Consultant: Phil Tippett
top Motion Technicians: David Sosalla, Randy Ottenberg, and Sean Cascy
latte Artists: Christopher Evans, Frank Ordaz, and Caroleen Green
latte Camera Supervisor: Craig Barron
latte Photography: David Fincher and Deborah Morgan
toryboard Artists: Stan Fleming and Phil Norwood
hief Model Makers: Paul Huston, Barbara Gallucci, Charlie Bailey, Ease wyeung, and Michael Fulmer
odel Makers: Wesley Seeds, Barbara Affonso, Larry Tan, Marc Thorpe, Scott larshall, Chuck Wiley, Pete Ronzani, Jeff Mann, Ira Keeler, Richard Davis, illiam George, and Mike Cochrane
ead Effects Animator: Bruce Walters
ffects Animators: Barbara Brennan, Jack Mongovan, Ellen Lichtwardt, Rebecca etrulli, Sean Turner, and Suki Stern
isual Effects Editor: Michael Gleason
ssistant Effects Editor: Michael Moore
dditional Photography: Rick Fichter
tage Technicians: Bob Finley III, Dick Dova, John McLeod, Dave Childers, arold Cole, Lance Brackett, Merlin Ohm, and Mike Speakman
iniature Pyrotechnics: Ted Moehnke, Peter Stolz, and Bob Finley Jr.
till Photography: Terry Chostner, Kerry Nordquist, and Roberto McGrath
ngineering: Michael MacKenzie, Wade Childress, Greg Beaumonte, Jerry effress, and Kris Brown
achine Shop: Udo Pampel and Christopher Rand
ocation Coordinator: Patty Blau
dministrative Staff: Chrissie England, Cheryl Durham, Susan Monahan, Paula arsh, Kathy Shine, Karen Ayers, Karen Dube, Ned Gorman, and Geoffrey de alois
ffects Processing: Monaco Labs
egative Cutters: Jack Hooper, Tom Hooper, and Gary Burritt
olor Timers: Jim Schurmann and Terry Claborn
itles and Additonal Optical Effects: Modern Film Effects
dditional Optical Line-Up: Jacques Protay

ndiana Jones and the Last Crusade (1989)
xecutive Producers: George Lucas and Frank Marshall
irector: Steven Spielberg
roducer: Robert Watts
creenplay: Jeffrey Boam
tory: George Lucas and Menno Meyjes
lusic: John Williams
ditor: Michael Kahn, A.C.E.
irector of Photography: Douglas Slocombe
roduction Designer: Elliot Scott
ostumes Designers: Anthony Powell and Joanna Johnston
ssociate Producer: Arthur Repola
ound Designer: Ben Burtt
isual Effects Supervisor: Micheal J. McAlister
tunt Co-ordinator: Vic Armstrong
esearch: Deborah Fine

isual Effects Produced at Industrial Light and Magic
isual Effects Producer: Patricia Blau
isual Effects Art Director: Steve Beck
ptical Photography Supervisor: John Ellis
isual Effects Editor: Michael Gleason
odel Shop Supervisor: Michael Fulmer
ake-up Effects Supervisor: Stephan Dupuis
latte Painting Supervisor: Mark Sullivan
nimation Supervisor: Wes Takahashi

Stage Managers: Ed Hirsh and Brad Jerrell
Camera Operators: Peter Daulton, Kim Marks, Patrick Sweeney, and Pat Turner
Camera Assistants: Sel Eddy, Ray Gilberti, David Hanks, and Jo Carson
Production Coordinator: Melissa Taylor
Optical Camera Operators: James Lim, Kenneth Smith, Jon Alexander, Don Clark, Jim Hagedom, and Tom Smith
Optical Lineup: Bruce Vechitto, Brad Kuehn, Peg Hunter, Lori Nelson, David Karpman, and Mike Cooper
Optical Processing: Tim Geideman and Bob Femley
Assistants Effects Editor: Terry Peck
Matte Photography: Wade Childress and Harry Walton
Matte Model Artist: Paul Huston
Matte Artist: Yusei Uesugi
Model Makers: Charlie Bailey, Blair Clark, Steve Gawley, Ira Keeler, Paul Kraus, Richard Miller, and Chuck Wiley
Donovan's Digital Compositing: Les Dittert, Doug Smythe, and Sandra Ford
Puppet Engineers: Kelly Lepkowsky, Marc Thorpe, Mike Jobe, and Don Bies
Make-Up and Clothing Effects: Lauren Vogt, Victoria Lewis, Lauren Wohl, Kim Smith, Steve Anderson, Ease Owyeung, and Annie Polland
Animation Camera Operators: Charlie Clavadetscher, Eric Swenson, and Bruce Walters
Animators: Sean Turner and Chris Green
Rotoscopers: Tom Bertino, Barbara Brennan, Joanne Hafner, Sandy Huston, Jack Mogovan, Ellen Mueller, Rebecca Petrulli, and Terry Sittig
Stage Technicians: Bill Barr, Dick Dova, Robert Finley Jr., Joe Fulmer, Dave Heron, Ross Lorente, and I.J.Van Perre Jr.
Production Assistant: Penny Runge

Willow (1988)
Executive Producer: George Lucas
Director: Ron Howard
Producer: Nigel Wooll
Story: George Lucas
Screenplay: Bob Dolman
Music: James Horner
Director of Photography: Adrian Biddle, B.S.C.
Production Designer: Allan Cameron
Associate Producer: Joe Johnston
Visual Effects Supervisors: Dennis Muren, Micheal McAlister, and Phil Tippett
Special Effects Supervisor: John Richardson
Costume Designer: Barbara Lane
Film Editors: Daniel Hanley and Michael Hill

Visual Effects Produced at Industrial Light and Magic
Optical Supervisors: Kenneth Smith, John Ellis, and Bruce Nicholson
Matte Painting Supervisor: Christopher Evans
Visual Effects Cameramen: Kim Marks and Harry Walton
Visual Effects Art Director: Dave Carson
Animation Supervisor: Wes Takahashi
Animation Camera Operators: John Knoll, Bruce Walters, Sandy Ford, and Charles Clavadetscher
Rotoscope Supervisor: Tom Bertino
Chief Visual Effects Editor: Michael Gleason
Unit Production Supervisor: Janet Mohler
Post Production Supervisor: Patricia Blau
Visual Effects Coordinators: Ned Gorman and Kim Bromley
Stage Manager: Ed Hirsh
Supervising Stage Technician: Pat Fitzsimmons
Special Creature Supervision: David Allen
Stop Motion Animator: Tom St. Amand
Visual Effects Editors: Michael Moore and Steve R. Moore
Visual Effects Camera Operators: Pete Kozachik and Terry Chostner, Peter Daulton, Pat Sweeney, Scott Farrar, and Marty Rosenberg
Camera Assistants: Pat McArdle, Robert Hill, Dave Hanks, Jo Carson, and David Hardberger
Optical Camera Operators: Donald Clark, James Lim, Jon Alexander, Selwyn Eddy, Patric Repola, and Keith Johnson
Optical Line-Up: Tom Rosseter, Brad Kuehn, Peg Hunter, Bruce Vecchitto, Ralph Gordon, Michael Sweeney, Mary Walter, Lori Nelson, and David Karpman
Optical Lab Technicians: Thomas J. Smith, Tim Geideman, and Robert Fernley
Director of Matte Photography: Craig Barron
Matte Painting Photography: Wade Childress, Randy Johnson, and Catherine Craig
Matte Artists: Michael Pangrazio, Caroleen Green, and Paul Swendsen
Lip Sync Animation: Available Light Ltd., Jhon T.Van Vliet, Katherine Kean, Michael Lessa, Joseph Thomas, Marti Julian, and Byron Werner
Model Shop Supervisor: Jeff Mann
Chief Model Makers: Paul Huston, Tad Krzanowski, Lorne Peterson, Jeff Olson, and Gordon Tait
Stop Motion Modelmakers: Blair Clark, Craig Davies, Sheila Duignan, Randy Dutra, Paula Lucchesi, Tamia Marg, and John A. Reed III
Modelmakers: Barbara Affonso, Rick Anderson, Jean Bolte, Eric Christensen, Tony Hudson, Paul Kraus, Claudia Mullaly, Randy Ottenberg, Ease Owyeung, Annie Polland, Wesley Seeds, Larry Tan, and Jeff Wilkins
Animators: John Armstrong, Gordon Baker, Tim Berglund, Christopher Green, Nick Stern, Sean Turner, and January R. Nordman
Rotoscopers: Barbara Brennan, Ellen Ferguson, Sandy Houston, Rebecca Petrulli, Kevin Richardson, Terry Sittig, Margot Hale, Krist-Ann Pehrson, Peter Albrecht, and Carolyn Rendu
Computer Graphics Supervisors: Douglas Scott Kay and George Joblove
Computer Graphics: Doug Smythe, Jonathan P. Luskin, Lincoln Hu, and Les Dittert
Stage Technicians: William Barr, Lance Brackett, Robert Finley III, Timothy Morgan, Buck O'Hara, Michael Olague, and Dick Dova Spah
Pyro Technicians: Robert Finley Jr., and Peter Stolz
Still Photographers: Kerry Nordquist and Sean Casey
Assistant Visual Effects Editors: Ray Gilberti, Terry Peck, Louis Rivera, Roberto McGrath, Michael McGovern, and Dave Lowery
Storyboard Artist: Dave Lowery
Conceptual Artists: Richard Van Der Wende and John Bell
Animation Coordinator: Paul Lucas
Production Assistants: Melissa Taylor and Roni McKinley

Optical Coordinator: Jennifer Walters
Titles and Optical Effects: Ray Mercer and Company
Additional Optical Printing: Hollywood Optical Systems, Inc., Lookout Moutain Films, and Pacific Title
Additional Optical Effects: Visual Concepts Engineering

Howard the Duck (1986)
Executive Producer: George Lucas
Director: Willard Huyck
Producer: Gloria Katz
Co-Producer: Robert Latham Brown
Screenplay: Willard Huyck and Gloria Katz, Based on the character created by Steve Gerber
Director of Photography: Richard H. Kline, A.S.C.
Production Designer: Peter Jamison
Editors: Michael Chandler and Sidney Wolinsky
Music: John Barry
Producer of Original Songs: Thomas Dolby
Costume Designer: Joe Tompkins
Associate Producer: Ian Bryce
Visual Effects Supervisor: Micheal J. McAlister
Visual Effects Art Director: Phillip Norwood
Duck Designer: Nilo Rodis-Jamero
Duck Coach: Miles Chapin
Sound Designer: Randy Thom

Visual Effects Produced at Industrial Light and Magic
Animation Supervisor: Ellen Lichtwardt
Alien Monster Designer: Phil Tippett
Stop Motion Supervisors: Phil Tippett and Harry Walton
Visual Effects Editor: Howard Stein
Optical Supervision: Dave McCue
Model Shop Supervisor: Ease Owyeung
Matte Painting Supervisor: Frank Ordaz
Visual Effects Coordinator: Chrissie England
General Manager, ILM: Warren Franklin
Production Managers: Ed Hirsh and Charlie Mullen
Visual Effects Cameramen: Pat Sweeney, Pat Turner, Michael Owens, Peter Daulton, Pete Kozachik, and Caris Palm
Visual Effects Animators: John Armstrong, Gordon Baker, Chuck Eyler, Nick Stern, and Sean Turner
Animation Camera Effects: Rob Burton and John Alexander
Rotoscope: Jack Mongovan, Barbara Brennan, Tom Bertino, Cindy Reid, Joanne Hafner, Sandy Huston, Peter Albrecht, Ellen Ferguson, and Donna Baker
Stop Motion Photography: Terry Chostner and Patrick McArdle
Stop Motion Animation: Tom St. Amand
Stop Motion Construction: Randy Dutra, Tamia Marg, and Sheila Duignan
Optical Consultants: Bruce Nicholson, John Ellis, and Kenneth Smith
Optical Camera Operators: James Lim, James Hagedorn, and Donald Clark
Optical Line-Up: Ralph Gordon, Peg Hunter, Ed Jones, Tom Rosseter, and Bruce Vecchitto
Lab Technicians: Jeff Doran, Tim Geideman, and Louis Rivera
Chief Modelmaker: Bill George
Modelmakers: Barbara Affonso, Kirk Amidano, Chris Hammond, Jeffrey Olsen, Randy Ottenberg, Susan Ross, Wesley Seeds, and Chuck Wiley
Matte Artists: Caroleen Green, Sean Joyce, and Richard Van Der Wende
Matte Photography: Wade Childress
Assistant Editors: Kim Costalupes and Terrence Peck
Stage Technicians: Dick Dova Spah, Brad Jerrell, and Joe Fulmer
Miniature Pyrotechnics: Peter Stolz
Still Photographers: Kerry Nordquist and Roberto McGrath
Production Assistants: Ned Gorman, Lori Nelson, Sandy Ford, and Karen Dube
Engineers: Greg Beaumont, Lanny Cermak, and Mike MacKenzie
Machine Shop: Udo Pampel and Vince Tilker
Production Accoutants: Cheryl Durham, Pam Kaye, and Jodi Muggenthaler
ILM Creature Shop Manager: Charlie Bailey
Animatronic Design Supervisor: Eben Stremquist
Mold Design Supervisor: Sean Casey
Coordinator: Mark S. Miller
Animatronic Designers: Tad Krzanowski, Mark Setrakian, Nicholas J. Esposto, Jeffrey Wilkins, Marc Thorpe, Ease Owyeung, Rodney Morgan, and Thomas M. Grimm
Location Animatronics: Tim Gillett, Scott McNamara, Dave "Chuck" Johnson
Location Make-Up and Feathers: Lauren Vogt
Painter: Laurel Lichten
Mold Makers: John Reed, Chris Goehe, and Anthony Hudson
Foam Latex Technician: Sean McCormick
Sculptor: Richard Miller
Featherers: Stacy Raven, Mary-Curtis Ratcliff, Lynn Gustafson, Victoria Lewis, Nicole Cavallero, Shelly Stevens, Lisa Lamerdin, and Milo Coates
Consulting Designer: Dave Sosalla
Duck World Ducks Creator: Tim Lawrence
Wigs Creator: Bill Brewer
Artisans: Robert Cooper and Jay Davis
Production Buyers: Paula Karsh, Bob Fernley, and Kitt Stevens

Tucker-The Man and His Dream (1988)
Executive Producer: George Lucas
Director: Francis Ford Coppola
Producer: Fred Roos and Fred Fuchs
Screenplay: Arnold Schulman and David Seidler
Director of Photography: Vittorio Storaro (AIC)
Production Designer: Dean Tavoularis
Costume Designer: Milena Canonero
Music: Joe Jackson
Editor: Priscilla Nedd
Sound Designer: Richard Beggs
Associate Producer: Teri Fettis
Art Director: Alex Tavoularis

Acknowledgments

Thanks and salutations to the Lucasfilm folks whose dedication made this book possible, particularly Howard Roffman, Lucy Autrey Wilson, Allan Kausch, and Deborah Fine (with a tip of the hat to Donald Bies at the archives). The support and enthusiasm of Chronicle Books helped make the journey to print straight and true, especially the editorial work of associate editor Charlotte Stone and copy editor Jeff Campbell. Invaluable historical insights were also provided by some of the great effects artists who contributed to the era of movie magic this book documents: Ralph McQuarrie (production design and matte painting), Lorne Peterson (model shop), Phil Tippett (creature shop), and Craig Barron (matte painting department). And to George Lucas—thanks for the thrills. May the Force be with you all!

Lucasfilm would like to acknowledge two individuals in particular, whose contributions to the archive deserve special mention.

David Craig, our first archivist, began the task in 1983 of photographing and documenting the artifacts, and from 1983 to 1988 coordinated several exhibits and character appearances in California, Washington, D.C., and Japan. He administered our first consolidation of the artifacts and gave the archive a firm footing for the future.

Donald Bies, our archivist since 1988, coordinated the two largest projects undertaken between 1989 and 1994—the move into the new Archive building and the George Lucas Exhibition in Japan. Both these projects were a major challenge and included the restoration of many of the models. In addition he has worked on smaller exhibits and special programs featuring live appearances by the cast of *Star Wars* characters, which have been held around the world. We want to thank Don for his enormous contribution and dedicated effort the past few years.

A long time ago, there existed a galaxy far, far away, spinning round in the imaginations of a small group of dedicated and talented individuals led by a master creator – George Lucas. Their dream was to turn their imaginary galaxy into reality, and this book examines the tools of their amazing trade, showing how concept sketches and storyboards were turned into costumes, models, masks, dioramas and movie magic.

From *Star Wars* to *Return of the Jedi* and *Raiders of the Lost Ark* to *Indiana Jones and the Last Crusade*, here is the very best of the Lucasfilm Archives.

ISBN 1-85227-587-1