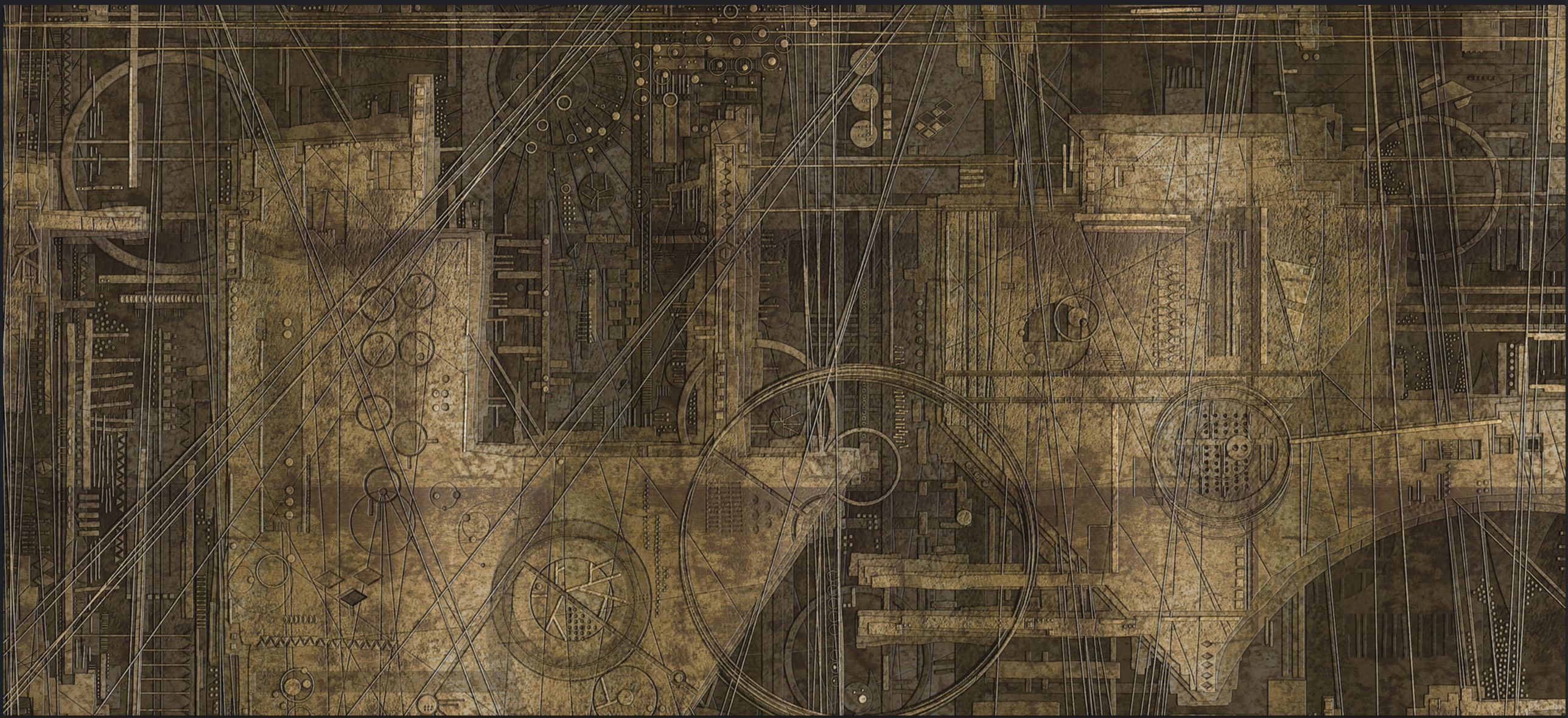
THE ART AND SOUL OF

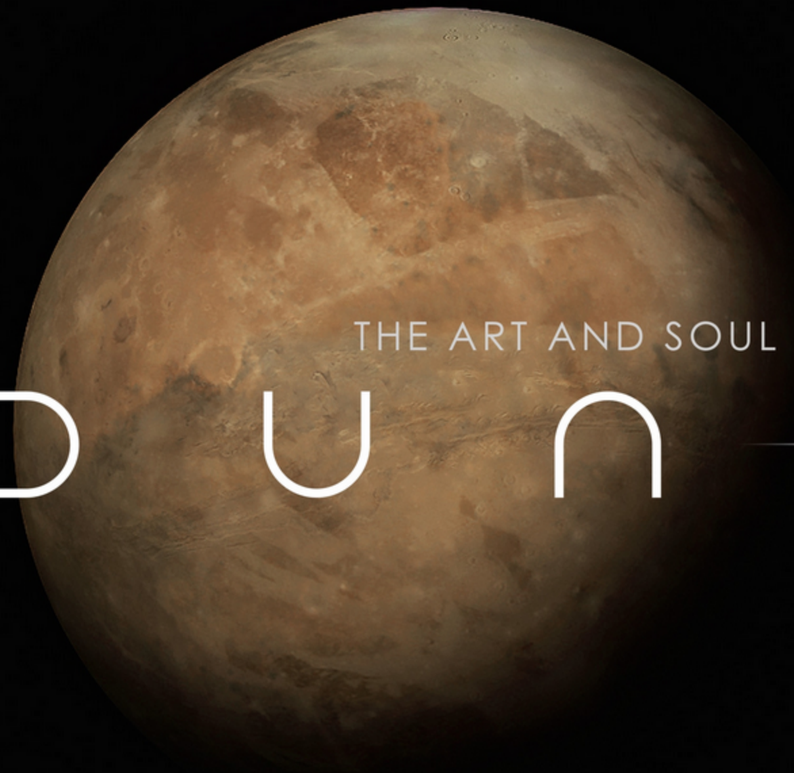
DUNE

TANYA LAPOINTE

FOREWORD BY
DENIS VILLENEUVE

INTRODUCTION BY
BRIAN HERBERT AND KEVIN J. ANDERSON





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FOREWORD

BY DENIS VILLENEUVE

PAGE 1 Concept art depicts Arrakis from space.

PAGES 2–3 In the deserts of Arrakis, a wormrider takes control of a sandworm in this conceptual piece.

PAGES 4–5 A concept illustration of a spice harvester on Arrakis.

PAGES 6–7 Concept art showing two Harkonnen ornithopters flying across the surface of the desert.

OPPOSITE Filmmaker Denis Villeneuve.

THE DESERT INSPIRES a deep sensation of isolation in one's heart. It provokes inevitable introspection. Like a microscope, the desert magnifies our existential fears. Stripped down from any social construction, and in direct contact with the vertigo of the infinity of space and time, we are left naked. The desert brings us back hypnotically to our very own human condition. It induces joy, humility, melancholia, and sometimes a barren terror. That exact feeling of isolation is what sparked the inspiration for *Dune*'s production design.

I immediately knew that production designer Patrice Vermette would be the perfect artist for the task. His immense appetite for exploring new creative territories made him an obvious choice. I needed his wild visions and fierce passion, but also his beautiful sensibility. I was convinced that Patrice would understand what I was aiming for. I also knew that he would be artistically crazy enough to find a way to reach the edge of the mirage.

When Frank Herbert wrote *Dune* in 1965, he was walking in unknown landscapes far into the future. Decades later, Patrice had to follow the same path in order to visualize what the author had imagined in his novel. I knew Patrice would help me create worlds we had never seen before and bring to the screen the images we all had envisioned in our minds when reading the book.

It was important for me that *Dune* fans recognize Frank Herbert's description of this universe, or, at a minimum, feel a deep connection with the spirit of the book. We tried to be as faithful to it as possible, but we may have strayed from the boundaries of the novel at times, an impulse of pure love for the original material. Adapting a story for the big screen requires transformation. It is a necessity. To faithfully adapt the poetry and the essence of someone else's work, you sometimes need to betray some aspects of it, and then, make peace with those decisions to survive creatively. Once you start crossing the desert, you can't stop. You must move forward.

I kept Frank Herbert's words very close to me as I designed and filmed this movie. Without his words, I would never have found my way through these scorched visions.

Please, enjoy the work of Patrice and all the artists who worked with us.

INTRODUCTION

BY BRIAN HERBERT AND KEVIN J. ANDERSON

IN 1957, FRANK HERBERT chartered a small plane and flew to the sand dunes on the Oregon coast to write a magazine article about a research project conducted by the U.S. Department of Agriculture. The USDA had developed a way to stabilize sand formations, planting poverty grasses on the crests of dunes to keep them from traveling and inundating roads and buildings. He intended to call the article "They Stopped the Moving Sands."

When he returned home and began work on the article, he realized he had something much bigger than a magazine piece. During the flight he had felt an emotional pull as he gazed down on sand dunes that were like the waves of a great sea. Sitting at his typewriter, he closed his eyes and envisioned a vast desert planet. And he beheld a desert messiah like the Mahdi on horseback, with a ragtag army on horse and camel, thundering across the desert. This leader was charismatic, capable of inspiring fanatical loyalty among his people.

Gradually these images became larger and more expansive in Frank Herbert's mind, and he created an entire universe of exotic planets. The desert world would be the most important of all, containing a finite resource—the spice melange—that the Imperial government and intergalactic businesses needed, and fought wars to control.

A story like that would require a very big canvas.

Frank Herbert saw a movie of *Dune* before anyone else did—an epic cinematic event that played out in his head; a fantastic, messianic vision that he then crafted into arguably the most revered science fiction novel of all time.

Frank Herbert had a lifelong love of cameras and photography. He worked in the newspaper business as a feature writer, wine editor, and professional photographer, usually for Hearst papers on the West Coast. Years later, when coaching his elder son, Brian, in the writing profession, he told him that he liked to write descriptive passages as if peering through the lens of a camera, describing what he saw.

As an example, he pointed to how he introduced the evil Baron Vladimir Harkonnen in *Dune*, beginning in the shadows of a windowless room where "a fat hand that glittered with rings" spins a globe that depicts an unknown world. Moment by moment, the view expands, but not visually. The author goes first to the voice: "A chuckle sounded beside the globe. A basso voice rumbled out of the chuckle . . ."

Still without revealing the Baron's full appearance, Frank Herbert has the vile man scheming against the noble Duke Leto and House Atreides, in a rumbling, growling, cold voice—a murderous demeanor that frightens and intimidates the others in the room, Piter de Vries and Feyd-Rautha Harkonnen. The Baron moves but is still not clearly seen. Instead, he "stirred beside the globe, a shadow among shadows."

Throughout the chapter, the author slowly reveals more and more to the reader, like the aperture of a camera lens opening gradually. After 3,000 words of suspense, the Baron is finally described: "As he emerged from the shadows, his figure took on dimension—grossly and immensely fat. And with subtle bulges beneath folds of his dark robes to reveal that all this fat was sustained partly by portable suspensors harnessed to his flesh."

Dune is an exceptionally vivid, intricate, and well-developed story filled with innovative ideas and incredibly exotic settings. Every person who reads the classic novel sees their own movie, envisioning and casting their own Paul Muad'Dib, Duke Leto Atreides, Lady Jessica, the Baron Harkonnen, Beast Rabban, Duncan Idaho, Gurney Halleck, Thufir Hawat . . .

Other filmmakers have brought their own interpretation of *Dune* to the screen—David Lynch's 1984 movie and John Harrison's later TV miniseries. Other directors preceded them, on projects that reached varying stages of development, without making it to the screen. All of these directors were Paul's predecessors, willing to step out onto the blistering-hot sands of the planet Dune—a very big test of directorial skills, indeed.

Brian has clear memories of being in the Herbert household during the initial creation of *Dune*. He recalls hearing his father read a passage to Brian's mother about a young man named Paul Atreides, forced to

put his hand into a mysterious box while an old woman, the Reverend Mother Gaius Helen Mohiam, holds a poison needle to his neck.

Listening, Brian was transfixed by the drama of the scene and the strange words—gom jabbar, Muad'Dib, the Padishah Emperor, Kwisatz Haderach, Arrakis, Bene Gesserit. He was intoxicated by the throaty, mysterious resonance of words and names as they rolled off his father's tongue in his sonorous, powerful voice.

Brian realized much later that he had been listening in on the opening chapter of *Dune*.

The story of *Dune* continues to be enjoyed and revered throughout the world more than half a century after its publication. And it's about to receive an even wider audience.

For Legendary Pictures, filmmaker Denis Villeneuve has taken on the daunting challenge of directing the definitive version of Frank Herbert's masterpiece. Villeneuve's two previous forays into science fiction —*Arrival* (2016) and *Blade Runner 2049* (2017)—were visual extravaganzas with imaginative palettes. Now, with *Dune*, he has his crowning achievement, a major motion picture that will not disappoint even the most die-hard Frank Herbert fans.

Any film adaptation of Dune draws upon an expansive foundation of the ideas and descriptions laid down in Frank Herbert's fantastic universe. The Dune canon has given Villeneuve an extensive array of source material, from Frank Herbert's original novel as well as its five sequels, *Dune Messiah*, *Children of Dune*, *God Emperor of Dune*, *Heretics of Dune*, and *Chapterhouse: Dune*—novels that together comprise over a million words and span more than five millennia of history.

Beyond those original books, together we have written many international best-selling novels that expand on Dune's history and its characters, ranging from the deep origin stories of the Butlerian Jihad and the founding of the Great Schools ten thousand years before *Dune* to the grand finale five millennia afterward. Our sequels and prequels, adding millions of words to the Dune saga, fill in the backstory of Duke Leto and his original clashes with the vile Baron Harkonnen, as well as Leto's touching romance with Jessica, the birth of Paul, and Princess Irulan's extensive work to chronicle the life of Paul Muad'Dib, rewriting history to create a legend.

From *Dune*'s original publication in 1965 to the release of *Children of Dune* in 1976—the first science fiction novel to appear on the *New York Times* best seller list—as well as the last twenty years of our expansion novels, the audience has grown tremendously. And the world has changed, making *Dune* more topical and thought-provoking than ever before.

The world eagerly awaits Denis Villeneuve's vision for *Dune*. This book, *The Art and Soul of Dune*, will provide you with a fascinating view behind the scenes.

PAGES 10–11 Concept art depicting the ducal cemetery on Caladan.

BELOW Brian Herbert on the set of *Dune* with Denis Villeneuve.

OPPOSITE Frank Herbert portrait by Gregory Manchess.

THIS IS ONLY THE BEGINNING

"*Dune*'s plot is just as sophisticated and complex as the process of making a movie."

ONE OF MY FAVORITE quotes from Frank Herbert's *Dune* is "plans within plans." It not only sums up the complexity and density of the novel's storyline, but also accurately describes the filmmaking process. Like Russian matryoshka dolls, there are unseen components that go into the making of a movie. You never know how many there are until you start taking them apart.

As executive producer on *Dune*, I was involved in all production meetings and artistic decisions. My first priority was to bring director Denis Villeneuve's vision to life. The French-Canadian filmmaker and I have been working together in sickness and in health for the past five years, first on *Arrival* (2016), then *Blade Runner 2049* (2017), and now *Dune*. I've had a front-row seat to his creative process and have witnessed time and time again his determination to make fresh, intelligent, and relatable science fiction movies.

Adapting Frank Herbert's novel was always going to be a gargantuan task. You already know this if you've read the 1965 masterpiece.

Dune tells the story of Paul Atreides, born and raised on the lush planet of Caladan by his father, Duke Leto Atreides, and his mother, Lady Jessica, a member of the bloodline-controlling Bene Gesserit Sisterhood. The young heir's peaceful life is turned upside down when the Emperor, ruler of the Imperium, relocates House Atreides to a desert planet called Arrakis, also referred to as Dune. This world is the only place in the known universe where one can find and harvest spice, a psychoactive drug that provides the foresight required for space travel. The spice trade of the Imperium is comparable to the oil industry of our world.

For the past eighty years, Arrakis has been controlled by the ruthless House Harkonnen, a position that has made the family very rich. Baron Vladimir Harkonnen, a man as corpulent as he is cruel, is not happy to see the planet go to the Atreides, his archenemies. Revenge is brewing. Meanwhile, a local society of fierce desert warriors known as Fremen are calling Paul the Lisan al-Gaib, which means "the Voice from the Outer World"—a reference to legends and superstitions planted by the Bene Gesserit ages ago. According to these beliefs, young Paul is a savior who will lead the Fremen to salvation. When the boy experiences his first spice vision, he starts thinking the prophecy may be true. Duke Leto attempts to form an alliance with the Fremen, but it's too late: House Harkonnen strikes, decimating House Atreides with the help of the Emperor, who was in on the plan from the start. Paul and Jessica escape the enemy, fleeing into the Deep Desert, where a new journey begins with the Fremen.

PAGES 14–15 The Bene Gesserit sisters arrive on Caladan in this concept piece.

OPPOSITE Director Denis Villeneuve on the set of *Dune*.

TOP Executive producer and author Tanya Lapointe discusses a scene with Denis.

BOTTOM Denis with actor Timothée Chalamet and director of photography Greig Fraser after wrapping the shoot in Norway.

TOP LEFT Storyboard artist Darryl Henley working with Denis.

TOP RIGHT Storyboard and concept designer Sam Hudecki.

CENTER RIGHT Stuart Heath of BGI Supplies and production designer Patrice Vermette discussing the ornithopter design with Denis.

Plans within plans indeed. *Dune*'s plot is just as sophisticated and complex as the process of making a movie of this scope.

A LIFELONG DREAM

The birth of this film has a serendipitous quality. It all started at the Venice Film Festival in September 2016. During a press interview for his new movie, *Arrival*, Denis told a reporter that his lifelong dream was to adapt Frank Herbert's *Dune*. The statement did not go unnoticed and was soon picked up by several news outlets. The sudden interest this news story generated got us talking about the book. This is what he told me at the time:

> *Dune* is a sublime novel, a great book. It is a very difficult story to adapt because it's an epic science fiction drama, filled with complex themes.

When I was a teenager, I was obsessed with it. I read all the books. I had *The Dune Encyclopedia* at home. My graduation ring had the word Muad'Dib engraved inside, and there were even Dune quotes in my yearbook. I loved it.

The central themes of the novel are a cross between religion and politics. The book has had a huge influence on popular culture, and on me as a filmmaker.

You can see the *Dune* inspiration in *Blade Runner 2049*, more specifically in Niander Wallace's office with its scale, style, and color. I would love to shoot *Dune* in the middle of the desert. Deserts just so happen to be my favorite places in the world.

Within two and a half years, Denis's lifelong dream would become a reality.

THE UNEXPECTED

We soon learned that Denis's passion for *Dune* had come to the attention of the very people who were trying to obtain the rights to the book.

Producers Mary Parent and Cale Boyter were both fans of Frank Herbert's original novel and had started pursuing the rights to the book years before they joined Legendary Entertainment as vice chair of worldwide production and executive vice president, creative affairs, respectively.

"I felt that it was an incredibly relevant story despite the fact that it was written in the '60s," says Mary. "Thematically, it describes challenges we are currently facing as a society with an ecologically bankrupt world, corruption, and shifting political sands. At the center of these themes is the coming-of-age story of a young man trying to navigate our new world."

Conversations with the Herbert Estate began in 2012. "We started the odyssey to chase down the rights," recalls Cale. "When we arrived at Legendary in 2016, it allowed us to be on the front lines and make it a priority to produce the movie."

For several years, the Frank Herbert Estate —managed by Frank Herbert's eldest son, Brian Herbert, and two of Frank Herbert's grandchildren, Byron Merritt and Kim Herbert—was pursued by major studios for the film rights to *Dune*.

In February of 2015, Brian and his wife, Jan, traveled to Los Angeles to meet with Legendary Pictures. "The meeting went very well," recalls Brian, "but other studios were interested, too, and the Estate had an important decision to make, one that would play a pivotal role in the future of Dune as a franchise." In September the following year, when Denis expressed his lifelong desire to direct a movie based on the novel, the Herbert Estate was intrigued.

TOP LEFT Denis Villeneuve in conversation with editor Joe Walker on the set in Budapest.

CENTER LEFT Visual effects supervisor Paul Lambert on set in the United Arab Emirates desert.

TOP RIGHT The crew setting up lights and rain effects for the Bene Gesserit arrival scene.

"We decided not to contact him directly because we were not yet working through a studio," explains Brian.

In November 2016, Legendary Pictures and the Herbert Estate came to an agreement, and the studio optioned the film rights. The Estate executives—Brian, Byron, and Kim—became executive producers on the new film project, while Kevin J. Anderson, Brian's writing partner, became creative advisor. "We made recommendations about maintaining the Dune canon that Frank Herbert established," says Brian. "These were essential, considering the demands of discriminating Dune fans."

After the deal was closed, Mary called Denis's agent, and a week later the director was sitting in her office. "He got emotional saying he couldn't believe he was sitting there," says Cale, who also attended that meeting.

"We couldn't believe it either," adds Mary. "It took years to get the rights, then fifteen minutes to get the director. That's never happened before."

It was obvious during this initial conversation that everyone in the room shared the same vision for a new cinematic adaptation of Frank Herbert's novel. After the meeting, Mary contacted Brian Herbert, who, along with his team, wholeheartedly agreed with the choice of director. Shortly thereafter, Denis was confirmed to direct the film. It was the first step on a long journey to bring the story of Paul Atreides to life. "We knew going in that the bar was high, and it was a challenging adaptation," admits Mary, "which is why it was so critical to get a filmmaker like Denis."

ONE SMALL STEP, ONE GIANT LEAP

In early 2017, Denis began the daunting task of adapting Frank Herbert's brilliantly complex novel for the screen. Denis hadn't written a screenplay from scratch since *Incendies*, a Canadian movie that earned him an Oscar® nomination for Best Foreign Language Film in 2011. While he welcomed the opportunity to return to writing, he also wanted a partner in crime. He reached out to Academy Award®–winning screenwriter Eric Roth, whose filmography includes *Forrest Gump* (1994), *Ali* (2001), *Munich* (2005), *The Curious Case of Benjamin Button* (2008), and *A Star Is Born* (2018). Eric also loved Frank Herbert's masterpiece and immediately agreed to work on the project with Denis.

"As a boy, I read *Dune*, and it ignited my imagination with its mythology," says Eric Roth. "Its creation of a universe far from a boy in Bedford–Stuyvesant, Brooklyn, gave me a world to dream of. Being asked to take the journey and work with a creative force like Denis was a writer's pot of gold at the end of a rainbow."

In late April 2017, Brian Herbert exchanged emails with Eric. "He wrote a long email to the Estate about how much *Dune* meant to him and his vision for the film project," recalls Brian. Later the two began discussing

OPPOSITE Actor Josh Brolin discussing the combat training scene with Denis.

TOP LEFT Denis speaking with actress Sharon Duncan-Brewster, who plays Dr. Liet Kynes.

TOP RIGHT Actors Rebecca Ferguson and Oscar Isaac rehearsing a scene together.

the script process. "Eric assured me that he loved Frank Herbert's masterpiece and that he and Denis intended to closely adhere to my father's story," says Brian.

In the summer of 2017, Denis was in Los Angeles undertaking postproduction for *Blade Runner 2049*. He would meet Eric early on Saturday mornings over drinks—espresso for Denis, and Diet Coke for the screenwriter. The two of them would discuss at length the cinematic potential of the Atreides's story, the family's journey to Arrakis, and the young heir's destiny.

In our correspondence about this creative collaboration, Eric summed up his unique relationship with Denis:

> Denis is a quiet, thoughtful man; I am a bit of a bull in a china shop, wanting to rush in where angels fear to tread.
>
> We found our collective voice, reaching for the proverbial stars together, and Denis generously wanted to have us share our dream of this world we were going to create. He would listen and weigh and never once was critical of a bad idea or a view too far . . . but would always encourage me to go further and farther, to be unique and surprising, but never forget to remember [that] at the soul of the book is the emotion of the young man Paul's journey.

During their conversations, Eric asked Denis what single word reflected his vision for the movie. Denis answered, "Women." For him, the powerful Bene Gesserit Sisterhood was central to the story. "They hold the power of procreation," says Denis, "as well as the wisdom to guide humanity to enlightenment."

Denis describes the Bene Gesserit as a powerful political force who use time to their advantage. "Most political movements in the book are driven by men, who are often reacting in the moment," explains Denis. "The Bene Gesserit perceive time differently. They strategize for the long term, thinking in centuries, even millennia. That's how they manipulate the course of humanity. They think of future outcomes rather than immediate results. They lead by influence instead of domination."

In those early days, Denis also decided to split the book in half and tell the story in two separate movies. He wanted to establish the world and all its intricacies without rushing through the complex plot. This allowed for a deeper dive into the book's political, religious, and environmental themes. It was a relatively easy decision to make considering the density of the story. The more complex question was how and when to end the first movie. There were ongoing conversations that evolved over time and concluded with the decision to close the film with Paul and Jessica meeting the Fremen after fleeing for their lives.

Brian Herbert and his team at the Herbert Estate went over the script and sent recommendations about how best to adhere to Frank Herbert's Dune canon. "It would be the first of many letters the Estate and Legendary would exchange during the script development process," Brian says.

The plan had always been for Eric to provide a first draft and then pass the torch. Denis was very inspired by this initial script and started building upon it, incorporating his own cinematic vision, but that wasn't the end of the writing process. "It took several brains working together to crack the story," says Denis.

TACKLING THE BEAST

Some of the greatest qualities of the original book quickly presented themselves as obstacles for a film adaptation. This didn't come as a surprise to Denis because he wasn't the first filmmaker to tackle *Dune*. In the 1970s, Chilean-French filmmaker Alejandro Jodorowsky attempted to bring Herbert's novel to the screen. His vision for the movie was monumental and exciting, but it turned out to be too grand and too expensive to ever see the light of day.

A decade later, David Lynch became the first director to succeed in bringing *Dune* to life. His ambitious 1984 movie, which stars Kyle MacLachlan as Paul Atreides, developed a cult following over time.

The book was also adapted for television in a three-part series titled *Frank Herbert's Dune*, which was first broadcast on the Sci-Fi Channel in 2000. It was well-liked by Dune fans, but almost two decades later Denis and the team at Legendary felt there was room for a new, perhaps definitive, cinematic version of the story.

The moment Denis started working on the project, he made it clear he would not be drawing influence from any of these previous adaptations. Legendary agreed that this needed to be a new take on the source material, told in a way that resonated with contemporary audiences.

In 2018, Denis was working on the script in Montreal when he asked Jon Spaihts (*Prometheus, Doctor Strange*) to help him make the novel's labyrinthine story accessible to movie audiences. The screenwriter had also been a fan of Herbert's book since he was a boy. "I first read *Dune* at twelve or thirteen," recalls Jon. "It had a grand romance and intelligence I hadn't encountered before in a book. It felt legitimately profound. I reread it every summer for many years. A landmark in my creative coming-of-age. On behalf of all *Dune* fans, I felt an obligation to honor the book and be faithful to its mythology."

The central issue with adapting *Dune* is undoubtedly its immense scale. The script needed to reflect Herbert's vast universe—its planets, technology, cultures, and wars. "Novels are bigger than movies as a rule," explains Jon, "and *Dune* is a big novel, in both its page count and its world-building."

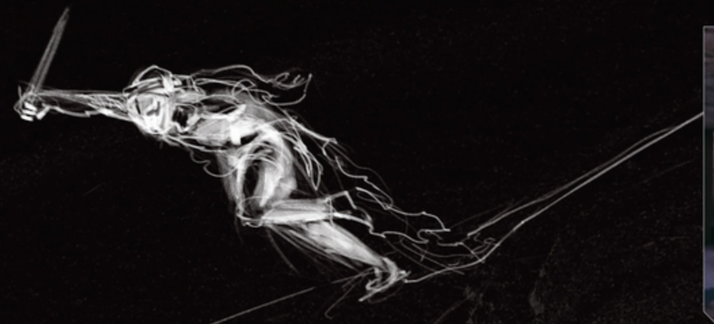
The other concern was figuring out how to transpose

"[Denis] wanted to establish the world and all its intricacies without rushing through the complex plot."

OPPOSITE Denis and actor Timothée Chalamet.

BOTTOM LEFT Costume codesigner Bob Morgan and costume designer Jacqueline West on set with Denis.

BOTTOM RIGHT Fight coordinator Roger Yuan and stunt coordinator Tom Struthers.



Paul Atreides's insightful inner dialogue from the book to the screen. "Despite its many vivid images," says Jon, "the book is focused on the internal: ideas, mental monologues, conversations. It is *uncinematic*." Although the book is enthralling, the drama is often described by the characters after the fact. But in theaters, audiences want to see the action, not be told about events that have occurred offscreen.

As Jon explains,

> Long strings of memorable scenes all take place in a single location. Paul Atreides occupies a room, and a series of other characters cycle through to talk with him, as though it were a stage play.
>
> The great action set pieces tend to happen in the gaps between chapters. The Atreides are packing to leave Caladan; turn the page and they're unpacking on Arrakis, halfway across the galaxy. The family goes to sleep one fateful night; turn the page and they are prisoners, the Harkonnen invasion already accomplished. We learn about the intervening events later, by flashback and hearsay. This pattern recurs again and again.
>
> To turn *Dune* into a movie is, in some senses, to turn the novel inside out.

All the while, drafts of the script were sent to the Herbert Estate for review and comment by Brian Herbert, Kevin J. Anderson, and Byron Merritt. Jon would go back and forth from the novel to the script, adding visual inventions to illustrate the untold stories from the novel. Denis and Jon collaborated closely in Montreal, Los Angeles, and Budapest—where much of *Dune* would be shot—throughout 2018 and even into 2019 as we started filming.

VISION OF THE FUTURE

Denis had been dreaming of *Dune* since he was a boy, so his vision for this world was crystal clear. He now had to surround himself with the people who would put those images on paper, the first step that would lead to his vision reaching the screen. As usual, Denis turned to concept designer and storyboard artist Sam Hudecki, with whom he had worked on all his English-language films. "Sam is my secret weapon," Denis explains. "Our creative intimacy allows me to be myself, and to make mistakes." While this back-and-forth may lead to some dead ends, the creative freedom allows for superior ideas to emerge.

In these early stages of world-building, Sam starts to sketch out images related to the narrative structure, the characters' lifestyles, and the project's general atmosphere. "It allows me to go back to the root of the film and find the essence of the story I want to tell," says Denis. The first image to come out of these sessions was a desert warrior. "It was the first foray into exploring, and it had Fremen leaping out of the sand," says Sam. "That was one of the key things I remember, and this guy charging down a hill."

The illustration reflected Denis's obsession with the feeling of isolation on Arrakis. "There is a sense of melancholy," says Denis. "Humans, and these characters, are overwhelmed by the immensity of the desert." He refined this concept with Sam, and then passed the drawings on to concept artist Deak Ferrand.

"I defined the visual alphabet of this movie with Deak," recalls Denis. "He is wonderful at drawing worlds in great detail, adding the right tone and moods."

Deak had worked with Denis on *Blade Runner 2049* and had developed a shorthand that allowed him to deftly zero in on the filmmaker's vision. "Denis knows what he wants," Deak explains. "If he could take a pencil and draw it, then he would not need any of us. It's like being a medium."

Fellow French-Canadian Patrice Vermette also joined the team early on. Denis and the Oscar®-nominated production designer are longtime friends and had previously worked together on *Enemy* (2013), *Prisoners* (2013), *Sicario* (2015), and *Arrival*. "Patrice has very detailed knowledge of architecture," says Denis. "He also shares my desire for innovation." The two of them designed the movie almost without having to talk to each other, and that's barely an exaggeration. They share a vision for science fiction that favors minimalist, pure design. "I don't like sets where there's too much going on," says Patrice. "I'm a bit allergic to that; so is Denis. Sometimes putting too many things on a set reflects insecurity."

Concept artist George Hull had designed spinners and other vehicles on *Blade Runner 2049*, and Denis wanted him to create an entirely new set of flying machines for *Dune*. George worked on several designs for the movie, but he focused much of his energy on three versions of Frank Herbert's iconic ornithopter, an aircraft used on Arrakis. "My first meeting with Denis on *Dune* was in a Montreal coffee shop," writes George. During preproduction on *Blade Runner 2049*, Denis had given the creative team the word *brutality* to guide their designs. For *Dune*, it was *melancholy*. "When I heard this, my mind was ignited," says George. "Denis brings his intelligence and thoughtfulness to every film he's done, and personally I crave that in the science fiction genre."

Over time, additional artists would be brought in to usher Frank Herbert's world into the visual realm. By the time we were ready to shoot, Patrice and his art department had put together a three-hundred-page document containing detailed concept art and references for every aspect of the movie. From that point on, everyone on the crew would refer to it and be on the same page artistically.

Director of photography Greig Fraser was Denis's first choice to shoot *Dune*. Denis had been wanting to collaborate with Greig since seeing his work on *Zero Dark Thirty* (2012) and *Mary Magdalene* (2018). "He is a master at embracing natural lighting, but also at re-creating it," explains Denis. "*Dune* is a movie about nature and ecosystems. So it was crucial that Greig's light be as close to reality as possible, to bring audiences in with its familiarity."

The fact that Greig also operates his own camera was an asset given the challenging shooting conditions

TOP Drawing of the Fremen from early brainstorming sessions with Sam Hudecki.

TOP LEFT The initial sketch of a Fremen warrior leaping out of the sand.

TOP RIGHT Denis watching Timothée Chalamet on a monitor while filming a scene in Duke Leto's office.

we would be working under. "I saw an opportunity that I felt was unmissable, because it was such a rich, beautiful, deep world," says Greig.

Denis also wanted the film's costumes to reflect a high level of realism. Jacqueline West, who had previously worked on *The Revenant* (2015), among many other movies, was hired as costume designer alongside Bob Morgan, who came on board as a first-time codesigner. "Jacqueline is known for her period costumes, not for science fiction," explains Denis. "That's why I wanted to work with her, so we could strive for authenticity." Jacqueline and Bob made over two hundred specialty costumes for the film. "I don't think I could have done this had Bob not agreed to join me," says Jacqueline. "It was a great collaboration, and he had all the expertise required for this movie."

Denis also reached out to visual effects supervisor Paul Lambert. Denis had collaborated with Paul on *Blade Runner 2049*, for which

Paul received his first of two consecutive Oscars®. Paul shared that award with special effects supervisor Gerd Nefzer, whom Denis also tapped to oversee *Dune*'s physical on-set effects, such as rain on Caladan and dust storms on Arrakis. "Producer Joe Caracciolo called me, asking if I was interested in doing *Dune*," recalls Gerd. "When he said it was being directed by Denis Villeneuve, I couldn't say no. He knows what he wants, and tells you immediately if he likes something. I am very thankful, because he is a big part of my Oscar® winning. So whatever he wants, he gets."

Among the other team members joining the crew were stunt coordinator Tom Struthers, who had worked on many Christopher Nolan movies, and fight coordinator Roger Yuan. The creative core wouldn't have been complete without close collaborators from past films, including property master Doug Harlocker, hair and makeup designer Donald Mowat, supervising sound editors Mark Mangini and Theo Green, and editor Joe Walker.

Last but certainly not least was composer Hans Zimmer. In fact, the esteemed musical master was one of the first people Denis talked to about *Dune*, even before the project was announced publicly. The book was an old favorite of Hans's, and he had been dreaming of composing music for a film adaptation of it for a long time. Denis was thrilled to be working with him again. "Doing music with Hans on *Blade Runner 2049* was one of the most beautiful artistic experiences of my life," says Denis. "His relation to creativity deeply moves me."

LARGER-THAN-LIFE SETS

We arrived in Hungary on November 3, 2018, to start preproduction. The film was based at Origo Studios in Budapest, where we had also shot *Blade Runner 2049* two years earlier. We knew our way around and were happy to reconnect with the local crew. Just as well, since we would be spending the next nine months working there.

Principal photography officially began four months later, on March 18, 2019. Over forty-five sets were built using five soundstages, in addition to a multipurpose outdoor set that allowed us to film both day and night scenes. Patrice had a large part of the backlot paved, painted, and surrounded with sand-colored screens that would play an important part in the visual effects process. The schedule was meticulously planned to transform this area into a number of locations, from the spaceport outside the city of Arrakeen—the Atreides seat of power—to the courtyard of the Atreides Residency. We utilized every corner of this backlot, creating over twenty configurations.

Yet we needed still more space to capture large-scale scenes on Arrakis. The team got creative and started building sets using the outdoor area between two soundstages usually reserved for production traffic and parking. This large space was cleared out, the walls were rigged with equipment, and the ground covered with a thick layer of sand. Because these sets needed roofs, custom-made fabrics were stretched from one soundstage to another in order to create a canopy overhead. With this makeshift covering, we were able to successfully film interior scenes using natural sunlight bouncing in on the sets through a wide entrance-way or a large skylight.

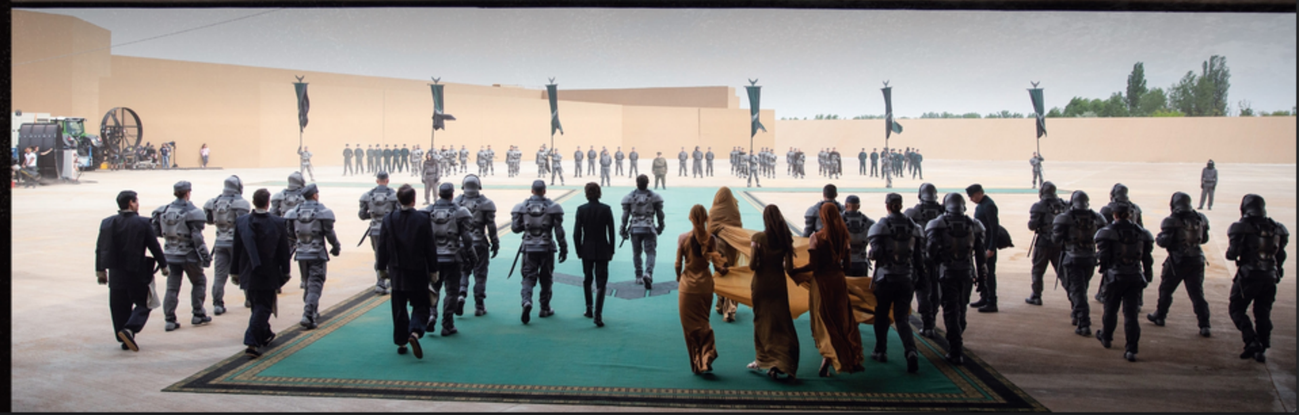
Budapest was our base camp, but it wasn't the only location in which we would shoot. The movie was filmed over five months, with the crew traveling to Jordan, Abu Dhabi, Norway, and later to California. "In terms of the scope, it is certainly the most ambitious production I've been involved with," says producer Joe Caracciolo, who has worked on over forty films in his career. While three or four hundred people worked on the movie in Hungary, there were simultaneously in excess of a thousand people from all over the world joining the crew in Jordan. "We basically built two portable cities in the desert to serve as base camps," recalls Joe. "One in dunes overseen by the Jordanian military, and another in the middle of the Wadi Rum desert. It was pretty cool."

Although everything ran smoothly, the Jordan shoot was a demanding month of nonstop filming complete with sandstorms, tight schedules, and many moving parts. Our local line producer, Fuad Khalil, had worked with Denis on *Incendies* a decade earlier. He was like family, and a valuable ally in ensuring that every part of the shoot went off without a hitch. That included working with the Jordanian Armed Forces for multiple aerial shoots using three military helicopters to capture scenes from a bird's-eye view.

Time was of the essence in the desert. Our plans relied on the close collaboration of every department, but most importantly on the director and cinematographer

TOP LEFT Denis rehearsing with actors Rebecca Ferguson, Sharon Duncan-Brewster, and Timothée Chalamet on the testing station escape tunnel set. Director of photography Greig Fraser and gaffer Jamie Mills can be seen in the background.

TOP RIGHT Actor Jason Momoa and Denis on set in the Wadi Rum desert in Jordan.



BOTTOM The arrival of the Atreides on Arrakis is shot on the paved backlot at Origo Studios in Budapest.

working together to capture the numerous scenes spread throughout the area. "It was fantastic to watch the efficient, organic nature in which Denis and Greig work together," recalls Joe. In one instance, we could shoot for only three or four hours at the end of the day because a specific location needed to be filmed in the shade. Denis and Greig rolled nonstop during those short windows of opportunity. They often managed to lock around twenty setups, the equivalent of a full day's work accomplished in less than half the time. "We had a very ambitious schedule, and it was a big concern on my part," adds Legendary's executive vice president of physical production, Herb Gains. "I signed off knowing we had to be perfect every day. We not only got everything we wanted, we got more."

The Jordanian landscape contains wonderful, almost mystical rock formations that were perfect for some of the desert scenes. But the story also called for rolling sand dunes spiraling as far as the eye can see. We found those about two hours outside Abu Dhabi. A very small portion of the crew flew to the United Arab Emirates to film principal characters walking in these stunning landscapes. "The title of the book is *Dune*, after all," says producer Mary Parent. "So going out to this desert and putting a camera on the sand was critical."

It was late July when we arrived in Abu Dhabi. Our production team had anticipated the extreme heat and devised a plan for us to work only at dawn and dusk. Daytime was excruciatingly hot, making it impossible for the crew to carry heavy equipment up and down the dunes. To avoid the worst of the heat, we would start our day before dawn. Even then it was already 100 degrees Fahrenheit outside. We would drive out to the desert, wait for the sun to rise, and shoot for a few hours. We would then return to our hotels, sleep until midafternoon, and go back to the desert to film until sunset. "Our crew was so cooperative," recalls Joe. "Not a lot of groups would have done that." If this doesn't sound like fun, all I can say is that it wasn't a vacation. It was, however, deeply satisfying to capture these breathtaking scenes in such challenging conditions.

The very last segment of our schedule took us on a short trip to Norway, where we filmed Caladan exterior scenes with Timothée Chalamet, who plays Paul Atreides. The country offered the perfect contrast to the arid environment of Arrakis, with luxuriant mountains and rugged shorelines. We wrapped August 5, 2019, at 10 p.m., with a shot of Paul Atreides watching the sun set over the ocean.

Over the coming year, we would capture additional scenes at locations including the Mojave Desert and the forests of Big Bear, both a few hours from Los Angeles, where we were based during postproduction. We also returned to Budapest for additional photography in August 2020.

Now, take a dab of spice and travel back in time, back before production started and cameras rolled, back to when this story was still a dream waiting to be drawn, embodied, filmed, and seen. Allow me to introduce you to the world of *Dune*, to its planets, its cultures, and, more specifically, to the artistic process that went into making this movie as authentic as possible.

TOP In Jordan, Denis discusses a scene with Zendaya, in costume as Chani.

OPPOSITE The crew filming at dawn in the United Arab Emirates.

"We basically built two portable cities in the desert to serve as base camps."

JOE CARACCIOLO, PRODUCER

CALADAN

PAGES 30–31 Castle Caladan concept art.

TOP Early illustration of Castle Caladan on a cliffside.

BOTTOM Concept art of an omitted scene featuring Paul surrounded by Atreides soldiers at night.

OPPOSITE A visual reference illustration of planet Caladan as seen from space.

"Paul Atreides comes from a planet that is very comforting. It is not too cold, nor too warm, and is imbued with nostalgia."

PATRICE VERMETTE, PRODUCTION DESIGNER

THE WORLD-BUILDING PROCESS for *Dune* was strongly influenced by nature, reflecting a central theme in the story: humanity's attempts to adapt to new environments and make life sustainable. For example, the design for the Atreides's castle on Caladan was inspired by the honeycombs in beehives, the hexagonal shapes forming a pattern language for its architecture. "They stack well together," explains Patrice Vermette. "By integrating the castle into a mountain, we could tell the story that the Atreides are trying to blend in with nature. It's like Frank Lloyd Wright's Fallingwater house, melding with the environment."

Denis uses concept art as direct reference for the images he wants to later see on screen, often filming a scene exactly as it was drawn, down to the smallest details. "I'm always trying to link movies with reality," he explains. "I try to create an equilibrium between familiarity and strangeness." Early in the process, Patrice had designed Castle Caladan as separate buildings built into the cliffside. But Denis realized that this was perhaps too unusual and didn't set up the scene as it should. The castle was subsequently redesigned to be a single recognizable structure.

TOP Early concept art of the honeycomb-inspired castle.

ABOVE Final design of Castle Caladan as a single-structure building.

OPPOSITE Castle Caladan design with a plate of the Norwegian ocean added in the background.

"The world-building process for *Dune* was strongly influenced by nature."

TOP Concept art for the green-and-black Atreides banner featuring the Atreides's family emblem.

BOTTOM Concept art illustrating the Herald of the Change, an emissary of the Emperor, arriving on Caladan.

OPPOSITE Timothée Chalamet, Stephen McKinley Henderson, Oscar Isaac, Jason Momoa, Josh Brolin, and Roger Yuan on the Duke Leto office set. Not only was Roger fight coordinator on *Dune*, he also plays Atreides officer Lanville.

HOUSE ATREIDES

The Atreides are a noble family, loved and respected by their people. In my correspondence with screenwriter Jon Spaihts, he had this to say about Atreides leadership in the story: "*Dune* was written in the 1960s, but its themes are as relatable as ever: the difficulty of governing from strength without tipping into tyranny; the fragility of planets and the necessity of conservation; and the centrality of subtle human qualities—honor, integrity, compassion—in steering the course of history."

It was essential for Denis that the movie not only stay true to Frank Herbert's philosophy, but that it also respect the iconography described in the novel. In fact, many descriptions from the source material trickled into all aspects of production design. The Atreides emblem is a hawk, and so the proud bird spreads its wings on flags and banners. The official family colors—black and green—are predominant in uniforms and weapons.

PAUL ATREIDES

Paul Atreides is the son of Duke Leto Atreides and Lady Jessica, from whom he will inherit, respectively, his titled nobility and his otherworldly Bene Gesserit skills. These two birthrights determine the destiny of a leader holding unique gifts of prescience and a profound understanding of humankind.

The search for Paul began in 2017. Denis, along with producers Mary Parent and Cale Boyter and casting director Francine Maisler, had brief conversations about searching for an unknown talent to play the lead role. The idea was tossed aside when *Call Me by Your Name* was released that fall. Timothée Chalamet was a revelation in the acclaimed romantic drama, quickly grabbing the world's attention. Denis and Legendary immediately agreed he was perfect for the part. There was never a short list of potential actors; there was always only Timothée. "We never reached out to anyone else," says Mary.

Denis explains why Timothée was right for the part:

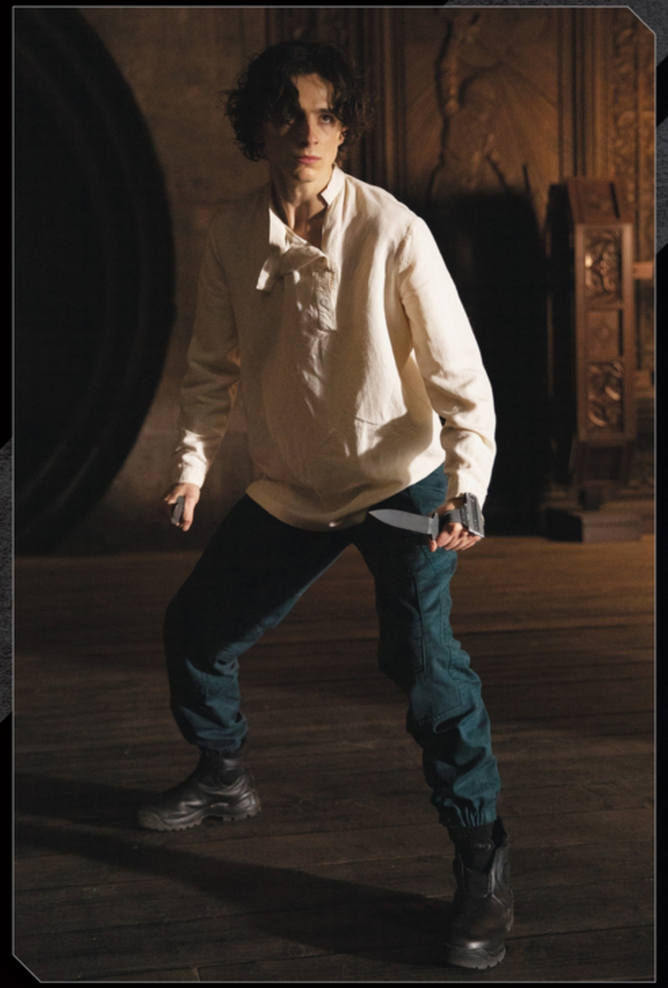
> Timothée is a very gifted actor with a rare talent. He is a true movie star. Like the great charismatic figures of cinema in the '20s and '40s, he generates an aura that is larger than himself.
>
> He also looks very young, which was perfect for the role. Sometimes he looks like he's fifteen years old on camera, yet he has the maturity of a young adult. That's exactly what Paul Atreides is like, a teenager with an old soul.

TOP LEFT Rebecca Ferguson and Timothée Chalamet portraying Lady Jessica and Paul Atreides.

RIGHT Costume design for Paul Atreides's official uniform.

OPPOSITE Timothée Chalamet as Paul Atreides.

"There was never a short list of potential actors; there was always only Timothée."



Denis and Timothée spent months fleshing out the character to determine how Paul thinks, moves, and what makes him tick. "I wanted to honor the spirituality of the role, as well as the legacy of the story," explains Timothée. Fortunately, the actor found that working with Denis grounded the experience of playing Paul Atreides: "I felt I could really give myself over. Considering the indie roots of *Incendies* and *Polytechnique* and *Prisoners*, and Denis's ability to focus on character-based stories within larger scopes in his more recent films, I knew that I couldn't be in better hands."

Costume designer Jacqueline West sought inspiration for *Dune* from classic movies by filmmaker Sir David Lean. "I must have seen *Lawrence of Arabia* ten times," she says. "The same with *Doctor Zhivago*. That's what inspired the modernized white Zhivago shirt Paul wears during the fight training scene." To give the timeless look a futuristic twist, Jacqueline and her team eschewed buttons and zippers and instead fastened the collar using only magnets.

Jacqueline was fascinated to see the character come to life before her eyes in early fittings. "When Timothée put on his costumes, he was a different person," she says. "His face changed, his whole demeanor changed. The costumes were a bridge from the actor to the character."

"That's exactly what Paul Atreides is like, a teenager with an old soul."

DENIS VILLENEUVE, DIRECTOR

OPPOSITE LEFT Timothée Chalamet on the training room set.

OPPOSITE TOP RIGHT Denis and Timothée review a take in the Jordanian desert.

THIS PAGE Paul Atreides (Timothée Chalamet) is awoken by his mother (Rebecca Ferguson) for the gom jabbar test.

LOW-TECH FUTURE

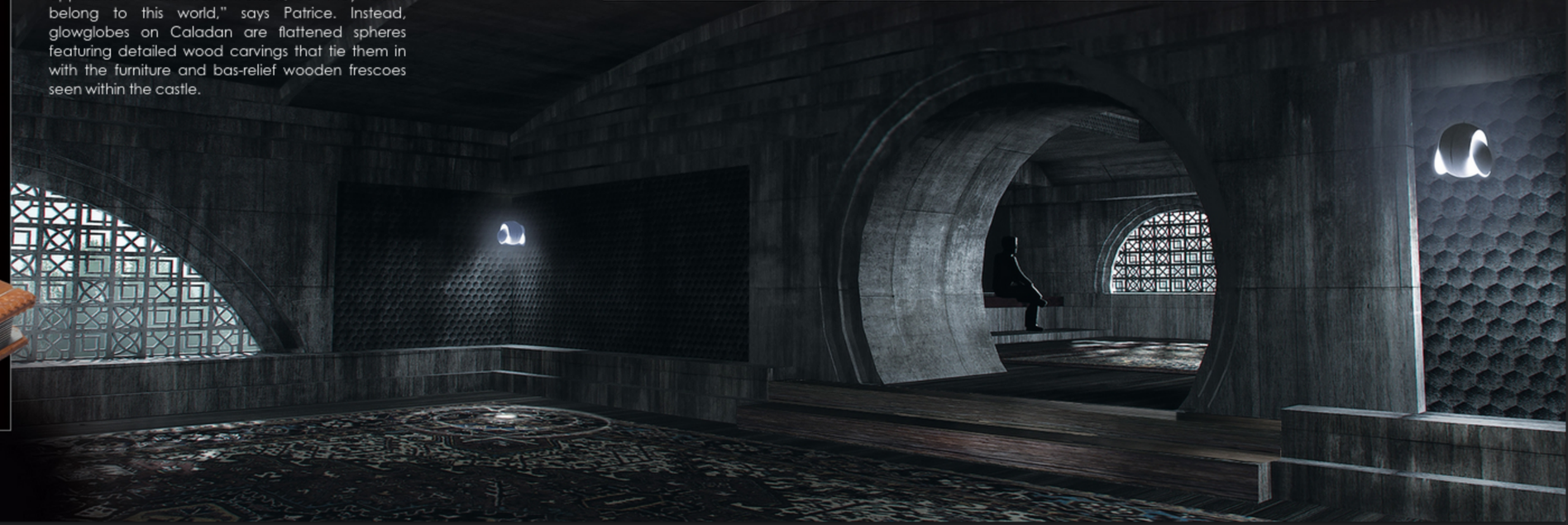
Dune is set in the year 10,191 of the Imperial calendar, a very distant future from our current time. Perhaps counterintuitively, there are no computers in this science fiction world. "Humans have banished thinking machines after realizing they were a threat to their survival," explains Denis. Even though the book was written in 1965, it was prophetic in predicting the spread of artificial intelligence. "We see it in our society today," says Denis. "As our phones become smarter than us, human intelligence withers and migrates elsewhere." In *Dune*, there are no screens, no internet, no Wi-Fi—only analog technology. Humans have reclaimed their intelligence and seek to develop it to its full potential.

One of the devices invented by Frank Herbert for this computer-free world is a book-shaped device that projects holographic films. This filmbook operates with a technology that utilizes an organic matter called shigawire. In the movie, Paul uses the filmbook to immerse himself in the environment and culture of Arrakis. It is through three-dimensional, documentary-style images that he learns techniques for survival in the Deep Desert. "I want the filmbook to remind us of *Nanook of the North*," Denis told his creative team. "It needs to feel like we've found an old salvaged film roll." He loved the idea that these holograms, like the 1922 movie, offered glimpses into the unfamiliar yet fascinating culture of an indigenous people.

PAUL'S CALADAN ROOM AND STUDY

On the first day of official photography, Greig Fraser's camera rolled on a scene in which Paul is awakened in his room on Caladan. The set was built in Budapest exactly as it had been drawn almost a year earlier, setting a mood for the scene that Greig was able to evoke with his lighting. "The artwork was very well conceived and designed," points out the cinematographer. "I attribute that to the fantastic director and production designer working hand in hand."

The artwork also introduces Frank Herbert's glowglobes. In the book, these hovering lamps defy gravity using suspensor technology. "We tried many different concepts for the glowglobes," explains Patrice Vermette. Early ideas included designs based on modern-looking chandeliers, spheres that opened up like shells, and a double light-projector apparatus. "These ideas worked, but they didn't belong to this world," says Patrice. Instead, glowglobes on Caladan are flattened spheres featuring detailed wood carvings that tie them in with the furniture and bas-relief wooden frescoes seen within the castle.



BOTTOM Filmbook design featuring honeycomb textures.

OPPOSITE TOP Rebecca Ferguson on set.

OPPOSITE BOTTOM Concept art for Paul Atreides's Caladan room and study featuring early glowglobe illustrations.

LEFT Leto Atreides armor and working uniform designs.

RIGHT Leto's ducal ring.

OPPOSITE LEFT Oscar Isaac in the ornithopter rescue scene.

OPPOSITE RIGHT Oscar Isaac portraying Duke Leto Atreides.

"Leto believes it is the people that make the leader, not the power."
OSCAR ISAAC, ACTOR

DUKE LETO ATREIDES

Leto Atreides is an honorable duke. He treats his people fairly, leading by example as his own father did. "Leto believes it is the people that make the leader, not the power," explains Oscar Isaac, who was cast as this multifaceted character. It was important for the actor that the Duke be perceived not only as a fearless leader but also as a caring father and a relatable human being. "I didn't want to make him someone who stares off into the middle distance and says profound things," he adds.

"I actually wrote to Denis when I first heard he was directing *Dune*," recalls Oscar. "I said, 'I love *Dune*. I love this book. Just throwing it out there.' He replied, 'You love *Dune*. Interesting . . .'" As it happened, Denis was already a fan ofthe actor's work, especially his roles in the Coen brothers' *Inside Llewyn Davis* (2013) and Alex Garland's *Ex Machina* (2014). "I had been wanting to work with Oscar for a very long time," says Denis. "He also fit the exact description of Duke Leto in the book."

The collaboration between Oscar and Denis proved to be extremely fruitful. The actor was impressed by the way the script distilled the essence of the novel while also embracing the filmmaker's authentic approach to the source material. "The most important thing for Denis is the cinema," says Oscar. "This is not a piece of literature anymore. It's a dreamscape."

To prepare for the role, Oscar observed the behavior of leaders and other people in authority. "I also watched a lot of Toshiro Mifune movies, such as director Akira Kurosawa's *Seven Samurai*," he adds.

Duke Leto's costume design stemmed from two central references. The first was Tsar Nicholas II of Russia, whose destiny parallels the Duke's. "He represents the end of a long line of rulers just before the Russian Revolution," explains Jacqueline West. "Like Nicolas's, Leto's formal uniform has an elegant simplicity that reflects the quiet dignity he maintains to the end of his reign."

The second source of inspiration was François Truffaut's science fiction classic *Fahrenheit 451* (1966). "Oskar Werner's character, Guy Montag, lives in a future society where books have been outlawed," Jacqueline says. "His disillusionment with hiding knowledge by burning books as a fireman, and committing himself to the preservation of an outlawed culture, seemed to me to parallel Leto's mission on Arrakis." She considered the Duke a liberator on Dune, and borrowed from Montag's simple dark uniform to capture that spirit.

Leto also proudly wears a large ducal ring on his left hand, an ancestral symbol of power. This iconic item from *Dune* lore needed to carry the legacy of all the predecessors who had worn it. "We researched family rings," recalls property master Doug Harlocker, whose team created the final prop. "I found one that was tall, with an unusual shape, and sat quite proud on a finger." This matte black ring with gold details would form the core of the prop design. Precious stones were later added, as well as the Atreides family crest, making it instantly recognizable.

"This is not a piece of literature anymore. It's a dreamscape."

OSCAR ISAAC, ACTOR

TOP Concept art of the cemetery overlooking the ocean.

OPPOSITE Early funerary island concept art.

CALADAN CEMETERY

The Caladan cemetery is the setting for an intimate conversation between father and son in which the Duke and Paul discuss the family credo, as well as the strategies they will employ as they prepare to leave for Arrakis. The stroll through the cemetery also connects Leto to his deceased father, accentuating the sense that the Atreides are leaving their ancestors behind. "Early on, Eric Roth said, 'You cannot bring the remains of your people with you,'" recalls Denis. "You therefore lose your roots, your heritage, and a part of your history." The cemetery became a way of expressing Eric's idea cinematically.

In an early version of the script, Denis envisioned a scene in which Paul and Leto, wearing futuristic wetsuits, swim to a funerary island in the middle of a lake. On this sacred isle, father and son would pay their respects to the deceased before leaving their planet forever. Ultimately this idea was discarded and the scene was filmed in a Hungarian village overlooking Lake Balaton. During postproduction, the footage was digitally composited with a background featuring the Norwegian ocean and landscapes.

BENE GESSERIT SISTERHOOD

When a dark spaceship lands on Caladan, mysterious cloaked silhouettes disembark and stride toward the Atreides's castle. It is not clear whether they are benevolent or a threat. As it turns out, they are both. The Bene Gesserit are a trained all-female political force. Some of them, known as Truthsayers, are imbued with a highly developed intuition that allows them to determine truth from lies. Individual members of this sisterhood are embedded within the Great Houses of the Imperium as counselors to the leaders, guiding them to peace and enlightenment.

The Bene Gesserit's power and influence are exerted through their ability to control the bloodlines of the Great Houses, uniting the strongest amongst them. For tens of thousands of years, they have been attempting to breed the perfect human being, an individual they call the Kwisatz Haderach. Their master plan also entails planting legends and superstitions on planets, using religion to shape the course of history and prepare people for the coming of this savior. "The Bene Gesserit philosophy is reminiscent of religious colonization from centuries ago," explains Denis. "They are so deeply rooted in societies that they become an unwavering power."

The Bene Gesserit's arrival on Caladan was the first scene to be storyboarded for the movie, a reflection of the sisterhood's overarching influence on all aspects of *Dune*'s storyline. It is not coincidental that the Bene Gesserit spaceship is egg shaped—a symbol of fertility. In fact, a different egg-shaped design was first envisioned by noted artist John Schoenherr on the cover of Frank Herbert's 1985 novel *Chapterhouse: Dune*.

Inspired by the Bene Gesserit all-female school and its selective breeding program, concept artists George Hull and Sam Hudecki designed multiple versions of this ship, exploring different visual styles. In the end, Denis chose the purest design. "Patrice really drove the 'less is more' aesthetic throughout the movie's fabric," recalls George. "To me that connotes a more elegant and sophisticated futurism, which is perfectly fitting for the Bene Gesserit Sisterhood."

BELOW Concept art for the Bene Gesserit spaceship with Lady Jessica in the foreground.

RIGHT Early costume designs for the Bene Gesserit.

BOTTOM The Reverend Mother Gaius Helen Mohiam arrives on Caladan with other Bene Gesserit sisters in this conceptual piece.

"It is not coincidental that the Bene Gesserit spaceship is egg shaped, a symbol of fertility."

OPPOSITE The egg-shaped Bene Gesserit spaceship design.

TOP Concept art for the spaceship ramp revealing dark, cloaked silhouettes.

BOTTOM Early sketches of the Bene Gesserit ship.

ABOVE Rebecca Ferguson as Lady Jessica.

OPPOSITE Illustration of Lady Jessica in Castle Caladan's meditation room.

LADY JESSICA

Lady Jessica is Paul's mother and Duke Leto's loving partner, but she is also a member of the Bene Gesserit Sisterhood. When casting this complex role, Denis wanted to find someone old enough to play Timothée Chalamet's mother, yet youthful enough to support the character's arc. "Lady Jessica is a young mother who makes mistakes," says Denis. "Audiences will be more forgiving for that reason. She is a pillar in the story, but we also need to feel her growth throughout the movie." Denis had been impressed with Rebecca Ferguson's work in the Mission: Impossible movies and felt she not only resembled Timothée but could also play a woman with hidden agendas. "Rebecca has an air of mystery," explains Denis. "There is something elusive about her. That, to me, was Lady Jessica."

The accomplished actress had just completed work on *Mission: Impossible*—Fallout and was looking for a new challenge when we approached her. "I had just told my agents that the last thing I wanted to play was yet another queen, concubine, or governess," recalls Rebecca. Then she got the *Dune* call. "Denis explains the character of Jessica as this powerful, queenlike concubine," she says, laughing. Rebecca ended up taking the role, and her concerns soon dissipated. "The film very much highlights her as a powerful individual," says Rebecca.

The Bene Gesserit have complete mastery of their minds and bodies. This includes controlling their wombs, an ability that allows them to choose the gender of their unborn children and therefore manipulate the bloodlines of the Great Houses. In fact, Jessica was ordered by the Reverend Mother—her Bene Gesserit

"The film very much highlights [Lady Jessica] as a powerful individual."
REBECCA FERGUSON, ACTRESS

TOP Lady Jessica (Rebecca Ferguson) training her son, Paul (Timothée Chalamet), in the Bene Gesserit way.

OPPOSITE Costume designs for (left to right) Lady Jessica's Caladan lace dress, gom jabbar black gown, and Arrakis arrival attire.

PAGES 56–57 (left) Castle Caladan corridors and great hall concept art. (right) Castle Caladan library illustration.

superior—to give Duke Leto a daughter. Sensing a son could become the Kwisatz Haderach, Jessica disobeys, giving birth to Paul. "Jessica is dealing with the consequences of being a mother, a lover, and a Bene Gesserit," explains Rebecca. "She always has to question which comes first."

Beyond her gifts of prescience and hyper-intuition, Jessica is a fierce fighter. Fight coordinator Roger Yuan designed her fighting technique using elements from a martial arts style created in the seventeenth century by Ng Mui, an abbess of the Shaolin Temple. "She was the precursor of Wing Chun," explains Roger, "which was actually Bruce Lee's style." The kung fu–based technique is a form of self-defense that does not focus on size or strength, but rather on redirecting force. "In this style, you have to be agile, mobile," says Roger. "It's a deception technique for survival's sake."

Lady Jessica's costumes were directly influenced by vintage dresses designed by revered fashion houses including Balenciaga, Dior, and Schiaparelli. These looks, despite their sophistication, needed to be modest—the Bene Gesserit do not flaunt their beauty or sexuality. Jacqueline West referenced specific works of art to create her unique style. "Each one of Lady Jessica's costumes has a tie with the past," recalls the costume designer. "I kept going back to the idea of a medieval nun with a look of the future." The black lace dress Jessica wears on Caladan, for example, is directly inspired by Francisco Goya's *Majas on a Balcony* painting from the early nineteenth century.

"Each one of Lady Jessica's costumes has a tie with the past."
JACQUELINE WEST, COSTUME DESIGNER

THE REVEREND MOTHER

The Reverend Mother Gaius Helen Mohiam is at a high rank within the Bene Gesserit order. She is Lady Jessica's teacher and mentor, but she is more importantly a powerful figure in the known universe. She is endowed with the title of Truthsayer to the Emperor, counseling him on state affairs.

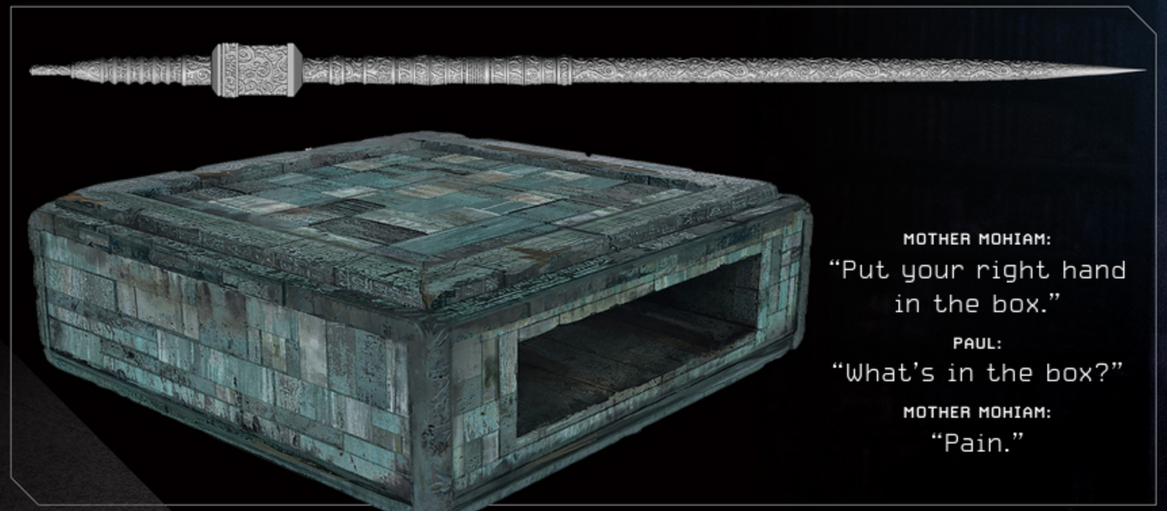
Charlotte Rampling was the first and only choice for the part of the Reverend Mother. Coincidentally, this was not the first time she was cast in a *Dune* production: Alejandro Jodorowsky had given her the part of Lady Jessica in his ultimately unrealized film. Forty years later, when the opportunity arose again, the actress couldn't say no. "Charlotte Rampling has a very strong presence," says Denis. "I didn't even know she had been cast in Jodorowsky's *Dune*. There simply wasn't anyone else I could see in this role."

The Reverend Mother is a towering figure, reminiscent of a chess queen with her all-encompassing powers. In fact, Jacqueline based the character's costume on a Renaissance chess piece as well as on an antique tarot card. "I knew that Frank Herbert was into chess and the tarot," explains Jacqueline. "I thought that would be a good place to start for the shapes of this costume."

OPPOSITE TOP LEFT Charlotte Rampling portraying the Reverend Mother Gaius Helen Mohiam alongside her pupil Lady Jessica (Rebecca Ferguson).

OPPOSITE RIGHT This scene was filmed with Charlotte Rampling wearing the veil, and again without it. She and Denis both preferred having the Reverend Mother's face mysteriously obscured.

THIS PAGE Costume and veil design explorations for the Reverend Mother.



MOTHER MOHIAM:
"Put your right hand in the box."

PAUL:
"What's in the box?"

MOTHER MOHIAM:
"Pain."

GOM JABBAR

The gom jabbar test is an iconic scene from the pages of Frank Herbert's novel. The test marks the beginning of Paul Atreides's coming-of-age story and has no ambiguity—he will either pass and live or fail and die. "He's on this crash course with a hero's journey," explains Timothée Chalamet. "It's like being on a roller coaster, and the initial g-force is this test. Now he's on it, and it's not slowing down."

As Paul walks into the Atreides library to meet with the Reverend Mother Mohiam, he is defiant—but not for long. The Reverend Mother uses an ancient hypnotic Bene Gesserit technique known as the Voice, forcing him to kneel at her feet. It is the ultimate Bene Gesserit skill—the limitless ability to control others.

The Voice does not have a visual component in the movie, and so perfecting the way it would sound was critical. On set, Denis didn't use speakers or voice enhancers to create the effect. He knew it would rely on more than just volume or distortion. Later, when he started working with supervising sound editors Mark Mangini and Theo Green, everyone agreed that the Voice needed to be recognizable without being gimmicky.

"It is a sound that a person hears in his or her subconscious, a voice from nightmares," Denis explains. "It's an ancestral, primitive voice. Deep, powerful, and frightening. It has psychological hypnotic control on others. When Jessica teaches Paul to use the Voice, she talks about his pitch, but this needs to be heard with very subtle modulations in the sound treatment."

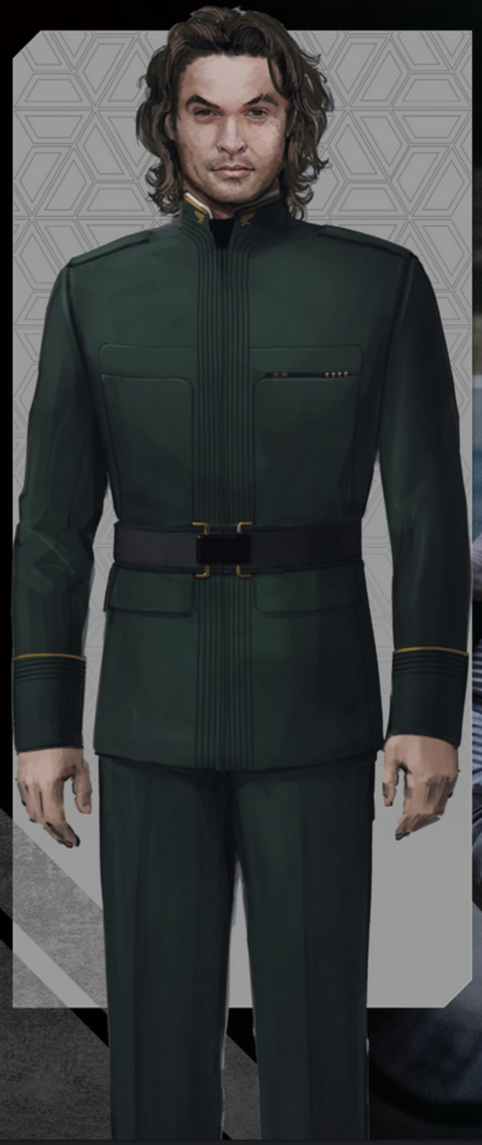
Charlotte Rampling's commanding delivery of the Voice on set became the baseline for any other actor performing it in the movie. It then evolved conceptually in postproduction, when deeper voices echoing the commands were added, as though conjuring up ancient Bene Gesserit ancestors.

TOP Illustrations of the gom jabbar needle and the stone box.

OPPOSITE Paul (Timothée Chalamet) is brought before the Reverend Mother (Charlotte Rampling) and succumbs to the Voice.

Following the Reverend Mother's orders, Paul undergoes the gom jabbar test, putting his right hand into an ominous-looking box as instructed. Soon he feels his flesh burning, an illusion caused by pain induction. He must resist the urge to scream or remove his hand from the box; otherwise the poisoned needle, known as the gom jabbar, held at his neck by the Reverend Mother, will be the end of him.

The design for the ancient stone box, as well as for the gom jabbar, was inspired by Frank Herbert's description in the book. "Denis coached Charlotte Rampling on how to hold the needle in a way that was unusual," recalls Doug Harlocker, whose team built both items. The delicate needle gets a close-up in the movie, but not for long enough to display the prop in all its glory. "There are a lot of details in that needle. You'd need a magnifying glass to really see them," adds Doug.



DUNCAN IDAHO

Duncan Idaho is the valorous Atreides Swordmaster, a diplomat as well as an elegant and fierce fighter. Paul looks up to him as he would to a big brother, admiring his charisma, free spirit, and bravery.

Casting the role proved to be a lengthy process, but when Jason Momoa's name came up, Denis knew he had found the right actor. "Duncan represents freedom, and Jason embodies that," explains Denis. "He also has a bohemian quality that I needed for the character. Duncan isn't just a soldier, he's an explorer."

Jason was snowboarding when he got the call. A huge fan of Denis's work, he was eager to make a good impression. "It was a surreal moment when I got off the ski lift and my agents called to say he wanted to talk to me. I didn't want to mess it up," says Jason with a laugh. The connection between Denis and Jason was instant, and the actor immediately took to the idea of playing the Duke's right-hand man. "I love that Duncan has honor, stature, and served the Atreides family," he adds. "I hadn't experienced that kind of role before."

Denis came to affectionately call Jason "The Momoa" on set. "Jason is an actor I found extremely charismatic," explains Denis. "He is also a very elegant fighter, like a dancer. Not all actors have that physicality, and I wanted someone who would have fun with the fight scenes."

Since Duncan Idaho is renowned in the novel for his combat skills, Roger Yuan developed a unique style for him. Inspired by the idea that Duncan has traveled throughout the universe, Roger choreographed sequences that incorporate techniques from the different factions he has encountered, including the Fremen's low-center-of-gravity technique and circular sword movements. "Wherever he goes, Duncan takes in what he finds useful and integrates it into his personal style," explains Roger. "He's always thinking of how best to fight, how best to defend, or how best to kill."

OPPOSITE LEFT Concept art for Duncan's formal uniform.

OPPOSITE RIGHT Duncan Idaho (Jason Momoa) in Fremen attire.

LEFT Illustration for Duncan Idaho's commando uniform.

GURNEY HALLECK

Gurney is the Atreides weapons master and diligent tactician distrustful of what lurks in the shadows. He knows the cunning nature of the Atreides's archenemies—the Harkonnens decimated his family and left him with a scar on his jawline by which to remember them.

Denis had filmed *Sicario* with Josh Brolin five years earlier and knew this was the perfect part for the acclaimed actor. "It's simple; Gurney is a poet, and so is Josh," says Denis.

Gurney is also witty, sensitive, and ruthless. "He is confident, but not in an arrogant way," says Josh. "He knows that by tapping into his vulnerability, he's going to be that much more attuned to somebody else's vulnerabilities, and therefore be able to take advantage of them in a time of war."

The multifaceted character is also one of Paul's mentors. In a key scene in which Gurney trains the young heir in combat, he pushes Paul to his limits, honing the skills the youth will need to protect himself on Arrakis. The scene called for Josh to execute complex fight choreography alongside Timothée Chalamet and required him to rehearse tirelessly in the months leading up to the shoot. "I did it purely out of fear," says Josh. "In my mind, everyone is going to show up ten times better than me and have put in ten times the amount of work that I have. Therefore, I put ten times the amount of pressure on myself."

The warrior poet always travels with a loyal companion: his baliset. Building the stringed instrument described in Herbert's book turned out to be a journey

BOTTOM Oscar Isaac and Josh Brolin on set in full Atreides armor.

OPPOSITE Josh Brolin as Gurney Halleck on the training room set.

"It's simple; Gurney is a poet, and so is Josh."
DENIS VILLENEUVE, DIRECTOR

for the props department. "It went through different hands in order to make it look believable," says Doug Harlocker. He first gave the project to a local Hungarian cello maker. "He attempted to reshape existing instrument pieces to make the baliset," Doug recalls. Unfortunately, the resulting instrument didn't look quite right. So Doug reached out to a local prop maker who also happened to be an accomplished guitar player. It took him six weeks to reshape the instrument to meet the movie's needs. A local jeweler was brought in to manufacture the frets and tuning pegs that would complete the piece. Although the baliset looked great, it was not a functioning instrument and couldn't be tuned. "I knew I wouldn't be able to play the instrument, even though I play the guitar," says Josh. On set, the actor performed Gurney's scripted ballad a capella, using lyrics adapted from the novel and a melody composed by Hans Zimmer.

TOP LEFT Josh Brolin plays the baliset.

BOTTOM LEFT Concept art for Gurney's iconic musical instrument.

BOTTOM RIGHT Timothée Chalamet and Josh Brolin performing a fight scene.

SHIELDS

The shield device worn by the characters of *Dune* generates an electromagnetic field that protects the body from weapon attacks and other impacts. It is effective against bullets and other high velocity weapons, which rebound off the shield's surface. To counteract these shields, warriors in this world have developed a "slow blade" technique that gently penetrates this protective barrier. Once the force field is breached, the system is deactivated, leaving the adversary exposed. The slow blade approach required the creation of a new fighting technique. Instead of typical quick, strong blows, the sword fighting in *Dune* required the exact opposite. "A slow sword makes for interesting choreography," explains Roger Yuan. "The goal for an opponent becomes finding the shield switch on the body and destroying it."

In the original 1965 book, the protective field is activated by a shield belt worn at the waist. Denis, however, wanted to make this device more contemporary and opted to have it worn faceup on the back of the hand. He also wanted the shield's energy field to be reminiscent of the work of Norman McLaren, a British-born Canadian director known for his experimental, sometimes abstract, hand-drawn animations. "I knew the shields would need to be quite artistic," recalls visual effects supervisor Paul Lambert. "We used a technique involving painting frames by hand. When you see an impact point, we copy the 'before' and 'after' frames in that area and wrap it around the body as if it were some form of resonance. It's quite tricky, because not every compositor artist has those kinds of skills." As the concept evolved, so did the colors of the visual effect: A quick blow hitting the shield gives it a blue protective luminescence, whereas a sword slowly penetrating its surface turns it red, alerting the user that it's on the brink of being disabled.

TOP LEFT Shield device concept art.

TOP RIGHT In this frame from the training scene, the shield's blue hue indicates protection from an incoming blow.

BOTTOM RIGHT A red hue appears as the slow blade penetrates the shield.

"The set . . . had a soul. There was a natural mood of both gravity and intimacy."

CALADAN TRAINING ROOM

The training room in Castle Caladan was an immersive set with bas-relief wood-paneling murals, a large skylight, and soft light coming in through a detailed arched window. Three wooden practice dummies stood eerily on one side of the set, foreshadowing the Harkonnens' distinctive silhouettes. The room also doubled as an armory, prominently featuring Atreides blades as well as prizes of war—weapons taken from defeated enemies. The set wasn't one of the largest builds on the production, but it certainly had a soul. There was a natural mood of both gravity and intimacy.

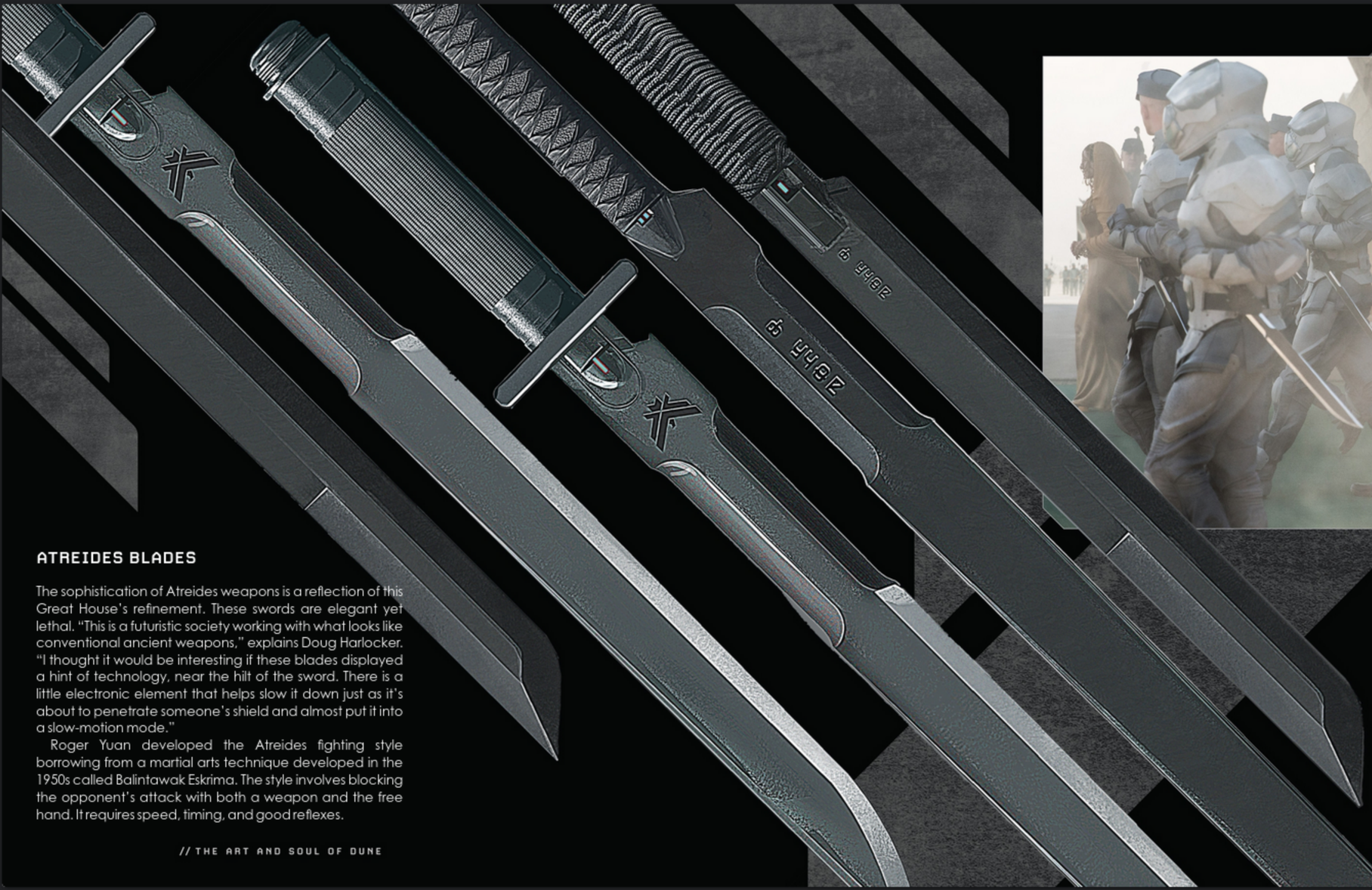
OPPOSITE BOTTOM LEFT Practice dummy illustration.

OPPOSITE BOTTOM RIGHT Set decoration design for the armory.

TOP Early training room concept art.

BOTTOM LEFT Josh Brolin and Timothée Chalamet silhouetted by the lighting on the training room set.

BOTTOM RIGHT Paul Atreides (Timothée Chalamet) strikes a practice dummy with his sword.



ATREIDES BLADES

The sophistication of Atreides weapons is a reflection of this Great House's refinement. These swords are elegant yet lethal. "This is a futuristic society working with what looks like conventional ancient weapons," explains Doug Harlocker. "I thought it would be interesting if these blades displayed a hint of technology, near the hilt of the sword. There is a little electronic element that helps slow it down just as it's about to penetrate someone's shield and almost put it into a slow-motion mode."

Roger Yuan developed the Atreides fighting style borrowing from a martial arts technique developed in the 1950s called Balintawak Eskrima. The style involves blocking the opponent's attack with both a weapon and the free hand. It requires speed, timing, and good reflexes.

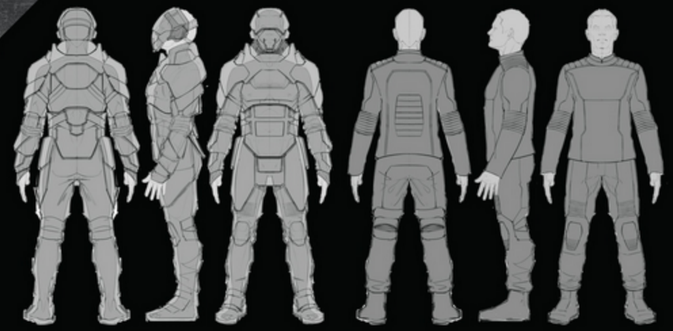
OPPOSITE Atreides sword designs.

TOP Paul (Timothée Chalamet) arrives on Arrakis flanked by Atreides soldiers.

BOTTOM Josh Brolin and Timothée Chalamet rehearse using their blades.

ATREIDES ARMOR

The Atreides armor was crafted to convey the spirit of a courageous and powerful army. Jacqueline West first started working on the design in Los Angeles with costume concept artist Keith Christensen prior to the shoot. "The costumes couldn't look too futuristic," explains Jacqueline. "Denis felt they had to be based in reality." They also had to be functional for actors and stunt performers who would need to walk, run, and fight while wearing them. "They were soft enough to move with the body, yet looked protective enough to wear in battle," says Jacqueline. The armor was modeled and sculpted on the studio lot in Budapest by British costume armorer Simon Brindle. Once the perfectly articulated and detailed prototype was approved, local costume armor sculptor Gergely Katai made multiple copies of the costume.



OPPOSITE TOP Illustrations used to make patterns for the interior and exterior layers of the Atreides armor.

OPPOSITE BOTTOM Atreides costume variations: working uniform, spaceport technician, spaceport technician (omitted from film), Hawat special forces design, and full armor.

LEFT Atreides armor with alternate headgear.

RIGHT Atreides armor with Caladan rain cloak.

"*Dune* is a sophisticated blend between high technology and medieval aesthetics. That's why the Atreides armor is made of a futuristic protective plastic, not metal."
DENIS VILLENEUVE, DIRECTOR

THESE PAGES Conceptual exploration of the Atreides uniforms and their variants.

THUFIR HAWAT

Mentats are humans trained to develop remarkable mental powers and memory capacity. They have come to replace computers in a world in which thinking machines have been outlawed. "Mentats can digest and analyze incredible amounts of information," explains Denis. "They can predict outcomes using their internal algorithms and powerful brains." Each Great House has a dedicated Mentat to navigate political and financial strategies—without them, it's impossible to make sense of the abundant data required to lead their people.

The venerable Atreides Mentat, Thufir Hawat, is portrayed by Stephen McKinley Henderson. "He is an actor with a warm presence and eyes that express intelligence," says Denis. "Despite the fact that Thufir is a living, breathing data processor, I wanted him to be a lovable character."

Stephen approached the character with Sherlock Holmes in mind. "I was always a fan of Arthur Conan Doyle's character and this whole notion of probability and deduction," explains Stephen. Thufir has a photographic memory, and by rolling his eyes to the back of his head he can retrieve information stored in his brain. "He has an ability to connect the dots in a way that is uncanny," adds the actor.

All Mentats also have a unique facial marking that distinguishes them from others. In the book, their lips are stained by sapho juice, a plant-derived drink that speeds up their thought processes. In the movie, this physical attribute was transformed into a more refined symbol. "The Mentats are so clean, and tidy," says hair and makeup designer Donald Mowat. "So I thought, 'Why can't it be a tattoo?'" He designed a dark square and applied it to the lower lip, experimenting with different sizes and placements until it looked just right. "With the feeling of a wine stain or birthmark in mind, I found a dark purple blackberry color, which did the trick," he adds.

RIGHT Stephen McKinley Henderson portraying Thufir Hawat.

"[Thufir] has an ability to connect the dots in a way that is uncanny."

STEPHEN MCKINLEY HENDERSON, ACTOR

LEFT Chang Chen as Dr. Yueh, the Atreides's family physician.

TOP RIGHT Dr. Yueh's slow dart gun.

BOTTOM RIGHT Dr. Yueh costume concept art.

DR. WELLINGTON YUEH

Dr. Wellington Yueh is the Atreides's family physician. He graduated from the Suk School of Medicine, which trains doctors in Imperial Conditioning, and as a result bears the Suk diamond on his forehead as a symbol of honor, loyalty, and the promise to never take a patient's life.

For this role, Denis chose Taiwanese actor Chang Chen, whom he had met at the Cannes Film Festival in 2018 where both were serving as members of the jury. "I've admired Chen as an actor since seeing him in Wong Kar-Wai's movies in the '90s," says Denis. The actor relished the opportunity to appear in his first English-language movie. "Before I read the script," recalls Chen, "I was expecting something very cyberpunk and otherworldly. When reading it, I discovered that this work of fiction is surprisingly accessible on the human level."

Yueh is a doctor of the future. Using only his sight, touch, and instinct, he can determine the cause of a person's suffering. "Frank Herbert wrote the character as a tragic romantic figure," explains his son Brian Herbert. Indeed, the doctor is conflicted between his loyalty toward Duke Leto and his love for his wife, Wanna. "He's suffered much despair in his life," says Chen about his character. "As a result, it's a complex and heartbreaking role for an actor to play."

In the movie, Dr. Yueh wears minimalist tailored tunics. Always anchoring the costumes in visual reference, Jacqueline West designed the character's attire with an eye on the image of Rasputin, the notorious late-nineteenth-century mystic who insinuated himself into the Russian royal family by acting as faith healer to their hemophiliac son.

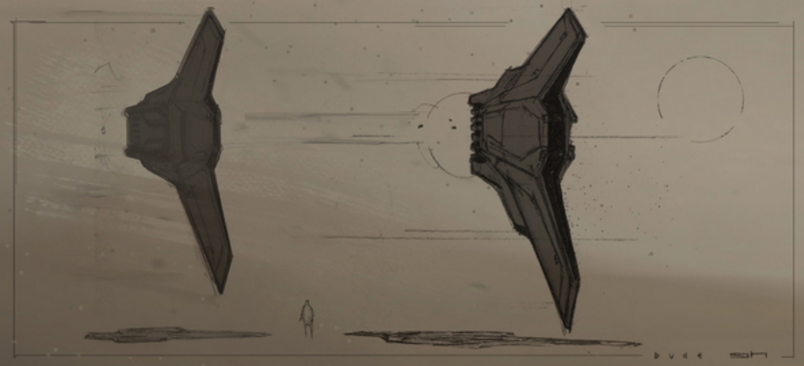
ATREIDES FLAGSHIPS

As the Atreides family prepares to leave Caladan, massive angular flagships emerge from the ocean in preparation for the voyage to Arrakis. "The Atreides preserve their fleets underwater," explains Denis. "Gigantic old, battered, and rusted ships slowly rise from the water bringing troops, weapons, and everything they will need to start a new life on Arrakis."

"In the early concept, I explored a simple vertical-themed ship that illuminates the ocean water before the reveal as it breaks the water surface."
GEORGE HULL, CONCEPT ARTIST

OPPOSITE Early concept art of the Atreides's flagship.

BOTTOM Final illustration of the flagship emerging from the ocean.



THESE PAGES Various iterations and visual explorations of the fighter spacecraft.

DUNCAN'S SPACECRAFT

This ship was originally created for a scene that was ultimately omitted, but Denis loved the look of it and found a new place for it in the cut. During the editorial process, a scene was added to introduce Duncan Idaho at the helm of this spacecraft, pushing the vessel to its limits.

"This sketch was an exploration of a vertical wing design that could spin through the clouds and mountains," explains George Hull. "I was oddly inspired by giant rock formations that are completely non-aerodynamic. I love juxtaposing the wrong things together to find some unusual hybrid." Patrice later added a ramp and landing gear to the ship before integrating the vehicle into the Caladan hangar, which was designed during postproduction by concept artist Deak Ferrand.

THESE PAGES The Herald of the Change landing on Caladan to meet the Atreides.

TOP LEFT Concept art for the Imperial spaceship.

BOTTOM Imperial spaceship ramp illustration.

"The Heighliner needed to look mysterious. The design is powerful yet quite simple."

DEAK FERRAND, CONCEPT ARTIST

HEIGHLINERS

Space travel in *Dune* requires the use of Heighliners. These gigantic ships have the capacity to transport humans and cargo to and from distant planets. The Atreides use these enormous ships to make their journey to Arrakis.

When developing the Heighliners, concept designer and storyboard artist Sam Hudecki first came up with a design that resembled a twisted paper tube. "It wasn't a full tube, and it looked different from all angles," he says. Deak Ferrand also explored various shapes with production designer Patrice Vermette, such as a pitted olive, a donut, and an avocado. Although the concept evolved, it always remained tied to the idea of a massive cylindrical ship soaring through space.

OPPOSITE TOP Early avocado-shaped Heighliner illustration.

THESE PAGES Final Heighliner design.

THESE PAGES Concept art depicting Baron Vladimir Harkonnen's chambers.

OPPOSITE TOP RIGHT The Baron's throne featuring a spice-colored orb.

OPPOSITE CENTER RIGHT Aerial view of the chambers.

Giedi Prime, every last acre of desecrated land has been covered with structures, creating a world made entirely of plastic buildings.

The Giedi Prime vista reveals the prominent Harkonnen palace, a large dome in the distance. Visitors enter through a retractable shaft at the top, as though being swallowed whole by a dark beast. Those who enter do so at their own risk.

It's no coincidence that the Baron's throne room looks like the inside of a ribcage, a skeletal reminder of death and decay.

"The architecture of the Baron's chambers is very organic_like a whale, a thoracic rib cage, a skeleton."

PATRICE VERMETTE, PRODUCTION DESIGNER

BARON VLADIMIR HARKONNEN

There was only one actor considered for the role of the infamously evil Baron Harkonnen. "Stellan Skarsgård scares me," says Denis on why he cast the Swedish actor. "He's been scaring me in movies for the past thirty years."

In his novel, Frank Herbert described the Baron as "grossly and immensely fat." During their first conversation, Denis told Stellan that he wanted to create the corpulent Baron using prosthetics rather than resorting to computer-generated effects. Stellan was relieved that this was the case and soon joined the production.

In the story, the Baron is so corpulent that he can't carry his own weight and therefore uses suspensor technology to move about. In bringing this idea to the screen, Denis knew there was a risk that the Baron would look like a caricature or, worse, be comical. Denis wanted Stellan to play the Baron as a strong and menacing leader rather than as "a fat baby flying around with an antigravity system." To create the character, the actor didn't delve into the psychology of the Baron, deciding instead to leverage his intimidating size. "It's a small role," points out Stellan, "but by giving him enough physicality, you can create a strong presence that casts a shadow over the entire film. Which is necessary for a bad guy."

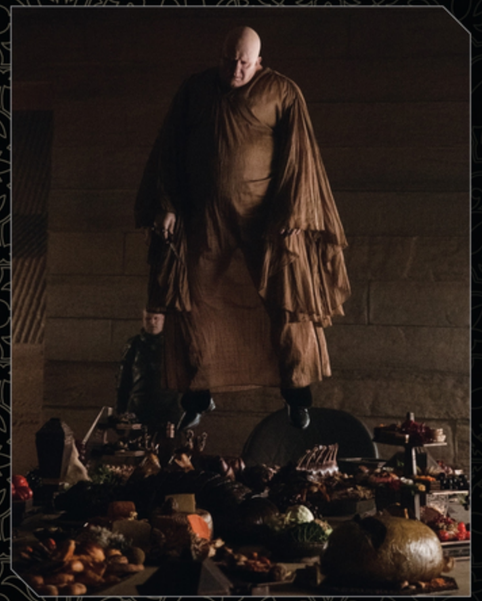
"By giving him enough physicality, you can create a strong presence that casts a shadow over the entire film."

STELLAN SKARSGÅRD, ACTOR

OPPOSITE LEFT Illustration depicting one of the Baron's costumes.

OPPOSITE RIGHT Early sketches of the Baron's physiology.

THIS PAGE Stellan Skarsgård in full prosthetics as the Baron.



TOP LEFT Baron Vladimir Harkonnen (Stellan Skarsgård) being lifted into the air by the antigravity suspensor device.

BOTTOM LEFT A visual effects render of the Baron's antigravity suspensor system.

RIGHT Costume design depicting the floating Baron's black silk robe.

OPPOSITE Early sketches exploring the Baron's shape and movement.

A BEASTLY FIGURE

The Baron's silhouette went through a considerable research-and-development phase. His figure, proportions, and musculature had to be narrowed down to a very precise design before the makeup team could start building the prosthetics. "We did many fat, bubbly Barons and then thought, 'Why isn't he more like a beast?'" recalls concept designer and storyboard artist Sam Hudecki.

At one point, Denis provided a picture of a giant walrus that became a central reference point for the Baron's design throughout the production. Sam then started playing with weight, movement, and behavior, to make him feel slightly inhuman. He also drew him walking on the tips of his toes as a reminder that the Baron is always held up by suspensor technology. "I liked the idea that this would allow him to be a little bit dainty," says Sam, "but also completely terrifying."

BUILDING THE BARON

The Baron's full-body prosthetics were the centerpiece of the hair and makeup department's work on *Dune*. Stellan had to sit for up to seven hours while layers of makeup and prosthetics were applied. "Mentally I could do it because it was fun watching the makeup artists work," says the actor. "Physically, however, it was like having a really bad seat on a transatlantic flight."

Early in preproduction, hair and makeup designer Donald Mowat had reached out to Love (pronounced loo-VEH) Larson and his wife, Eva von Bahr, prosthetics experts who would take on the challenge of bringing the Baron to life. Working with Stellan in Stockholm, where the actor is based, the makeup duo and their team had eighteen weeks to produce multiple copies of the full-body prosthetic, each of which would inevitably be destroyed in the process of getting the actor out of the suit at the end of every shoot day.

Designing the Baron's body started with sculpting a life-size clay figure that displayed strength beneath the corpulence. "Love said they had ten sculptors working on the suit because it was so immense," Donald recalls. The proportions of the body parts were sculpted and molded to look as natural as possible despite the Baron's considerable size. "We didn't make them ten times the normal size," explains Donald. "We just chose a volume that would be powerful and based in reality."

On his shooting days, Stellan would arrive at the studio between four thirty and eight o'clock in the morning to be ready to shoot in the afternoon. The process started with him being fitted with the Baron's head and shoulders. Then, the other parts were progressively added to his body. These sections included foamlike padding, a cooling vest, and occasionally a harness used to winch Stellan into the air, simulating the antigravity suspensor technology. At the end of the process, Love, Eva, and their team completed the look by affixing a layer of fake skin over the entire body.

The most delicate work, however, was the task of applying the face, because it had to withstand tight close-ups and also avoid obscuring Stellan's expressions and emotions. "Sometimes you need to do less in terms of prosthetics, or use less drastic makeup, so you can still see the actor's face," says Donald.

OPPOSITE Love Larson (left) and his team bringing finishing touches to the prosthetics worn by Stellan Skarsgård.

TOP In Eva von Bahr and Love Larson's Stockholm studio, the Baron's prosthetics are sculpted, molded, and tested on Stellan Skarsgård.

THIS PAGE Design variations for the Baron's costumes.

OPPOSITE LEFT Concept illustration for the Baron's armor.

OPPOSITE RIGHT Early concept for the floating Baron.

THE BARON'S NEW CLOTHES

The next challenge was dressing the voluminous Vladimir Harkonnen in costumes that would express his status, wicked temper, and hedonistic nature. "I saw him as a kind of evil, sad warlord," says costume designer Jacqueline West. In that spirit, she referenced movies by director Akira Kurosawa set in feudal Japan when designing the Baron's armor.

Denis wanted the Baron to wear pajama-like clothing in his daily life to show that he doesn't bother to dress in formal attire when governing. "His description of the character sounded like Colonel Kurtz in *Apocalypse Now*," says Jacqueline. "I always loved the dark shroud Marlon Brando wears in that movie, with only his face glowing. His body disappears and his face becomes this mysterious orb in the darkness." Instead of pajamas, however, Jacqueline designed a striking long black silk robe with seemingly never-ending fabric that unfolds as the Baron rises to the ceiling. "Denis said he wanted the Baron to float, and I said it would be so great not to see where his body ends," she adds.

"[Rabban] relies on intimidation and fear. He feeds off of evil; he feeds off of pain."

DAVE BAUTISTA, ACTOR

GLOSSU RABBAN HARKONNEN

Rabban is the heir to House Harkonnen, a vicious character embodied in the movie by Dave Bautista, who portrayed a replicant gone rogue in Denis's last film. "I loved working with Dave on *Blade Runner 2049* and definitely wanted to cast him again in *Dune*," says Denis. "Rabban is very sadistic and mean," explains Dave. "He relies on intimidation and fear. He feeds off of evil; he feeds off of pain."

The character is indeed a brute with a bad temper. "Rabban is not afraid of anything except for his uncle," says Dave. "He really wants to please him, but the Baron looks at him as more of a pawn in his big game. They're related, but there's no affection there."

From the start, Denis envisioned the Harkonnens as a population living in a highly polluted environment with no access to sun or proper nourishment. As a result, Giedi Prime's inhabitants have very pale skin, dark eyes, and no hair. This meant the actors playing Harkonnens, including Dave, had to shave their heads and wear eyebrow covers, giving their characters a sinister countenance.

RIGHT Dave Bautista portraying Glossu Rabban Harkonnen.

LEFT RABBAN'S INKVINE WHIP IS MADE FROM A CREEPING PLANT NATIVE TO GIEDI PRIME.

BOTTOM AND RIGHT COSTUME ILLUSTRATIONS DEPICTING RABBAN'S ARMOR.

"It's really a huge idea—how a person could emulate the functionality and the importance of a computer."
DAVID DASTMALCHIAN, ACTOR

PITER DE VRIES

Like the Atreides, House Harkonnen depends on a Mentat to digest incoming data and make strategic political decisions. Like Thufir Hawat, Piter de Vries is a living thinking machine, but unlike his rival, he is a coldhearted being with no redeeming qualities. Denis had worked with actor David Dastmalchian on *Prisoners* and *Blade Runner 2049* and was overjoyed to welcome him to the cast of *Dune*. "I thought the role of Piter was perfect for David," says Denis. "He is a very creative and versatile actor. We have a running joke that I always kill his characters in my movies, but never in the same way. He is very good at dying."

Piter de Vries is a merciless character driven by his devotion to the Baron. "The Baron is my boss, my hero, my master," explains David. "And Piter is dedicated to this cause of retaining the Harkonnens' control of the spice." When the Emperor gives Arrakis to the Atreides, Piter becomes instrumental in calculating how the Baron can once again seize control of the spice-rich planet.

To prepare for the role, David read up on the psychological mechanisms of sociopaths to understand how a character like Piter can function without emotion. He also studied Herbert's source material. "I thought a lot about a world without computers," recalls David. "It's really a huge idea—how a person could emulate the functionality and the importance of a computer."

Although David had shaved his head for the role of Coco in *Blade Runner 2049*, he couldn't do it for *Dune* because of his commitment to a role in another movie. The actor therefore spent three hours every day in the makeup chair, where he was fitted with a custom bald cap and eyebrow covers.

He then slid on the character's slim, leather-like tunic, the design of which was inspired by Bengt Ekerot's portrayal of Death in Ingmar Bergman's *The Seventh Seal* (1957). When he was in full costume and makeup, David would move and walk very slowly, his entire demeanor instantly changing. The effect was eerie, and very much in line with the character. "It was feeling the physicality of Piter coming into focus," explains the actor.

OPPOSITE Piter de Vries actor David Dastmalchian under the special effects rain in Budapest.

LEFT Piter de Vries's (David Dastmalchian) unique look featuring the sapho juice tattoo on his bottom lip.

TOP RIGHT Costume illustrations for Piter de Vries.

THIS PAGE Harkonnen helmet research and development illustrations.

OPPOSITE LEFT Side-by-side comparison of early concept art and final design of the Harkonnen armor.

OPPOSITE RIGHT Various Harkonnen blade designs.

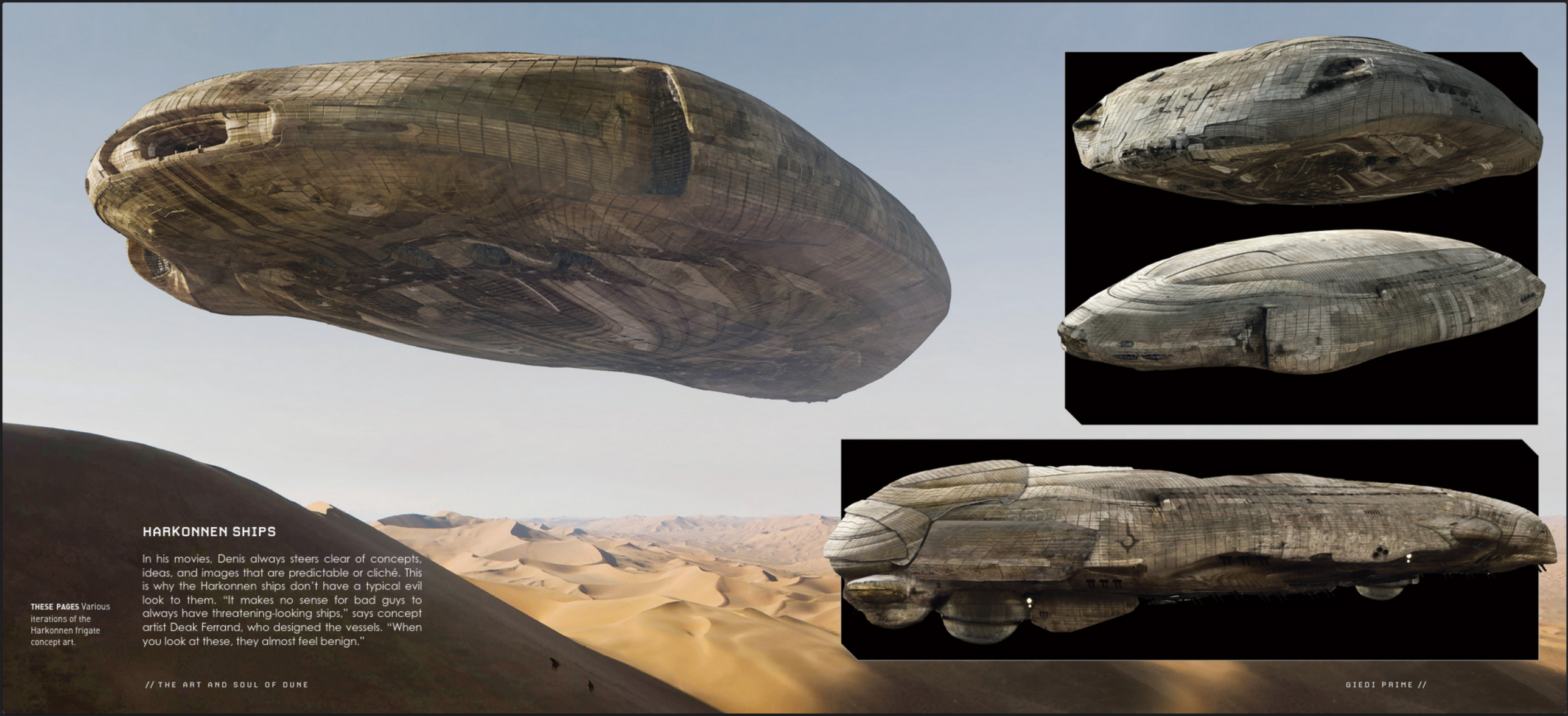
HARKONNEN SOLDIERS

Harkonnen soldiers are always seen in armor in the movie—war is their life. For costume designers Jacqueline West and Bob Morgan, this faction of the *Dune* universe was one of their favorite to create. Per Denis's vision, they steered away from the retro-futuristic genre of steampunk as well as from anything that was "too sci-fi," coming up instead with a look they described as "modern medieval." "The Harkonnen costumes are dark, mysterious, and, again, very tarot-card-driven," says Jacqueline. The armor also features layers of scales and textures that evoke the insect world. "Even their helmets are ant-like," points out Bob, "and their bodies are reminiscent of spiders." All these features give the Harkonnen army eerie silhouettes when they attack the Atreides in the dead of night. "It was wonderful to make something that had not been seen before," adds Bob.

HARKONNEN BLADES AND FIGHTING STYLE

The Harkonnens' weapons are very different from the Atreides's blades; instead of being elegant, they are massive, clunky, and crude. "Denis wanted to illustrate the sheer brutality of that culture," explains property master Doug Harlocker. "They are less precise and refined, but they do as much physical damage as possible."

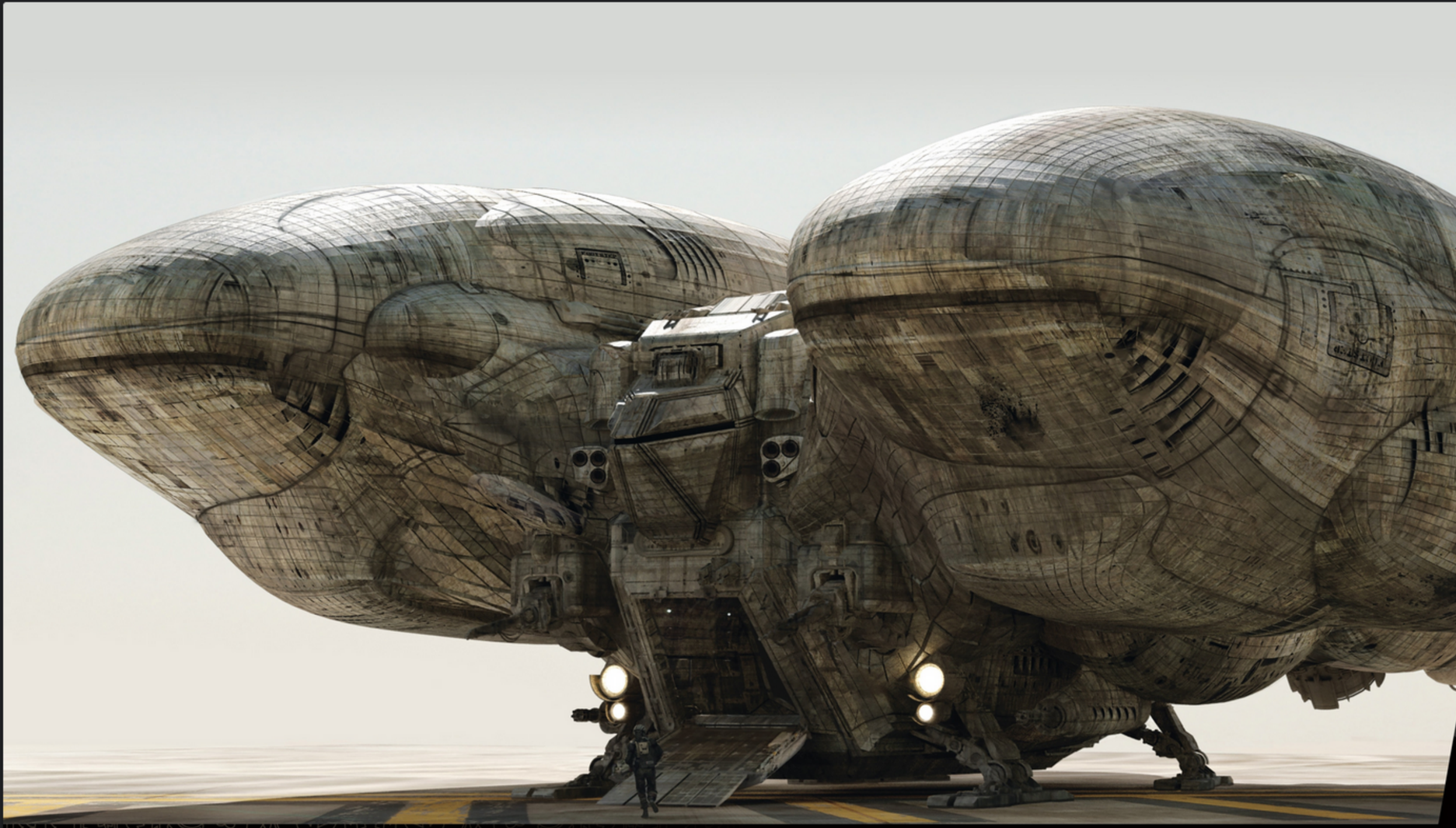
To create the Harkonnens' barbaric fighting style, Roger Yuan borrowed elements from ancient Mongol war tactics. "The Harkonnens' discipline is based upon fear—fear of failure and fear of the Baron," explains the fight coordinator. "Torture is something they enjoy inflicting on others; they, however, don't want to suffer. So they fight sadistically to the death."



HARKONNEN SHIPS

In his movies, Denis always steers clear of concepts, ideas, and images that are predictable or cliché. This is why the Harkonnen ships don't have a typical evil look to them. "It makes no sense for bad guys to always have threatening-looking ships," says concept artist Deak Ferrand, who designed the vessels. "When you look at these, they almost feel benign."

THESE PAGES Various iterations of the Harkonnen frigate concept art.



THESE PAGES The Harkonnen troopship fully deployed.

RIGHT A sequence illustrating the troopship's flight and landing system.

The light, sandstone-colored frigate (previous pages) is the largest of the Harkonnen ships. Its unique shape and texture were again inspired by nature. "The original idea was based on an armadillo," says production designer Patrice Vermette.

The Harkonnen troopship (these pages) was designed using the same color palette as the frigate and incorporated a tiled texture. The idea was that the craft could travel quite quickly, and upon arrival to its destination, side pockets would deploy like parachutes, slowing down the ship.

HARKONNEN CRAWLERS

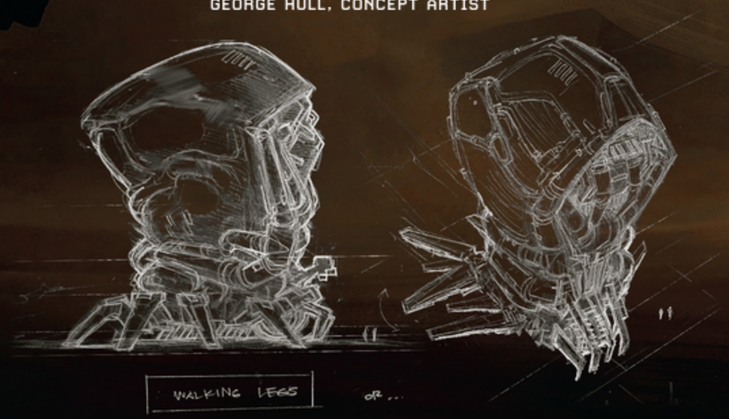
The Harkonnens' fleet also includes spice crawlers, which are used on Arrakis to extract spice from the desert. "This harvester is meant to look like a squid or a terrifying spider," says Denis of the visual design he came up with, inspired by Frank Herbert's description of the bug-like vehicles. The crawler was designed by concept artist George Hull during the early brainstorming process, but was not originally included in the script. It nevertheless made its way into Denis's subconscious and ultimately into the movie. "This is a design I sent Denis while anxiously waiting for *Dune* to begin production," recalls George. "Two years later, he rang and said he had nightmares about this image and wanted it for the opening of his movie." George dug out the design and refined it by adding structural details to illustrate not just how it moves on the desert floor, but, more important, how it voraciously harvests spice. In the final film, it appears in an introductory scene that shows the Harkonnens and Fremen at war over spice exploitation on Arrakis.

OPPOSITE Harkonnen harvester concept art.

BOTTOM Early sketches exploring the engineering of the Harkonnen harvester.

"I love juxtaposing strange influences as I believe wonder is a vital emotion in the cinema experience."

GEORGE HULL, CONCEPT ARTIST



SALUSA SECUNDUS

"The desolate planet features an intriguing stone landscape."

PAGES 112–113 Concept art of Salusa Secundus inspired by the city of Paris.

TOP Early illustration of the planet's environment.

BOTTOM RIGHT Concept art depicting an Imperial vicar reciting chants from a pulpit.

OPPOSITE BOTTOM RIGHT With Imperial flags waving above them, thousands of Sardaukar await battle in this conceptual illustration.

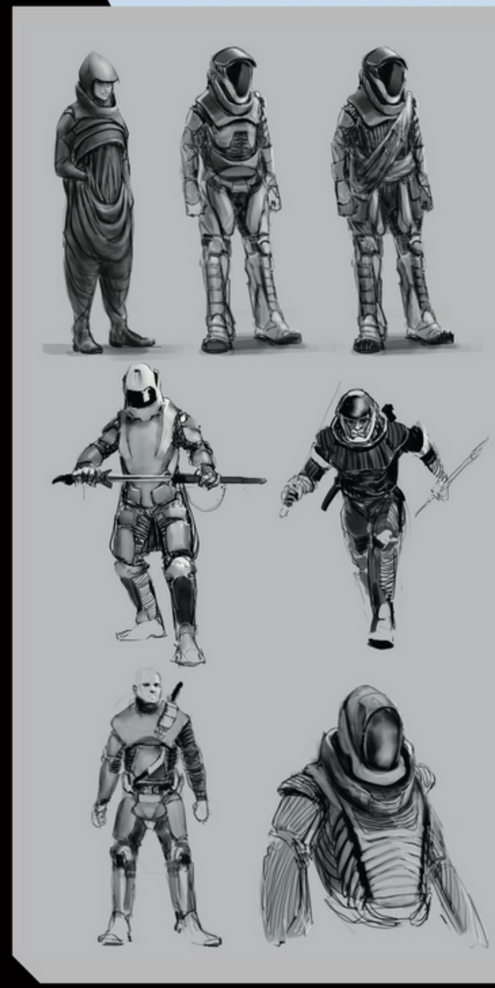
Salusa Secundus is the Imperial prison planet, where criminals serve time for violations against the Imperium. Many prisoners don't survive this inhumane world, while the strongest are recruited by the Emperor's army and trained to become Sardaukar, the most hardened soldiers in the universe.

The desolate planet features an intriguing stone landscape. "The inspiration for this concept art is an aerial view of Paris," says Patrice Vermette. "This is what (seen on the previous two pages) the city would look like if the buildings were made from stone." Indeed, if you look at a map of the French city and zoom in on the Place Charles de Gaulle, formerly the Place de l'Étoile, you will notice the large junction with avenues radiating out to different districts, much like the artwork for Salusa Secundus.

THE SARDAUKAR

As the elite forces of the Emperor, the Sardaukar are inventoried, trained killing machines. Denis wanted them to resemble Vikings—tall, bearded, and physically formidable. Hair and makeup designer Donald Mowat also added serial numbers to the soldiers' foreheads, communicating the idea that these troops are under the complete control of the Imperium

The Sardaukar's uniforms are part space suit, part armor, allowing them to jump from spaceships and land on planets ready to attack. These costumes needed to appear to be lightweight space garments, yet provide the necessary protection for battle. "The challenge was to not make them look like robots," says costume designer Jacqueline West. "Denis was very preciseabout how he wanted the helmets to look," adds costume codesigner Bob Morgan, "and how much of the face you'dsee through the visor."



THESE PAGES
Illustrations showing the design evolution of the Sardaukar uniform from early drawings to the costume used on set.

TOP AND BOTTOM Concept art depicting the inverted prisoner crucifixion on Salusa Secundus.

OPPOSITE BOTTOM Set photography of the Sardaukar war ritual.

WAR RITUAL

Denis wanted each faction in *Dune* to have a defined culture. In the case of the Sardaukar, their brutal way of life is expressed through a highly ritualized war ceremony. The ritual is seen in a chilling sequence in which a legion of stone-faced soldiers stand at attention as they watch dozens of prisoners hang upside down with blood flowing from their sliced throats into large basins. The Sardaukar kneel before priests, each receiving a dab of the victims' blood on their forehead.

This is the only scene we filmed using blue screen during 2019's five-month shoot. It was shot in a vacant space on the Budapest studio lot, with stone slabs on the ground simulating the Salusa Secundus ceremonial site. The blue screens set up in the background were replaced during postproduction with the planet's landscape and additional Sardaukar soldiers, as well as Imperial ships in the distance.

SARDAUKAR COMBAT

The Sardaukar blades were inspired by ninja swords: dangerous, brutal, yet precise. "We were trying to create their warring philosophy through the edged weapons that they are using," explains property master Doug Harlocker.

The props department also designed the Sardaukar lasgun, a laser projector weapon. In the movie, Imperial soldiers use it to cut through a metal door in an abandoned desert research station in their pursuit of Paul Atreides.

The Sardaukar use a unique fighting style that separates them from common soldiers and other factions. "These are elite guards," says fight coordinator Roger Yuan. "They train like special forces, so that means as a team. Even in battle, they would go in a phalanx." Their blade work is lethally precise. "Their attacks are 'one cut, one kill,' like samurai," adds Roger. In keeping with the spirit of this medieval Japanese mentality, the Sardaukar don't fear death. "It's a mix of samurai and Viking spirits," he adds. "They seek a glorious death."

LEFT Concept illustration of a Sardaukar soldier holding a lasgun.

BOTTOM RIGHT Dart guns are integrated into the forearm of the armor in these costume designs.

OPPOSITE LEFT Sardaukar on the attack with blades held high.

OPPOSITE RIGHT Concepts for the Imperial Sardaukar blades.

THESE PAGES Various iterations of the Imperial frigate that carries Sardaukar to war.

ARRAKIS

Arrakis is a desert planet and the only place in the known universe where spice can be found and harvested. The Harkonnens have kept a tight hold on this fief for eighty years, oppressing and killing the desert people to protect their livelihood. But the Fremen have greater dreams for their home planet: They aim to bring water back to its surface and rebuild its ecology.

There is hope for better days when the Atreides take power and settle into the Arrakeen Residency. Instead of fighting the Fremen, Duke Leto attempts to build an alliance with them. Over time, Paul Atreides will come to realize that he has a greater responsibility toward these people and their planet than he ever imagined. "What a journey to have to come to terms with: being born a prophet, and that burden," writes screenwriter Eric Roth, "and being sent onto a planet that suffered from the blindness of ecology, echoing our own blindness as to what we are wreaking on our own planet."

MOONS OF ARRAKIS

Two moons orbit Arrakis. Visually, these twin heavenly bodies help establish the feeling that we are on a planet very different from Earth. The film stays true to Frank Herbert's descriptions from the novel: The first moon has markings resembling the shape of a hand, and the second has craters in the shape of a desert kangaroo mouse.

The otherworldly look of the moons was important to Denis. One night in Jordan, we were filming in the desert and the moon suddenly appeared, big and bright, above us. Someone suggested we film it as reference for the moons in the movie. "It was one of my favorite moments in Jordan," recalls Timothée Chalamet. "Denis said, 'This moon is *tiny*. Dune has two huge moons.' He wasn't trying to sound funny about it. He meant, 'What? *This* moon is a joke.'"

PAGES 124–125 Early illustration of the Arrakis landscape.

OPPOSITE The city of Arrakeen with the planet's two moons shining above.

TOP Detailed illustration of the two moons that showcases their distinctive markings: One features a shape that looks like a hand, the other a marking that resembles a desert mouse.

DUNCAN DROP

Duncan Idaho has been entrusted with a peace mission on Arrakis and is the first to land on the planet to meet with the local Fremen. "To be sent to a foreign land to meet an indigenous people is a beautiful thing," says Jason Momoa. "He is an honorable character." In an early draft of the script, the film opened on Duncan journeying to the distant planet.

The sequence began as Duncan looks down at Arrakis from his spacecraft, with the planet's warm hues reflecting on his spherical helmet. Pushing himself off the edge of the hatch, he plummets head-down toward the planet, allowing the audience to discover Arrakis from his point of view. Duncan drops faster and faster toward the surface in a controlled fall alongside a rock face. As he approaches the ground, he activates his suspensor belt and lands softly on a rocky elevation.

We filmed this scene with Jason in two locations. In Budapest, the spaceship door that Duncan would exit was built on a soundstage next to a three-story-high LED screen. Visual effects supervisor Paul Lambert created footage of Arrakis as seen from space based on concept art of the planet. During each take, the visual effects shot would be played on the LED screen, allowing director of photography Greig Fraser to capture the proper reflections of the planet on the helmet's visor.

RIGHT Duncan's space suit costume illustration.

BOTTOM LEFT Concept art shows Duncan Idaho jumping from his spaceship.

OPPOSITE A stunt double simulating a space dive to Arrakis in front of a three-story LED screen.

"The spaceship door that Duncan would exit was built on a soundstage next to a three-story-high LED screen."

We shot the second part of this scene with Jason and his stunt double in the Jordanian desert, using a large crane to lower the performers to the desert floor and simulate Duncan's suspensor-belt landing.

The space suit used in the deleted scene was built from the same pattern as the Sardaukar armor, yet was drastically different in style. Its silver fabric was inspired by Philip Kaufman's classic 1983 movie about the United States' first astronauts. "I remember Denis saying he wanted a space suit, but wondered if it could be in a color other than white," says costume designer Jacqueline West. "Then I remembered they wore silver in *The Right Stuff*, and he just lit up."

Ultimately, however, Denis decided to omit the entire space-drop sequence because he felt it didn't tie in with the canon and style of *Dune* as established by Frank Herbert.

TOP Filming Duncan's landing in the Wadi Rum desert in Jordan.

OPPOSITE Early concept art of Duncan arriving on Arrakis.

SPACEPORT

The Atreides's troop carriers land on Arrakis after their long voyage from Caladan. The scene unfolds from Paul's point of view as the ship's ramp lowers, revealing the blazing sunlight, smoldering heat, and gusts of wind laden with sand. Denis wanted audiences to have the same first impression of the planet as Paul does, and be blinded by the light.

The scene also expresses a radical change in scale. "Arrakis is larger than life," explains Patrice Vermette. "The spaceport needed to communicate the beginning of a very different life." This is a recurring theme both in the book and in the movie—the idea of powerlessness and solitude in the face of the vastness of the desert. "I started mixing this idea with ziggurat architecture, references from Egypt that Denis sent me, and my love for brutalist architecture."

A week before filming the Atreides landing on Arrakis, Denis woke up with an idea. He had been dreaming

THESE PAGES Illustration of the Atreides's troopship landing on Arrakis.

BOTTOM During filming of the Arrakis arrival scene, a functional ramp was lowered to reveal the actors playing the Atreides family.

"Upon their arrival, the Atreides must feel like they are being squashed by the scale of Arrakis."

PATRICE VERMETTE, PRODUCTION DESIGNER

of bagpipes and wanted to include the traditional Scottish instrument in this scene to emphasize the clash between the cultures of Caladan and Arrakis. A musician was quickly cast in the role of an Atreides bagpipe player. "What I love about the bagpipes in the movie is that they link the audience with Earth, telling them that this music has survived over time," says Denis.

When planning the spaceport scenes, which required a very large space, the production team explored a number of shooting locations. Ultimately, the Budapest studio turned out to be the best option. A section of the vacant backlot measuring 500 feet by 350 feet was paved to replicate the Arrakis spaceport tarmac. "As massive of a backlot pad as we built, it still could have been twenty-five times bigger than it was for everything we had to film over the period of three months," recalls producer Joe Caracciolo. Whether indoors or outdoors, we were always filming on gigantic realistic sets.

While we may not have worked with blue or green screens—with the exception of the Salusa Secundus ritual scene—we did use sand-colored screens as backdrops that would later be replaced with visual effects elements. These screens blended in with the world we'd created, immersing the actors and the entire crew in a monochromatic landscape, much like an actual desert. This ingenious idea came from Paul Lambert. "What I realized was that the color of sand when you invert it is blue," explains the visual effects supervisor. "So rather than setting up a bunch of blue screens, we set up sand screens. To extract the mattes, which allows us to extend imagery further than those screens, we invert the photography and they become blue screens. It works really quite well." These screens reflected the light more naturally, as though it were bouncing off sand dunes, which was a major advantage, explains Greig Fraser. "To Paul's absolute credit, if the light doesn't feel right, the end result won't feel right. And if you spend all this effort getting the best actors, the best script, the best editing, and the best visual effects, but the audience is distracted by the quality of light, you're not really doing a service to the rest of the arts."

TOP Concept art depicts the spaceport as seen from the Atreides troopship.

BOTTOM RIGHT A full-size ornithopter on set surrounded by sand-colored screens that would later be used to extend the imagery with visual effects.

THESE PAGES A concept illustration reveals the sandblasted architecture of Arrakeen.

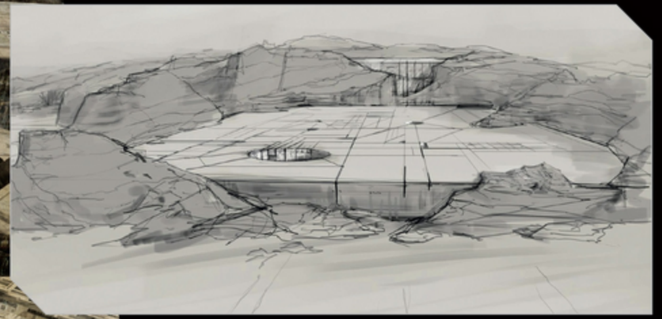
BOTTOM Alternate version of the cityscape featuring a solid concrete roof that covers the streets beneath.

ARRAKEEN CITY

Arrakeen is the seat of the Atreides's newly acquired power. All political and financial activities occur here, as does the spice refining process. The sprawling megalopolis is encircled by mountains and bordered by a shield wall, two elements that together serve the triple function of protecting citizens and industries against sandstorms, enemy attacks, and the enormous deadly sandworms that live in the desert.

Denis wanted the city to express a sense of loneliness and isolation. To get this sparse feel, he worked with Deak Ferrand on the concept, paring down the details to reveal a pure yet richly textured design. "It's hard to be simple as artists, because we can't hide behind the minutiae," explains the concept artist. "It's difficult because we instinctively want to show off our artistic prowess. Instead, it's about staying humble."

During the development process, Patrice came up with an alternative design for the city that featured the streets and buildings of Arrakeen covered by a large block of stone. "The key idea was to protect the city against the elements," explains concept designer and storyboard artist Sam Hudecki, who illustrated Patrice's concept. Although Denis ultimately went in a different direction regarding the main look of the city, the concept was later integrated into a smaller section of Arrakeen—the marketplace and surrounding streets that Duncan Idaho flies through when making his escape from the Harkonnen attack.



ARRAKEEN RESIDENCY

The crown jewel of Arrakeen is the royal Residency. "The Atreides's new home needed to look like an old, battered building that has been sandblasted by the desert wind over thousands of years," says Denis. "It has been designed to resist massive sandstorms, and they occur every three weeks on this planet." Early iterations of the Residency design suggested a number of architectural options—one concept evoked a dam, another resembled a train. Ultimately a pyramid-like design was deemed the most organic shape for this environment. It was made to look like a government house rather than a palace, at the request of the Herbert Estate team.

THESE PAGES Concept art depicts the Arrakeen Residency.

TOP RIGHT An early train-inspired design for the Residency.

"The Residency needed to look like an old, battered building that has been sandblasted by the desert wind over thousands of years."

DENIS VILLENEUVE, DIRECTOR

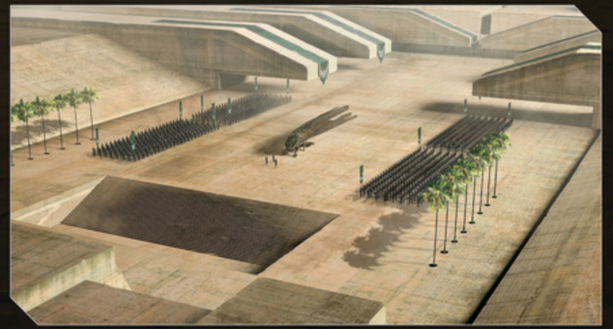
TOP A concept illustration for the Residency courtyard.

OPPOSITE BOTTOM LEFT An aerial concept for the courtyard featuring the sacred date palms.

OPPOSITE BOTTOM RIGHT Costume design concept art for the residents of Arrakeen.

There were logistical requirements to keep in mind while designing the Residency exterior. It needed to convincingly house locations vital to the story, including the Residency aircraft bay, the Duke's balcony, and rooms looking out onto the city. Deak tied all these pieces together in a detailed illustration that also included the Residency courtyard, which had been designed separately.

The courtyard features two rows of perfectly aligned date palms. These trees are sacred to the people of Arrakis. They hold the hope of a greener future, when water will be sufficiently abundant to sustain both humans and nature. "The palm trees we built for the courtyard set were hybrids," reveals Patrice. "The trunks camefrom Spain, and the long, large leaves came from Turkey. So they were Frankenstein palm trees. Date palms made with two breeds."



"The exciting part about making this movie was the tactile authenticity of the world-building."
MARY PARENT, PRODUCER

STAGE 6

I loved showing actors around the sets when they first arrived in Budapest. I couldn't get enough of their jaws dropping in amazement. These constructions were so large they made you feel disconnected from reality and oppressed by their immensity. The Arrakeen Residency set built on Stage 6 was the largest of them all, with wide hallways, high ceilings, and studio lamps shining through horizontal slit windows simulating a blinding desert light. The design was minimalist, yet felt like an ancient palace. "I recall seeing *The Ten Commandments* and *Ben-Hur* as a boy," says actor Stephen McKinley Henderson. "And when I first walked onto this set, that's what I thought of. It was just like working in a pyramid."

"The exciting part about making this movie was the tactile authenticity of the world-building," explains Mary Parent. "It was Denis's initial instinct, one we felt was important in bringing this story to life."

The Residency hallway was shot from all possible angles with different lighting patterns rigged to evoke whatever time of day was required for the scene. One of the sequences involved Paul Atreides gazing up at a large sandworm fresco designed by Aaron Morrison. In May 2019, Brian Herbert and his wife, Jan, visited the set, where they shared in the excitement

OPPOSITE Paul Atreides (Timothée Chalamet) takes in the Residency's sandworm fresco.

BOTTOM First assistant director Chris Carreras on Stage 6 with actor Oscar Isaac.

of the production. Brian told us that his father would have loved the worm fresco and probably would have wanted one for himself.

Stage 6 also featured several staircases, adding dimension to the Residency as well as a labyrinthine feeling. The hallway doors led to other sets, including Paul's bedroom, the master bedroom, and the meditation room. "It was amazing," recalls Joe Caracciolo. "Despite its size, we shot every square inch of that set. Halfway through filming we even started to run out of angles to film." As a cost-effective solution, Patrice and his team made architectural changes to the set and built large columns, creating the illusion that these were previously unseen areas of the Residency.

The interiors for the Residency were built exactly as they had been drawn. "It was kind of intimidating, to be honest," recalls Greig Fraser on matching the lighting to the concept art. "Those images were works of art. And even though they were based on physics, you can't replicate the sun lighting these spaces from half a million miles away. So there were a lot of technical limitations that stood in the way of creating the feel of the artwork." Greig lit these sets using LED technology, which allowed him to bring the subtlest changes to the brightness and the color of the light using a handheld console. "Getting all the lighting equipment we needed was a challenge," explains Greig, "because the quantities required for this shoot didn't actually exist in the world."

Although the Residency set reached the roof of Stage 6, the walls were only fully built up to eighteen feet. Beyond that, sand screens were installed to mimic the color of the ceiling. This allowed Paul Lambert to add digital set extensions in postproduction. In the same spirit as on the backlot, the sand screens allowed Greig to work with realistic reflections indoors. "What typically happens is that green or blue screens interfere with the sets, usually making them darker," he says. "But that didn't happen on our sets because the light bounced naturally off the sand screens. That was a successful strategy."

OPPOSITE Concept art for the Residency staircase, which was built exactly as it was drawn.

CENTER LEFT Final Arrakeen glowglobe design.

CENTER RIGHT Alternate glowglobe design.

BOTTOM Design for corridor leading to the master bedroom and Paul's room.

TOP LEFT Gurney (Josh Brolin) and Leto (Oscar Isaac) open a gift left by the Baron.

CENTER LEFT Concept art for the Harkonnen box filled with spice workers' fingers.

OPPOSITE Conceptual illustration of the corridor that leads to Duke Leto's office.

LETO'S OFFICE

Duke Leto's Arrakeen office was built on a separate stage from the rest of the Residency, but its scale matched that of the Residency hallway with its high columns and majestic doors. When we first visited this set, construction was still in progress. Denis felt the color of the walls was too warm. He wanted cooler hues to reflect the starkness of this environment. "I'm very precise when it comes to color, and so is Denis," says Greig. "I think we're fantastic bedfellows in that respect. I'm not happy putting up just any old light and walking away from it. I need to refine the color in the light carefully so that it creates an overall balance."

It's in Leto's office that the Duke, Gurney, and Hawat find a gift left behind by Baron Vladimir Harkonnen with a note that reads, "My dear cousin Leto. Welcome to Arrakis. There's a lot to learn. I thought I'd give you a few pointers." The Duke opens the large black box to find thousands of severed fingers taken from unfortunate spice workers.

"That's one of my favorite props," says property master Doug Harlocker of the ominous box. "We originally had found a little carved tea box," Doug recalls. "I remember showing it to Denis, thinking I had found the container he needed for this scene. He said 'Yeah, that's really beautiful, but it has to be twenty times larger than that.'" Denis didn't want to put twenty fingers in the box; he wanted to include thousands of them, reflecting the Baron's determination to decimate the Atreides's spice mining workforce. The prop team used the tea box as a model and built a new version with greatly increased proportions. "I loved the way it opened, and how people looked into it," recalls Doug. "Sure, it reflects the brutality of the Baron, but it was also a love letter to him in a way."

TOP LEFT Visual effects model for the hunter-seeker.

CENTER LEFT Illustration of Paul hiding from the hunter-seeker within the filmbook hologram.

OPPOSITE Early concept art of Paul's Arrakeen bedroom, which was built as illustrated at Origo Studios in Budapest.

PAUL'S RESIDENCY ROOM

Paul's room on Arrakis is bare except for a desk and a bed. It feels more like a prison cell than a bedroom. That is the feeling Denis wanted to convey: a young heir confined to his quarters, out of the heat and harm's way. Screenwriter Jon Spaihts identified with Paul's predicament while he himself was in his Budapest hotel room working on the script, unable to venture out into the Hungarian city. "The thing that made me smile was, this is how Paul Atreides came to Arrakis," writes Jon. "A young man shuttered in the ducal Residency, peering out the windows at the strange city of Arrakeen where he knew neither the language nor the customs, where he was not permitted to go. The parallel stopped there; no psychic awakening for me. But I got to dream about it."

Paul's bedroom is the setting for a scene from the book in which a hunter-seeker, a lethal remote-control device, attacks the young heir. The sequence begins with Paul watching a holographic documentary on his filmbook when the hunter-seeker emerges from his headboard. The device searches the room for Paul, who skillfully hides behind a holographic image generated by the filmbook until he is able to destroy the weapon.

Frank Herbert's original concept for the hunter-seeker drew inspiration from nature, so the team looked to the natural world when designing it. "We looked at a lot of insects, ants, and wasps. Some of them are pretty terrifying," says Sam Hudecki. At one point, Sam suggested that the device be attached to a filament to direct its path remotely. The concept grounded the technology in a practical idea, but Denis sometimes sacrifices practicality, favoring purity of design. In the end, the hunter-seeker was realized as a wire-free floating device controlled by a Harkonnen operator nearby, reflecting more directly Frank Herbert's description of the device.

"Kynes is highly respected by the Fremen because she has an allegiance to and the utmost respect for their planet."

SHARON DUNCAN-BREWSTER, ACTRESS

DR. LIET KYNES

Dr. Liet Kynes is the Judge of the Change on Arrakis, responsible for overseeing the transition from House Harkonnen rule to House Atreides. She is known on Arrakis as the Imperial Ecologist. In Frank Herbert's novel, the character is male. But during development of the screenplay, Denis and Jon Spaihts decided that the cast would benefit from featuring more women. "We're making a movie in the twenty-first century, after all," says Denis. "This was important to me. It also made sense for Kynes to be a woman. In fact, I loved that this woman held so much power."

There was a long casting process before British actress Sharon Duncan-Brewster joined the ensemble. The first time she met Denis, she told him she had taken the part without reading the script. "I just said '*Yes!*' to working with one of the most highly respected directors on the planet," she says. When she finally did read the script, she wasn't disappointed. "My initial impression was that Kynes straddled many different levels of control and therefore power—political, environmental, spiritual, cultural."

It is indeed unclear in which world Kynes belongs. She admits to being an outworlder, yet she speaks the Fremen language Chakobsa and has their unique blue eyes. Is she working with the Fremen? All evidence points to yes, but her identity remains ambiguous. "Kynes is highly respected by the Fremen because she has an allegiance to and the utmost respect for their planet," says Sharon. "What she does as an ecologist is try to change the whole ecological system and bring equilibrium back to Arrakis."

EYES OF THE IBAD

The blue coloration seen in Kynes's eyes is described in the novel as the "eyes of the Ibad." The phenomenon indicates high levels of spice consumption over a long period of time.

Designing the look for the "blue within blue" eyes described by Herbert required a mindfully creative process. Denis was always wary of "glow-in-the-dark zombie eyes," as he would put it. "I knew from the moment I started in June of 2018 that the blue eyes were going to be a fundamental part of *Dune*," says Paul Lambert, who was tasked with digitally adding the blue tinge to the actors' eyes. The possibility of using contact lenses was floated but dismissed because of the sandy locations we would be shooting in, and because of the large number of characters who would require them.

For the visual effects supervisor, the challenge was to augment the eye color of a character without changing the actor's gaze or performance. "It's very easy to go overboard with adding too much color or too much glow," Paul says. "You want to be immersed in the story without visual effects taking you out of it." The solution was to add a gentle blue hue to the sclera (the white of the eye) and the iris. Then the team slightly desaturated the iris to let more light in, simulating the effect of natural blue eyes. "We have a lot of Fremen characters with brown irises, and quite dark irises," says Paul. "We pushed the luminescence of those irises to the maximum limit without ever fully replacing the eyes."

OPPOSITE LEFT Sharon Duncan-Brewster as Dr. Liet Kynes.

BOTTOM Dr. Liet Kynes (Sharon Duncan-Brewster) in Duke Leto Atreides's office.

ARRAKEEN AIRCRAFT BAY

The Residency aircraft bay is where Paul, Leto, and Gurney meet Kynes for the first time. This scene was shot in between two soundstage buildings with a canopy stretched overhead. A large opening on the side of the set let sunlight stream into the space, simulating the light that can be seen coming through the large hangar doors in the aircraft bay concept art. The set measured 90 feet by 300 feet, a space big enough to house a full-size ornithopter prop built in the United Kingdom prior to the shoot. Standing on this set felt as if we were shooting indoors, but we were in fact outside in a space usually used as a roadway for production vehicles moving from one stage to another. Patrice and his team later revamped the area for another segment of the movie occurring later in the Deep Desert.

"The aircraft bay was one of the most stressful and challenging sets for the art department."

PATRICE VERMETTE, PRODUCTION DESIGNER

OPPOSITE BOTTOM Sharon Duncan-Brewster on set with Josh Brolin and Oscar Isaac.

TOP Concept art for the Arrakeen aircraft bay.

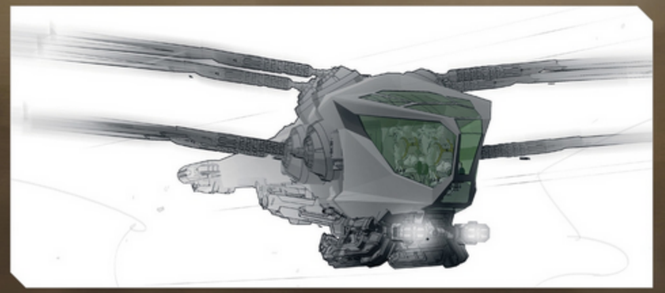
BOTTOM The outdoor aircraft bay set rigged between the soundstages.

ORNITHOPTERS

Ornithopters, or ornis for short, originated in the classic novel and are one of Frank Herbert's most iconic inventions. "Frank transposed his obsession with ecology into technology and vehicles," explains Denis. "He imagined flying aircrafts with propulsion systems inspired by birds, which were a challenge to design." Many artists worked on the ornithopter with Denis and Patrice. Sam Hudecki generated early sketches that were inspired by the insect world but resembled helicopters, while Colie Wertz and George Hull were tasked with further developing the orni design.

Like Brian Herbert and the estate, Denis felt that basing the orni on a dragonfly would be the best way to translate this fantastic invention to the screen. Everyone's goal was to stay as true to Frank Herbert's description of the ornithopter as possible: a powerful and unique aircraft.

THESE PAGES Atreides ornithopter design illustrations.



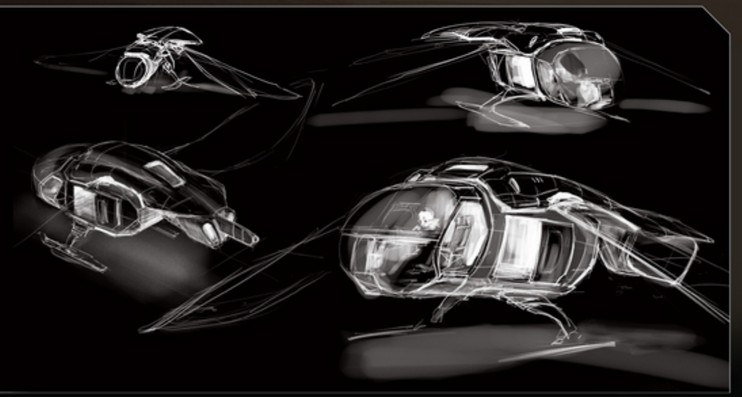
"Denis told me the look of these crafts was crucial to the sense of wonder in the story."

GEORGE HULL, CONCEPT ARTIST

For Denis, it was also important that the orni look heavy, almost like a military vehicle. "Ornithopters need to feel like bush machines," he explains. "The design is not about comfort. It's about surviving in a harsh climate. It's not fancy at all."

Once the final design was approved, Paul Lambert and his visual effects team were brought in to figure out the aircraft's agile, hummingbird-like flight patterns, its wings moving so quickly that they blur out of view. Paul also had to figure out different flight styles for the various factions in the story—Duncan, for example, has a characteristically flamboyant style that employs large tailspins when he takes off and lands.

The full-size practical ornithopters that would be used during the shoot, including the one seen in the Arrakeen aircraft bay, were built by a specialized props company called BGI Supplies, based at Longcross Studios in Surrey, England. When he first saw the ornithopter in person, Denis was astonished, excited, and bewildered by the size of the vessel. "It needed to be that big; otherwise it wouldn't have looked like it could fly,"



TOP RIGHT AND CENTER RIGHT Interior designs for the ornithopter.

BOTTOM Concept art depicting the ornithopter at full length.

OPPOSITE TOP Final ornithopter design.

OPPOSITE BOTTOM Early designs for the ornithopter.

points out Patrice, who oversaw the build in the UK.

BGI built four different versions of the ornithopter for different scenes in the movie. Structural engineering was the number one challenge because the ornis required not only fully believable exteriors, but also fully functional interiors for the actors and crew to film entire scenes in. "They had incredible designs," says Stuart Heath of BGI. "However, building these kinds of vehicles in the real world often goes against the laws of physics." Stuart and his team worked closely with each head of department to incorporate mounts for cameras, lighting, stunt rigs, and special effects equipment. "Another huge factor was taking something so big and dark in color to Jordan, where the temperatures are so high," he says. "I have seen composite materials deform in this level of heat. So we found materials with high heat resistance to reduce this problem."

Once the ornis were completed, the next challenge was to transport these props—which each weighed between four and ten tons—to Eastern Europe and the

Middle East. "The ornis were too big for lorries," says Stuart. "They would have been structurally weakened if we had broken them down into pieces to fit into containers, so we opted for air cargo." When the studio asked Joe Caracciolo how he planned to get the ornis to Jordan and then to Budapest, he said, "In a very big, very expensive plane." He wasn't kidding. We used an Antonov An-124, the second-largest cargo plane in the world.

PAGE 158 Concept art depicting an Atreides ornithopter in the desert.

PAGE 159, RIGHT The ornithopter being manufactured at BGI Supplies in England.

TOP The ornithopter being loaded on the Antonov An-124.

ABOVE The ten-ton ornithopter being rigged by the camera crew.

OPPOSITE Gurney (Josh Brolin) rescues Paul (Timothée Chalamet) from a sandworm.

SPICE MINING

As rulers of Arrakis, the Atreides must ensure that the spice harvesting industry thrives so that they can export the substance throughout the known universe.

The process relies on enormous machines known as spice harvesters, or spice crawlers, that are used to extract spice from vast desert expanses. They are transported between the desert wastes and Arrakeen every day by carryalls—inflatable flying machines similar to hot-air balloons. While spice workers operate the harvesters, spotter aircrafts monitor the area to detect any threats, such as incoming sandworms, which are attracted by the rhythmic vibrations of the crawlers.

In one key scene in the film, Duke Leto, Paul, and Gurney venture out into the Deep Desert aboard an ornithopter, with Dr. Liet Kynes as their guide, to observe spice mining in action.

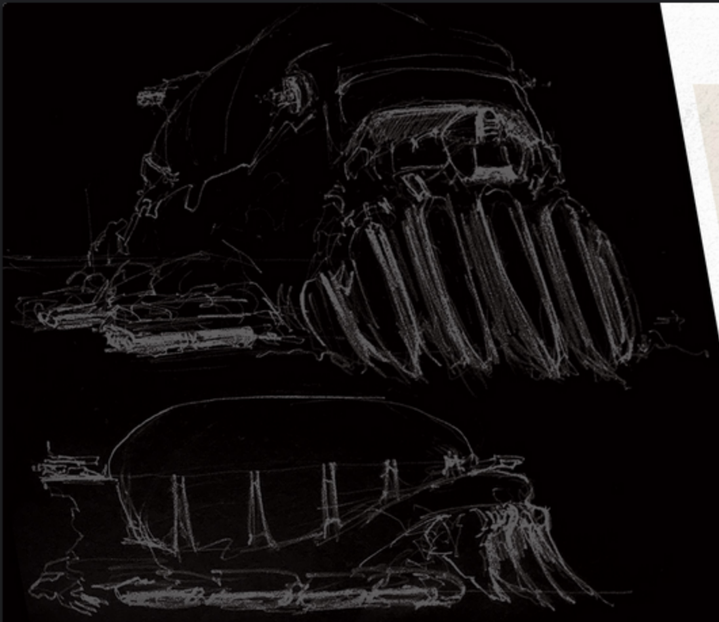
The interior cockpit segment of this reconnaissance mission was shot in Budapest. In order to light the actors with natural sun, the ornithopter prop was installed outdoors on a gimbal. Josh Brolin told me that filming this sequence for two days with Oscar Isaac, Timothée Chalamet, and Sharon Duncan-Brewster was "the most unreal moment" of the shoot for him. "It was a really special time, because you are encased in the cockpit with sun and hot lights blazing through the glass," explains Josh. "It was like being an ant under a magnifying glass. I didn't have a lot of dialogue, but I couldn't even remember the few lines that I had because my brain started to sizzle. The harder we worked, the funnier it became."

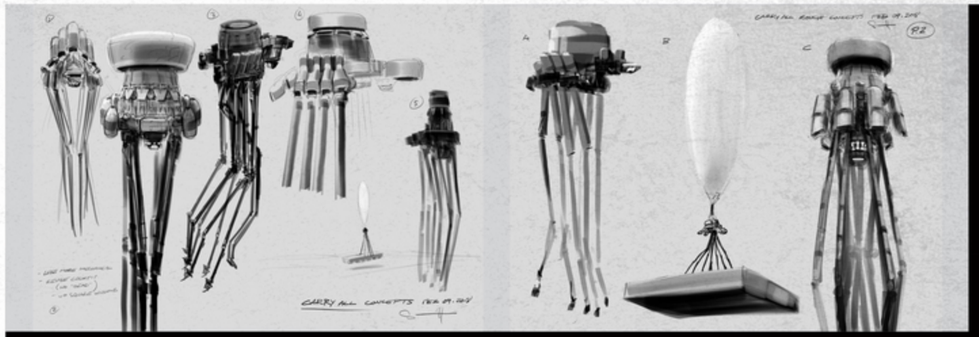
The exterior part of the sequence, when Paul and Gurney venture out of the ornithopter in an attempt to save the spice workers from a sandworm attack, was then shot in Jordan. We filmed the scene in rare pristine dunes found in a restricted area near the Israeli border. We were granted access to this location, overseen by the military, by Jordan's Royal Film Commission. This allowed us to bring in a three-hundred-ton crane to lift the Atreides ornithopter from the ground, simulating takeoff.

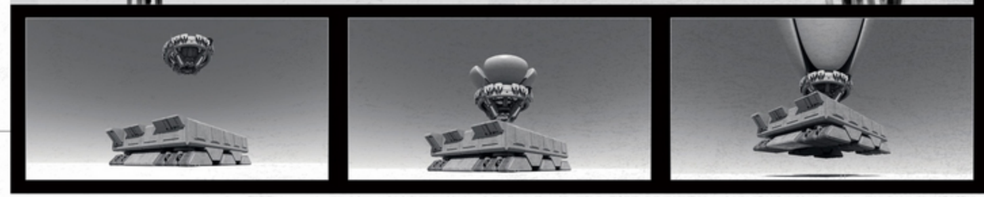
"The scene was quite challenging," says special effects supervisor Gerd Nefzer. "When you work with a crane, you are always at the mercy of the crane operator. In Jordan, he was fantastic, but he didn't understand a word of English or German. It was hard to communicate, but we showed him the movements

TOP An Atreides crawler harvests spice from the desert in this concept illustration.

BOTTOM The ornithopter set piece being lifted by a three-hundred-ton crane.





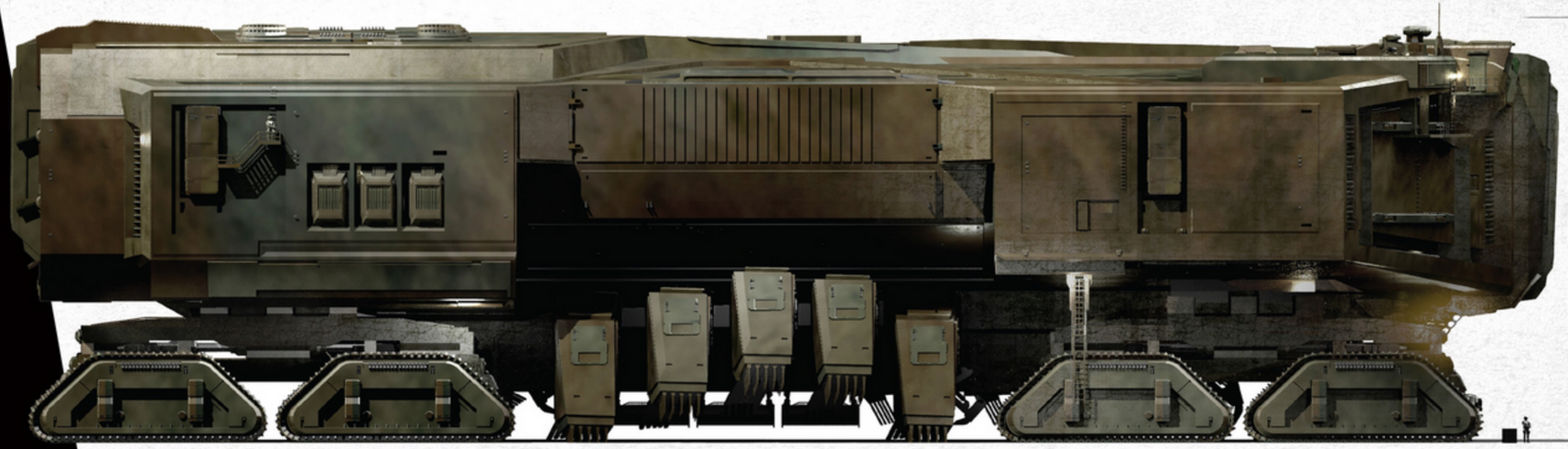


LEFT Early drawings (top) and final digital model (center) of the carryall.

with our hands. The ornithopter had to take off nose-down and move forward. We shot it ten times, and he always did it the same way, which was tricky because it weighed ten tons."

One day at this location, Joe Caracciolo noticed dragonflies flying around the set. They looked exactly like our ornithopter, only smaller, making the experience that much more surreal.

Fortunately, the weather in Jordan was unusually cool for that time of year. In fact, it had snowed a week earlier just a few hours from our set. It doesn't usually snow in the Middle East, not in April—not ever. We were lucky because whatever we needed for the shoot Mother Nature sent our way, whether it was sun, cloud cover, or sandstorms. The entire crew had to wear head wraps, scarves, and goggles to protect themselves from the sand. Even then, we were covered in it at the end of the day—there was no escaping it.



TOP LEFT Fist-inspired crawler sketches.

TOP RIGHT Concept art for spotter aircraft.

BOTTOM Final design and color reference of the spice harvester.

SPICE HARVESTERS

One of the early spice harvester sketches looked like a gigantic mechanical hand pushing through the desert. "It was like a fist grinding its way through the sand," says Sam Hudecki. As the concept evolved, Denis and Patrice made the shape look more like a factory on tracks, just as Frank Herbert described it in the novel. Its silhouette and movement were inspired by NASA crawler-transporters used to carry spacecraft to launch pads.

George Hull was assigned to flesh out these early concepts into a truly unique vehicle. "My first designs were very flat, as I was thinking about the two-hundred-mile-per-hour winds described in the book," explains George. "But Denis felt it was too sleek. With that note, I simply stretched the body taller by about 400 percent, and it suddenly came together. Even though the audience will never see this, I also designed how the spice is collected, filtered, and stored in this behemoth."

The Atreides harvesters are meant to look old and beat-up because they are, in fact, the Harkonnens' old machines. To introduce the idea that the Atreides are ill-equipped to harvest spice, Denis also created a scene with dozens of broken-down crawlers. "The idea was to have something that looks like an airplane graveyard," says Denis. "We see forty-five to fifty machines from above. Some are being taken apart, others need smaller repairs."

OPPOSITE Concept art for the spice worker rescue scene.

BOTTOM A full-size crawler tread was built at the studio and shipped to Jordan for the rescue scene.

LEFT Spice worker costume design.

OPPOSITE TOP Concept art for the Arrakeen refinery as seen from above.

OPPOSITE BOTTOM Spice silo concept art.

The Atreides's struggle to meet their production quotas is visually depicted in a scene in which Leto inspects the spice silos. Patrice had a eureka moment for the design of the depleted silo when he came across a game of *Four in a Row*, the digital version of Connect 4. "The idea was to have an egg-crate structure in which we put the silos," says Patrice. "Just like with an egg crate, if there are three out of twelve eggs, you understand that many are missing."

Spice is refined in a plant built within the Arrakeen city walls. The refinery's proximity to the Arrakeen Residency allows Duke Leto and Gurney Halleck to keep a close eye on this vulnerable part of the Atreides's operations. Deak Ferrand's refinery concept art shows how the fictional technology operates, even though the movie doesn't delve into these inner workings. "I think it's important for me to get into these details, because it's not just about designing something for the fun of it," says the concept artist. "I want to understand how it works. It's very important, because it will tell you how it needs to look. You're not designing to make it look beautiful; you're designing it to be functional."

THE ATTACK

"I wanted it to be a massive invasion, with Gurney Halleck left behind in hell."

DENIS VILLENEUVE, DIRECTOR

PAGES 170–171 Concept art depicts the Harkonnen attack on the Arrakeen spaceport.

TOP Harkonnen troopships descend on the spaceport in this conceptual piece.

ABOVE A conceptual illustration depicts the attack on the Atreides as seen from space.

There is an abnormal tranquility when the Atreides first arrive on Arrakis: the calm before the storm. Duke Leto knows the Harkonnens are up to no good—and so does Gurney—but neither predicts that a massive raid is about to be unleashed. "The problem is that Leto is not able to see that there is a more nefarious plan," says Oscar Isaac. "He could never have expected it because ultimately he believes in law, he believes in order." On the night of the attack, the family goes to sleep oblivious to the impending danger.

The Harkonnens first attack the spaceport, destroying the Atreides fleet and targeting the troops sleeping in the barracks. The scene begins with Gurney Halleck being awakened to a sky filled with enemy ships raining fire down on Arrakis. House Atreides attempts to retaliate, firing their massive missile launchers and hitting a Harkonnen troop carrier, blowing it out of the sky. But it's too late, and Leto's army is crushed by the Harkonnen forces. "I wanted the Atreides to be outnumbered ten to one," explains Denis. "I wanted it to be a massive invasion, with Gurney Halleck left behind in hell."

We shot the spaceport attack over several nights on the Budapest backlot during the summer of 2019. "It was tough. I still feel it. I got bruised up," says Josh Brolin. "It was difficult, but it was extremely satisfying. The shots were so incredible, and what Greig was doing with the lighting was great." The taxing scene required the actors and extras to sprint at full speed holding weapons, repeating the action over and over again until sunrise. There were also sword fights, pyrotechnic effects, and smoke machines, which contributed to the intensity of the shooting conditions.

Lighting the large multifunctional Budapest backlot for the night shoots required a massive setup with eight construction cranes holding up large LED light boxes that bathed the outdoor set in an orange hue that made it seem as though the entire area was afire. The lighting setup was so bright that it was spotted from the other side of the Danube River, almost five miles away. Although the rigging was impressive, Denis and Greig Fraser agreed that the lighting should look as natural as possible. "Some DPs [directors of photography] find joy in the biggest lighting setups. I actually find

TOP A concept illustration showing the Harkonnen frigate overlooking the Arrakeen carnage.

BELOW As it falls, a slow bomb reduces its speed just before penetrating a spaceship's protective shield in this concept illustration.

BOTTOM A slow bomb penetrates the troopship's protective field in this final frame.

OPPOSITE Harkonnen troopships descend on the spaceport in this conceptual piece.

the opposite," Greig says with a laugh. "I get more enjoyment in intimate settings."

In postproduction, the spaceport attack would be augmented with visual effects that would extend the set, add scale, and unleash a fleet of Harkonnen warships on the Atreides. As part of the assault, Denis included a new Harkonnen weapon he invented for the movie: slow bombs. In the same spirit as slow blades, these explosive devices decelerate as they approach their targets in order to pierce the protective shields of large spacecrafts. As the bombs explode, they destroy the electromagnetic fields as well as the ships themselves. "The Harkonnens are brutal, and I wanted to illustrate this trait in their warfare," Denis explains. "They want to just bomb everything to extinction."

SHIELD GENERATORS

Meanwhile, in Arrakeen, Dr. Wellington Yueh has turned against the Atreides family and helps the Harkonnens invade the Residency. In the darkness of night, while everyone is asleep, Yueh silently makes his way to the shield generator room and shuts down the city's power, communications, and security systems.

Denis wanted this scene to evolve without a word being spoken, so concept artist Deak Ferrand suggested that when Yueh deactivates the power, huge pistons would drop down from the generator room ceiling, communicating to the audience that they had been detached from their power source. At that exact moment, the lights turn off, and we see Yueh in silhouette walking out of the room, his betrayal revealed in a purely cinematic image.

SARDAUKAR ATTACK

After the initial onslaught, the Atreides soldiers struggle to find their bearings and hold what's left of their defensive line. When the Harkonnens appear at the bottom of the courtyard staircase, the Atreides perform a Maori-style haka ritual, a rallying chant readying them for battle. Denis designed this scene in early stages of storyboarding with concept designer and storyboard artist Sam Hudecki. The action that follows was inspired by the iconic Odessa Steps sequence from Sergei Eisenstein's 1925 movie *Battleship Potemkin* in which imperial Russian troops attack citizens at the famous landmark. In our movie, the Atreides forces begin with the upper hand, battling the enemy from the top of the stairs with shields glowing in the darkness. But suddenly, Sardaukar drop from the sky behind them, overpowering the Atreides and allowing the Harkonnens to take the Residency.

THESE PAGES Early concept art of the Residency stairway attack.

OPPOSITE BOTTOM A design for the Residency generator room.

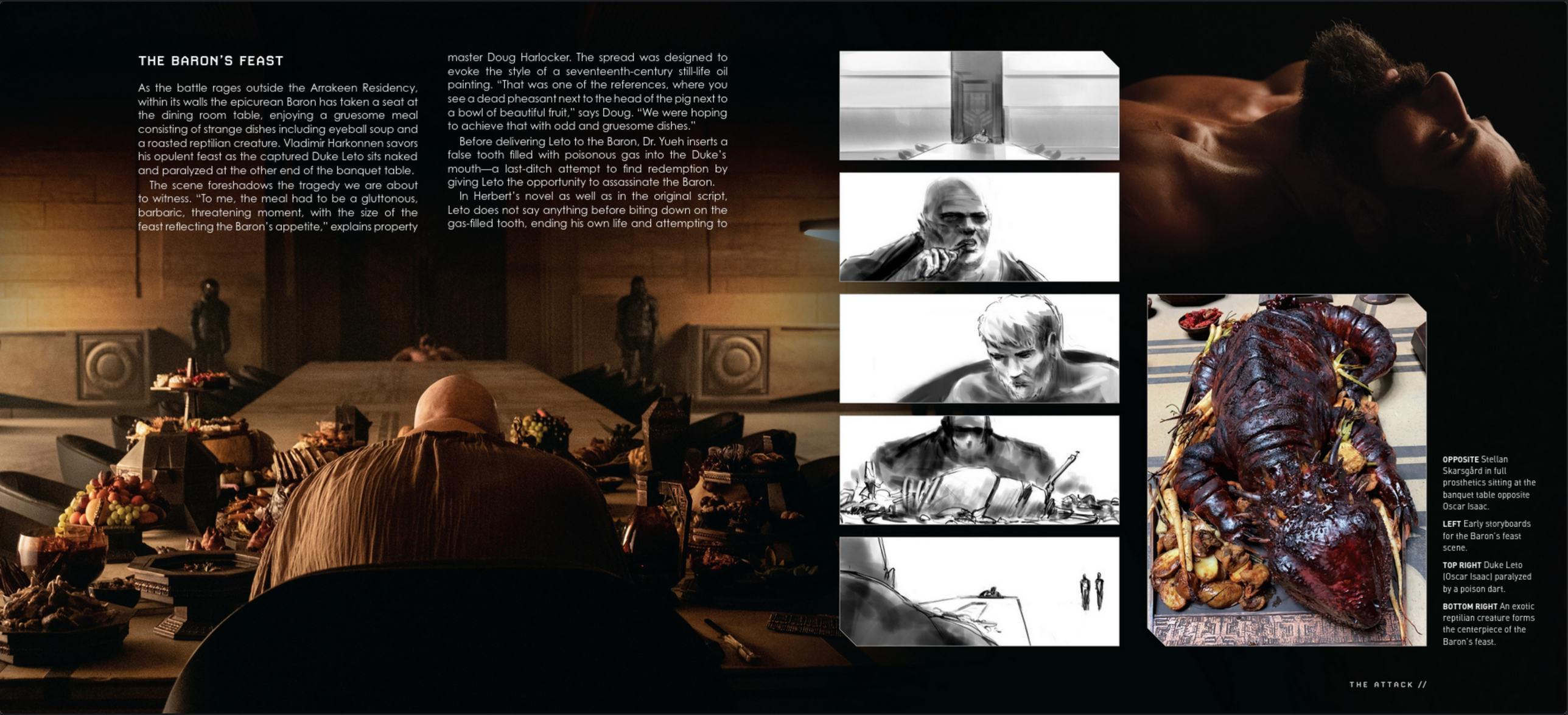
THE BARON'S FEAST

As the battle rages outside the Arrakeen Residency, within its walls the epicurean Baron has taken a seat at the dining room table, enjoying a gruesome meal consisting of strange dishes including eyeball soup and a roasted reptilian creature. Vladimir Harkonnen savors his opulent feast as the captured Duke Leto sits naked and paralyzed at the other end of the banquet table.

The scene foreshadows the tragedy we are about to witness. "To me, the meal had to be a gluttonous, barbaric, threatening moment, with the size of the feast reflecting the Baron's appetite," explains property master Doug Harlocker. The spread was designed to evoke the style of a seventeenth-century still-life oil painting. "That was one of the references, where you see a dead pheasant next to the head of the pig next to a bowl of beautiful fruit," says Doug. "We were hoping to achieve that with odd and gruesome dishes."

Before delivering Leto to the Baron, Dr. Yueh inserts a false tooth filled with poisonous gas into the Duke's mouth—a last-ditch attempt to find redemption by giving Leto the opportunity to assassinate the Baron.

In Herbert's novel as well as in the original script, Leto does not say anything before biting down on the gas-filled tooth, ending his own life and attempting to



OPPOSITE Stellan Skarsgård in full prosthetics sitting at the banquet table opposite Oscar Isaac.

LEFT Early storyboards for the Baron's feast scene.

TOP RIGHT Duke Leto (Oscar Isaac) paralyzed by a poison dart.

BOTTOM RIGHT An exotic reptilian creature forms the centerpiece of the Baron's feast.

take the Baron with him. But Oscar Isaac felt that the character should deliver parting words to the Baron. "There is this line in the book that is described as Leto's final thought," explains the actor. "It is, 'The day the flesh shapes and the flesh the day shapes.' I also wanted to add another beautiful line from a different scene: 'Here I am and here I remain.' I brought those two lines to Denis, and he really liked them." The added lines land powerfully, as Leto draws his last breath while shedding a tear. "It felt incredibly emotional, because all Leto is thinking about in that moment is his family and that they have possibly died," says Oscar.

The Baron survives Duke Leto's attempt on his life using a protective shield activated via a ring on his finger, but he is badly wounded by the poisonous gas. He was originally scripted to recover in a decontamination chamber outside the Residency, but this scene was omitted to instead focus on him convalescing in a bath of black oil.

Before filming the bath scene, we tested how Stellan Skarsgård's prosthetics reacted to the concoction of water, colored vegetable oil, and beeswax that was used to fill the tub. We knew that the Baron would float to the surface because of the inner padding of the full-body prosthetics, which created buoyancy. To solve the issue, we removed the bottom part of the body, allowing the actor to sit comfortably in the tub with only his head, arms, and shoulders appearing above the oily water.

OPPOSITE The Baron (Stellan Skarsgård) recovering from a poison attack.

THIS PAGE Stellan Skarsgård is prepped for the oil bath scene.

BOTTOM RIGHT Early concept art of the Baron's bath featured spice-colored water, which was later changed to black.

PALMS ON FIRE

The Harkonnen attack occurs over the course of one night, and there is no respite. Outside the Residency, the city is ablaze, with the twenty sacred palm trees flaming like torches. We shot these burning date palms on the Budapest backlot. To ensure that the leaves burned in a prolonged and dynamic way, special effects supervisor Gerd Nefzer added two hundred specially created laser-cut steel leaves at the top of the twenty tree trunks. "Every leaf had a controlled gas feed," says Gerd. "We had to open the tree trunks and get the gas lines in, then close them up again." The pyrotechnic effect required eight miles of gas pipe. The intricate system was activated at the touch of a button and created a spectacular scene.

TOP Concept art depicts the palm trees burning during the Harkonnen attack.

BOTTOM RIGHT The flaming palm trees are filmed during a night shoot in Budapest.

OPPOSITE A concept illustration of the Harkonnen gunship.

REIGN OF FIRE

For the Harkonnen attack sequence, Denis wanted to create a unique gunship that would unleash hell on Arrakeen. "I remember when we designed it," says Denis. "I asked that this ship be ugly and have the capacity to destroy and kill everything in its path. I was very happy with the look of it."

The gunship started out looking like a wasp, but Patrice Vermette felt that the reference was too obvious. He then started looking at images of the bubonic plague and how the body reacts when the skin is attacked by this bacteria. Deak Ferrand designed the final look of the ship using reference images to give it the shape and texture of a gangrene-infected tumor. "Patrice sent me those pictures of the bubonic plague on people," recalls Deak. "They were horrible pictures. Horrible." In the end, the ship was quite terrifying as well.

> "I asked that this ship be ugly and have the capacity to destroy and kill everything in its path."
>
> DENIS VILLENEUVE, DIRECTOR

HARKONNEN ORNITHOPTER

The Harkonnen ornithopter was modeled after the original Atreides aircraft. "I wanted the enemy ornithopters to be fatter and more aggressive," explains Denis. Patrice worked with concept artist George Hull to develop a look that would echo the aesthetics of the Harkonnen fleet. "The exterior shell of the Harkonnen ornithopter is much closer in appearance to that of the big mother ship, the flattened, armadillo-shaped frigate," adds Patrice. "We used the same texture and organic rounded edges, as opposed to the Atreides's angular shape."

BOTTOM The Harkonnen ornithopter design.

THESE PAGES Duncan Idaho escapes the Residency in a stolen enemy aircraft in this concept illustration.

TOP Concept art depicts Duncan Idaho's view of the attack from the Residency balcony.

ABOVE A concept design shows the city of Arrakeen under a thick layer of smoke.

OPPOSITE Concept art shows Duncan Idaho's daring maneuver in the marketplace that allows him to escape through a nearby street.

DUNCAN'S ESCAPE

As the Atreides army is being decimated, one man still stands. Escaping the Residency, Duncan Idaho kills every Sardaukar and Harkonnen who crosses his path before stealing an enemy ornithopter. This scene was written late in postproduction, yet relies on the early artwork of the covered cityscape. Although the original idea behind the design was to protect the streets from the sun and sand, the concept also ends up protecting Duncan from his enemy. In the scene, he pulls off a 360-degree ornithopter turn in the marketplace and evades the Harkonnens by flying at ground level through the streets beneath the stone canopy.

"Duncan Idaho kills every Sardaukar and Harkonnen ...who crosses his path before stealing an enemy ornithopter."

DEEP DESERT

"In keeping with *Dune*'s philosophy, we adapted to the desert."

The first page of *Dune*'s screenplay features these lines: "The desert has no mercy. You adapt or you die." The quote was pasted to Denis's office door as a reminder to the entire crew of our goal in telling this story.

He shared its significance with me:

> *Dune* is a story about people being uprooted from their home and relocated to a new environment where most of them will die. The one person curious enough to learn about the culture of the native people will gain the knowledge and wisdom to survive. This, of course, is Paul.
>
> We live in a world in which everything is changing quickly—politically, technologically, and environmentally. Again, those who gain the most knowledge will survive. Stephen Hawking said, "Intelligence is the ability to adapt to change." Frank Herbert wrote something similar: "Survival is the ability to swim in strange water."
>
> I want Dune to be a call to the youth, and this idea of adaptation is everywhere in the DNA of the project.

The Deep Desert and the final chapter of the story were not highly conceptualized compared to the rest of the movie. Some artwork was created to express the general feeling of the desert, but the goal wasn't to design landscapes; it was to find them. Denis wanted to harness the opportunities that would arise from being in the desert.

Filming in Jordan, in the military dunes and the iconic desert of Wadi Rum, was an immersive experience that fed the creative process for the entire crew. "It's an incredible place culturally," says stunt coordinator Tom Struthers. "When you sat on your balcony, you could see Israel, Egypt, and Saudi Arabia and the Red Sea beyond."

"It added a transformative quality for everyone," says Timothée Chalamet. "To be shooting in the biblical origins of the world added weight to what we were doing."

Beyond the dunes, the stunning rock formations of these landscapes were also integral to telling the Dune story—environments that closely matched those envisioned by Frank Herbert. "In the script and in the book, the characters in the desert always find safety on rocks," says Patrice Vermette. In fact, Arrakis's Deep Desert can be compared to the open sea. Instead of being eaten by sharks, humans risk being swallowed by the even more terrifying sandworms. This is why rocks are so important—they offer refuge from the desert beasts.

The desert imprinted itself in our bodies and in our minds. "Running across sand dunes is really hard," explains Sharon Duncan-Brewster. "You have no way of predicting whether the ground beneath your feet is going to give way or not, so your legs, ankles, and feet end up operating in a very different way." When we went back to shoot on stages in Budapest, these experiences informed many creative decisions. "We had the flavor of the sand, the wind, and being in the elements," says costume codesigner Bob Morgan. The costume department knew firsthand how the outfits reacted in these conditions, how they should be constantly sandblasted and dusty.

When we returned to the desert, this time in the United Arab Emirates, we set up our base camp two hours away from the city of Abu Dhabi. The location offered sprawling sand dunes stretching out as far as the eye could see. It was August, and the heat was blazing. In fact, it was so hot that director of photography Greig Fraser's team had to put ice packs on his camera to prevent it from overheating. In keeping with Dune's philosophy, we adapted to the desert.

PAGES 188–189 Concept art of the Deep Desert.

THESE PAGES A concept illustration shows Paul and Jessica stranded in the desert, with the dual moons guiding their way.

THESE PAGES Timothée Chalamet and Rebecca Ferguson filming in the desert.

OPPOSITE BOTTOM RIGHT The crew diligently walk in one another's footsteps to reduce unwanted footprints in the sand.

STRANDED

After being kidnapped by Harkonnen soldiers and whisked away in an ornithopter, Paul and Jessica manage to free themselves from their bonds and kill their captors. Following an emergency landing, mother and son climb up a dune and witness the destruction of Arrakeen. "It's the realization that Duke Leto no longer exists," says Rebecca Ferguson. "They're stuck in this extremely open environment; they have nowhere to go." Their only salvation is Paul's newly acquired knowledge of Fremen ways. "Paul is gradually turning into what Jessica has trained him to be," adds Rebecca. "But she's not prepared for what the changes mean to her, and that he is perhaps even a threat for her."

During this first part of their journey in the desert, Paul and Jessica sport linen pajamas, having been abducted in the middle of the night. Jacqueline West designed the costumes for double duty: not only as sleepwear, but also as practical clothing the two actors could wear when running up and down dunes in Jordan. "The idea came from Denis," says the costume designer. "He wanted them to look very simple and yet desertlike." To create the costumes, she reached out to Genni Tommasi, a friend who makes handwoven linen in Lucca, Italy. "She's quite famous," says Jacqueline. "Armani uses her to weave linen designs. She came up with the desert pattern in both of their pajamas."

VIRGIN SANDS

During the desert shoots, the cast and crew had to be wary of every step they made. We had to protect the virgin sand in and around the locations we were shooting because any rogue footprints would need to be fixed in postproduction. "Even though we were going to create a world with exploding spaceships, the sand actually occupied a fair amount of my time," says visual effects supervisor Paul Lambert.

We therefore had to be disciplined about walking in one another's footsteps and not wandering off set. Every angle of the desert was a potential shot, and we didn't want to risk polluting a picture-perfect opportunity with our footprints. In fact, we had teams sweeping the desert floor to erase any trace of human existence. The desert's strong winds then smoothed out any rough surfaces left by the brooms, once again giving the area the look of virgin sand.

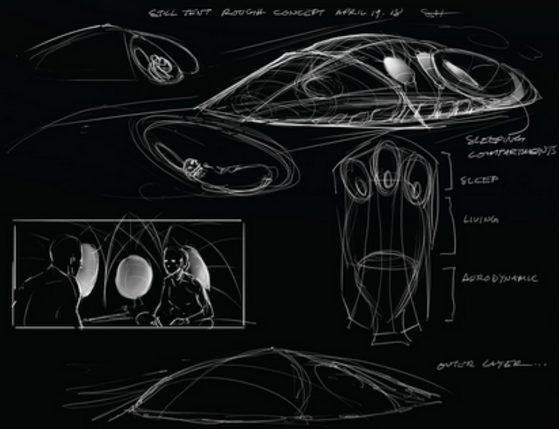
FREMKIT

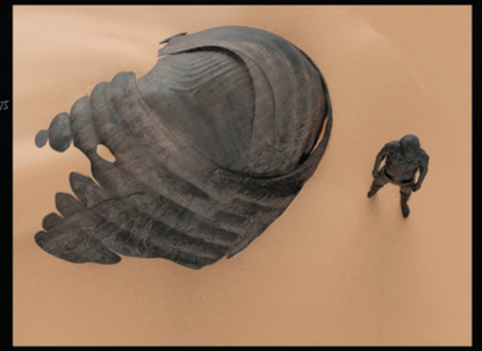
The Fremkit left by Dr. Yueh in the kidnappers' ornithopter is Paul and Jessica's lifeline. This Fremen-made survival pack contains ingenious devices used in the Deep Desert. The first item Paul pulls out is a stilltent, a shelter that also doubles as camouflage in the sand dunes. Patrice found inspiration for the stilltent design in the carapace of a cockroach. It was a logical association given this insect's renown for surviving in the most challenging conditions. Denis also loved that Patrice's design for the inside of the Fremen tent looked like a womb. The imagery evoked Paul's rebirth and spiritual awakening. Not only does he become a duke in the stilltent scene, but he also becomes an adult.

Denis insisted that all the items in the Fremkit look as if they had been made by the same Fremen manufacturer. All the devices were based on Frank Herbert's inventions from the novel. The sand compactor, for example, uses static energy to repulse sand. In the movie, it provides the necessary power to clear a passage out of the stilltent after the shelter is buried during a sandstorm.

The Fremkit's paracompass points north like any other compass. With the dual moons of Arrakis, however, "it takes a clever piece of clockwork to sort it out," as Duncan tells Paul in the movie. Denis requested that this prop have a fluid organic component. "If you have a solid, inanimate object," says property master Doug Harlocker, "you may want to add a light on it to

TOP The open Fremkit prop reveals desert survival gear.





TOP Early concept art of Paul and Jessica finding refuge in the stilltent.

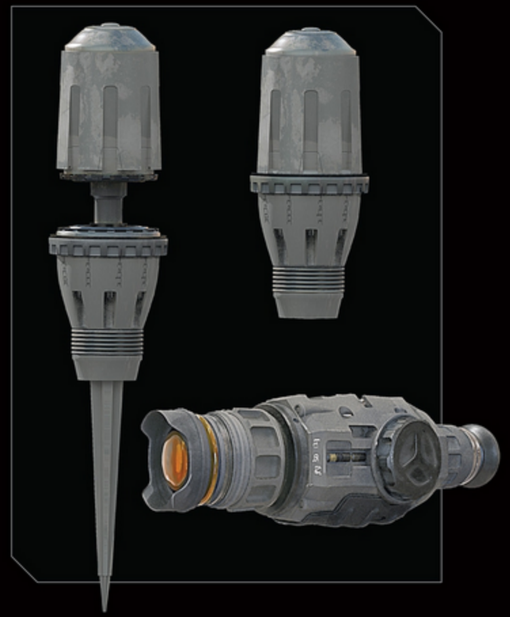
BOTTOM LEFT Sketches of the stilltent's shape and design.

BOTTOM RIGHT A digital model of the stilltent showcasing the design and texture of its exterior.

make it more visually interesting, but if you can animate it and make it work, that's even better." These creative discussions led to the paracompass being fitted with a green translucent liquid core and a mechanism that allowed it to snap open and shut.

In the novel, the Fremen monocular found in the Fremkit is described as having an oil lens. Doug and his team paid homage to the book by including this detail in the design, adding a tint of spice color, which reflects the light.

The Fremkit's thumper is used to attract sandworms. Once planted in the sand and activated, it creates rhythmical pounding vibrations that resonate under the desert floor. The props department built different versions of this Fremen device for various uses during the shoot. One had a retractable anchor dart, while another had a fully functioning thumping mechanism.



OPPOSITE LEFT Sharon Duncan-Brewster holding maker hook props. Maker hooks are also found in the Fremkit and are used by Fremen to steer sandworms through the desert (see page 233 for details).

OPPOSITE RIGHT Concept designs for (clockwise) the activated thumper, the closed thumper, and the monocular.

TOP Concept art for the sand compactor.

CENTER LEFT A design illustration for the paracompass.

BOTTOM The five-inch tall muad'dib reference model used during filming.

MUAD'DIB

In *Dune*, the desert holds some well-kept secrets, one of them being the muad'dib—the Fremen name for a desert mouse. Denis wanted the creature to be as convincing as possible, so Doug Harlocker not only designed the mouse but also made a life-size proxy. "The muad'dib is very symbolic in the story," says Doug. "It's an animal that can survive in the desert. Of course, it represents Paul growing and adapting. He is in full metamorphosis, growing out of the old philosophies." The five-inch-tall muad'dib replica was used as a visual reference for the digital version of the mouse seen in the final film.

Written by *Dune* executive producer Tanya Lapointe, this visually dazzling exploration of the filmmaking process gives unparalleled insight into the project's genesis—from its striking environmental and creature designs to its intricate costume concepts and landmark digital effects. Showcasing Denis Villeneuve's visionary approach to realizing Frank Herbert's science fiction classic, *The Art and Soul of Dune* is an essential companion to the director's latest masterpiece.

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