WALT DISNEY PICTURES
presents

FINDING NEMO

PRODUCTION INFORMATION

The Academy Award®-winning creators of the "Toy Story" films, "A Bug's Life" and "Monsters, Inc." dive into a whole new world of computer-animated fun, fantasy and heartfelt emotion with their splashy new underwater adventure, "Finding Nemo." This latest feature from Pixar Animation Studios, presented by Walt Disney Pictures, follows the comedic and eventful journeys of two fish – the overly cautious Marlin and his curious son Nemo – who become separated in the Great Barrier Reef. Buoyed by the companionship of Dory, a friendly-but-forgetful fish, Marlin embarks on a dangerous trek and finds himself the unlikely hero of an epic effort to rescue his son – who hatches a few daring plans of his own to return safely home.

Written and directed by Oscar® nominee Andrew Stanton, who co-directed the 1998 Disney/Pixar hit, "A Bug's Life" and is credited as co-screenwriter on all four of Pixar's previous features, "Finding Nemo" sets a new "high water mark" for the art and technology of computer animation with its incredible underwater world populated with memorable characters. Lee Unkrich, co-director of "Toy Story 2" and "Monsters, Inc." once again serves in that capacity and lends his filmmaking expertise to this project. The film was produced by Graham Walters, a nine-year Pixar veteran who most recently served as production manager on "Toy Story 2." Based on an original story by Andrew Stanton, the screenplay for "Finding Nemo" was written by Stanton, Bob Peterson and David Reynolds. Making his Pixar debut on "Finding Nemo" is multiple Academy Award®-nominated composer Thomas Newman, whose exciting and sophisticated score came to be regarded by the filmmakers as a character in the film.

Lending guidance to the overall project in his role as executive producer was John Lasseter, Pixar's executive vice president of creative, and the Academy Award®-winning filmmaker who directed "Toy Story," "A Bug's Life" and "Toy Story 2," and served as executive producer on "Monsters, Inc."

According to Lasseter, "This movie absolutely raises the bar for Pixar and for the art of computer animation. I'm so proud of Andrew for making a film that carries out his vision and gives us some of the most charming characters Pixar has ever created. The film is breathtakingly beautiful and filled with real drama, real emotion and depth, as well as great comedy. Being the father of five sons, this was definitely a story I could relate to. As filmmakers, we love to have the emotion be true and honest. And even though 'Nemo' is a complete fantasy, it's based on things that are familiar to audiences. The father-son relationship, going to school for the first time – these are things everyone understands yet this film is about fish on a coral reef.

"Technically, we've pushed things beyond anything Pixar has done before," Lasseter continues. "Just animating fish was difficult, but our technical team has created an underwater environment that is graceful and beautiful. The real underwater world is so spectacular that it's already a fantasy world. Our challenge was to let the audience know that our ocean is caricatured. We wanted them to know that this wonderful world doesn't exist, but then using the amazing tools that we have in computer animation make it look totally believable. Our goal is always to make things believable, not realistic. By stylizing the design of things, adding more geometry and pushing the colors, we were able to create a natural and credible world for our characters."

A talented team of top actors helped the filmmakers find the character of Nemo and the other members of the colorful cast. Acclaimed actor/director/comedian Albert Brooks lends his vocal talents and comic timing to Marlin, the fretful and slightly neurotic clown fish father. Emmy-winning comedian Ellen DeGeneres gives a memorable and engaging performance as the vacillating voice of the eternally optimistic blue tang, Dory. Nine-year-old Alexander Gould (who has been acting since the age of two and whose credits include "Ally McBeal," "Malcolm in the Middle" and "Boomtown") is heard as the adventurous young clown fish, Nemo.

Adding bite to the voices of sharks Bruce, Anchor and Chum, respectively, are Barry Humphries ("Dame Edna"), Australian actor/comedian Eric Bana ("The Hulk"), and New Zealander Bruce Spence ("Mad Max"). Director/screenwriter Andrew Stanton goes with the flow and gives a laid-back vocal performance for the unflappable sea turtle, Crush.

Academy Award®-winning actor Geoffrey Rush ("Shine") wings it with a top-flight performance as the gossipy pelican Nigel. Willem Dafoe (an Oscar® nominee for "Platoon" and "Shadow of the Vampire") is heard as Gill, the brooding moorish idol leader of the tank gang who takes newcomer Nemo under his fin. Allison Janney (a three-time Emmy Award winner for "West Wing") does a "star" turn as the astute starfish, Peach. Brad Garrett (Raymond's Emmy Award-winning policeman brother on "Everybody Loves Raymond") voices Bloat, a blowfish with a tendency for emotional as well as literal blow-ups. Stephen Root ("King of the Hill") is heard as Bubbles, the bubble-obsessed yellow tang. Vicki Lewis ("NewsRadio") lends voice to Deb (and Flo), a reflective black & white humbug damsel fish with an identity crisis. Bringing the right blend of panic and desperation to Gurgle, a royal gramma whose fear of germs makes him a royal pain, is film and stage veteran Austin Pendleton. Top Pixar storyman Joe Ranft (who has previously voiced Wheezy the lonely squeak toy penguin in "Toy Story 2" and Heimlich the jolly German caterpillar in "A Bug's Life") adds to his vocal repertoire with his role as Jacques, a fastidious cleaner shrimp who loves to muck about.

From a visual standpoint, "Finding Nemo" is a stunning achievement that is both aesthetically appealing and groundbreaking. Production designer Ralph Eggleston (an Oscar®-winner for his direction of the Pixar animated short "For the Birds" and production designer on the original "Toy Story") set the look and style for the film. The film's dual directors of photography, Sharon Calahan and Jeremy Lasky, added to the look and excitement of "Nemo's" underwater setting with their innovative approach to lighting and layout. Calahan's lighting helped to give the film a modern 3-strip Technicolor quality and enhanced the underwater effect with soft backgrounds, vibrant colors and beautiful glows. Lasky's expert handling of the layout (camera movements, staging) added to the sense of being underwater and took full advantage of the film's dramatic possibilities.

"Finding Nemo" provides a spectacular showcase for all the members of Pixar's technical and creative teams. In order to tell the story convincingly, the technical team had to discover new and improved ways for animating underwater imagery in the computer. Extensive research and development was done to study water properties and new tools were created to provide the full range of possibilities required by the script. Supervising technical director Oren Jacob led an incredible effort to capture the look and feel of an organic coral reef and a vast ocean that would respond in a realistic way to the action of the characters. Early on, Jacob and Pixar's global technical wizards (supervised by Michael Fong) identified five key components that suggest an underwater environment – lighting (patterns of caustic lighting that dance on the ocean floor and fog beams that shine from the surface), particulate matter (the ever-present debris that appears in water), surge and swell (the constant movement that drives plant and aquatic life), murk (how the color of light filters out over distance and the distance appears dark), and reflections and refractions. Add in bubbles, ripples, drips and rings, and you have the makings of a very complex environment.

Jacob explains, "This film is far more complicated than 'Monsters, Inc.' in that almost every shot involves some kind of simulation program or simulated movement. On average, there are more things going on per frame in this movie than we've done before by a pretty significant amount. There was more interdependency between the various departments than ever before and we often went back and forth to make sure the lighting and other components looked just right."

Producer Graham Walters adds, "'Finding Nemo' was an amazing film to work on and it exceeded our expectations at every step of the process. Throughout the production, people on the crew would walk into the dailies and be blown away by what they were seeing. The coral reef is particularly beautiful and it ended up looking as if someone had opened Ralph Eggleston's mind and poured it on the screen. Andrew was a great leader and inspired us all. He has a tremendous amount of respect for the audience and never underestimates them. He is always pushing the Pixar films to get more from the language of film and expand the boundaries of the medium. Lee Unkrich was a great partner in helping him make the movie that he envisioned up on screen."

Production on "Finding Nemo" began in January 2000 with the crew ultimately reaching a maximum of 180. All of the animation was done at Pixar Animation

Studios' beautiful new state-of-the-art facility in Emeryville, California.

David Stainton, president of Walt Disney Feature Animation, concludes, "The talented team at Pixar continues to amaze and entertain audiences with their incredible technical accomplishments and their ability to tell stories that touch us all. 'Finding Nemo' is another triumph for the Studio and a great debut for Andrew Stanton as a director in his own right. We're proud of our continuing relationship with John Lasseter and all of the great filmmakers at Pixar and feel that this latest effort represents another milestone for the art of computer animation."

THE STORY

Life along the Great Barrier Reef is full of dangers when you're a tiny clown fish. And for Marlin, a single parent determined to protect his only son, Nemo, there are constant fears and anxieties. When it comes time for Nemo to leave the protective shelter of his sea anemone home for the first day of school, Marlin nervously accompanies him and agonizes over his every move. When Nemo defies his father and swims beyond the reef's awesome "drop off" to investigate a boat, he is suddenly scooped up by a diver as Marlin helplessly watches.

Marlin's sinking feeling turns to desperate action as he frantically swims off in search of his son. As he passes a school of fish, he literally bumps into Dory, an agreeable blue tang who offers to help. The only problem is that Dory has severe short-term memory loss and forgets things as quickly as they happen. Together, this aquatic odd couple set out on an impossible mission.

Meanwhile, in a dentist's office overlooking Sydney Harbor, Nemo has landed in a fish tank that is home to a colorful group of characters. The leader is a tough moorish idol named Gill, who also came from the ocean and dreams of one day returning. The other tank-mates include: a starfish named Peach; a temperamental blowfish named Bloat; Bubbles, a bubble-obsessed yellow tang; a germophobic royal gramma named Gurgle; a compulsive cleaner shrimp named Jacques; and Deb, a black & white humbug damsel fish who believes that the reflection in the tank glass is her identical twin sister, Flo. When Nemo is officially initiated into the gang, he rekindles Gill's dormant desire to escape.

Marlin and Dory soon find themselves in troubled waters contending with such hazards as a trio of sharks (embarked on a self-help program to improve their image from mindless eating machines); a mesmerizing-but-deadly angler fish; and a tangled forest of jellyfish. The duo also have a close encounter with a blue whale, surf the East Australian Current (EAC) with a herd of hip sea turtles, and fend off an attack by ravenous seagulls, as they make their way to Sydney Harbor. Their adventures become the stuff of legends, and soon fish and fowl alike are buzzing about this extraordinary pair. Word of this heroic clown fish traveling the ocean in search of his son even reaches Nemo back in his tank.

Nemo is surprised and thrilled when he learns of his father's search for him. With Gill's encouragement and motivated by a strong desire to return to his father, Nemo moves forward with a daring escape plan. But time is running out; the dentist's rambunctious niece Darla (a destructive dynamo who has been known to shake her pet fish until they go belly up) is set to pick up Nemo the next day.

Arriving at Sydney Harbor, Marlin and Dory get a major assist from Nigel, a friendly pelican who has also heard the amazing stories of this brave clown fish searching for his son. With the clock furiously ticking and numerous forces at play, the father and son remain oceans apart in their efforts to reunite.

ORIGINS OF THE PROJECT

The story of "Finding Nemo" was very personal for director/writer Andrew Stanton, derived from a series of events in his own life. A visit to Marine World in 1992 started him thinking about the amazing possibilities of capturing an undersea world in computer animation. This was three years before "Toy Story" made its debut, but Stanton was fascinated with the prospect of creating such a wondrous environment. Another piece of the puzzle came from Stanton's childhood memories of a fish tank in his family dentist's office. He recalls looking forward to going to the dentist just so he could look at the fish. Stanton remembered thinking, "What a weird place

for fish from the ocean to end up. Don't these fish miss their home? Would these fish try to escape and go back to the ocean?"

The final piece of the puzzle for Stanton was his own relationship with his son. He explains, "When my son was five, I remember taking him to the park. I had been working long hours and felt guilty about not spending enough time with him. As we were walking, I was experiencing all this pent up emotion and thinking 'I-miss-you, I-miss-you,' but I spent the whole walk going, 'Don't touch that. Don't do that. You're gonna fall in there.' And there was this third-party voice in my head saying 'You're completely wasting the entire moment that you've got with your son right now.' I became obsessed with this premise that fear can deny a good father from being one. With that revelation, all the pieces fell into place and we ended up with our story."

Pitching the story to his mentor and colleague John Lasseter was the next step in "Nemo's" evolution. Stanton prepared a roomful of elaborate visual aids and launched into a pitch to sell his story idea. After an hour, an exhausted Stanton asked Lasseter what he thought. "You had me at 'fish,'" Lasseter replied.

Lasseter recalls, "I remember when we were working on 'A Bug's Life' Andrew had this great little drawing that he did over his desk which showed two small fish swimming alongside a giant whale. And I always liked that. He told me it was something he was thinking about but I didn't hear anything more about it until the pitch. I've been a scuba diver since 1980 and I just love the underwater world. When he pitched this idea, I knew that it was going to be amazing in our medium. We always pride ourselves at Pixar on matching the subject matter of our movies with the medium. I really did know when he said 'fish' and 'underwater' that this film was going to be great.

"Andrew is such a great storyteller," adds Lasseter. "He has an absolute fantastic devotion to making sure that the movie is not predictable. He's always added that to all of our films and I've learned a lot from him in that area. He believes that if something is getting too schmaltzy, he has to turn it on its ear. He has a way of getting sincerity through insincerity, but it's not so insincere that it doesn't have heart. He tends to be a little cynical but, in the end, there's so much heart underneath what he's doing."

Stanton concludes, "Telling a story where the protagonist is the father got me excited. I don't think I've ever seen an animated film from that perspective. It made me interested in wanting to write it because I knew I could tell that story. I also thought that the ocean was a great metaphor for life. It's the scariest, most intriguing place in the world because anything can be out there. And that can be a bad thing or a good thing. I loved playing with that issue and having a father whose own fears of life impede his parenting abilities. He has to overcome that issue just to become a better father. And having him in the middle of the ocean where he has to confront everything he never wanted to face in life seemed like a great opportunity for fun and still allowed us to delve into some slightly deeper issues."

He adds, "My dad gave me some good advice about parenting. He said, 'The tough choice you have is you can either be their parent or their friend. Pick one.' It's a lifelong dilemma and I love indulging in that truth with this film. I'm considered the most cynical of the group here at Pixar. I'm the first one to say when something is getting too corny or too sappy. Yet, I'd say I'm probably the biggest sucker romantic in the group, if the emotion is truthful. I just loved the idea of doing a father-son love story. They're in eternal conflict."

GONE FISHIN': PIXAR'S ANIMATORS DRAW INSPIRATION FROM VOICE TALENTS, A FISH EXPERT AND A TANKFUL OF FISH

Pixar's expert team of animators have had their share of challenges in the past bringing life to toys, bugs and monsters, but their assignment on "Finding Nemo" proved to be the toughest yet. Visits to aquariums, diving stints in Monterey and Hawaii, study sessions in front of Pixar's well-stocked 25-gallon fish tank, and a series of in-house lectures from an ichthyologist all helped to get them into the swim of things.

The animators also looked at some of the Disney classics that involved underwater scenes – "Pinocchio," "The Sword in the Stone," "Bedknobs and Broomsticks," and "The Little Mermaid" – for inspiration. In the end, it was the naturalistic portrayal

of animal life in "Bambi" that left the biggest impression.

Stanton explains, "We kept coming back to 'Bambi' because of the way the filmmakers adhered to the real nature of how these animals moved and what their motor skills were. They used that as the basis for getting as much expression, activity and appeal. We wanted our characters to work in that same way. We thought of it as 'Bambi' underwater."

Supervising animator Dylan Brown, an eight-year Pixar veteran, and directing animators Mark Walsh and Alan Barillaro were responsible for guiding an animation team that fluctuated between 28 and 50. With a large cast of characters – ranging in size from the petite cleaner shrimp, Jacques, to the enormous blue whale – this group had their work cut out for them as they learned about fish locomotion and discovered how to create believable behaviors for characters without arms and legs.

Brown explains, "Each film has its own unique set of challenges and we always begin by trying to figure out what they are and how to solve them. With 'Nemo,' we had an entire cast of fish characters with no arms or legs. Since they didn't have the traditional limbs to allow strong silhouettes, we had to invent a whole new bag of tricks. In the beginning it was a bit daunting and frustrating. We began analyzing what was appealing in terms of posing fish. We put a lot of work into the face and getting the facial articulation just right. We didn't want them to be just heads on sticks like in a Monty Python sketch. Their faces had to be integrated with the entire body language. Where a human character might just turn his head to look at something, a fish might turn his head just a little and the entire body would pivot along with it.

"Another big factor for us was timing," Brown continues. "With characters like Buzz, Woody or Sulley, you have an earth-based gravity. But fish underwater can travel three feet in a flash. You blink and the thing is gone. We were wondering how they did that and studied their movements on video. By slowing things down, we could figure it out. Our timing got very crisp as we learned how to get our fish characters from one place to another in the course of a frame or two. We always tried to incorporate naturalistic fish movements into the acting. By putting things like one-frame darting and transitioning from one place to another into our acting, the characters became very believable."

In the past, animators were always told to "ground their characters" and avoid letting them "float." With "Finding Nemo," they had to figure out the exact opposite – how to make them look like they were floating, but in water – not air.

Alan Barillaro observes, "It became fun and challenging to come up with a whole new range of how to communicate and gesture. You don't have gravity to deal with underwater, so we discovered things like when a character gestured, he would tend to drift a bit more. I found that a lot of the gestures humans make could be boiled down to eye and face movements. I would look at my own face in the mirror and imagine I had a tail on the back of it."

Mark Walsh recalls, "The first thing that Andrew did on the film was to sit with us in front of the fish tank and basically pitch the story to us. He explained that the magic of the world was going down to the perspective of a clown fish and imagining him going through an entire ocean and encountering sharks, turtles, jellyfish, etc. You imagine moving in closer and seeing this little fish and how hard he is trying."

To ensure that their characters would have the range of expressions and movements needed, the lead animators linked up with modelers and riggers from the character department and served as their "animation buddy." With direct input from the animators, the technical directors created new and improved tools and controls (known as avars) to enhance the overall character performance.

Brian Green, the Characters CG supervisor, explains, "This was the first time that Pixar has had a character department and it allowed us to serve the animators' needs better. The animation buddy might give us a drawing and say 'For acting purposes, I need it to look more like this.' We would go in and adjust it. This made for a very close relationship. We also tried to create automatic dynamic motion for some of the characters. Our goal was to try and automate everything we could – things like the movement of dangly bits on some characters – so the animator could concentrate on the performance."

Helping the animators get up to speed on fish behavior and locomotion was Adam Summers, a noted professor in the Ecology and Evolution department at the University of California at Irvine.

Summers notes, "I'm what is called a biomechanic or sometimes a functional morphologist. My specialty is applying simple engineering principles to how animals move and eat. They asked me to come in and talk about things like fish shapes and colors, and I ended up teaching an essentially graduate-level ichthyology course to the Pixar staff. There were at least twelve lectures. It was really an incredibly rewarding thing because I found that these folks like their job as much as I like mine. They were infinitely curious about fish and they were flat-out the best students I had ever had. By the end of each lecture, they would be asking me questions that I didn't have answers for.

"I remember speaking with character designer Ricky Nierva about a fish character and he asked, 'Where would the eyebrows really be?' I told him fish don't have eyebrows. They don't have any muscles in their face except for jaw closers. Ricky said, 'Adam, fish don't talk but talking is going to be a requirement for the movie. So we're going to have to be taking artistic license with science all the time.'"

Summers also gave the character designers and animators some important insights into fish locomotion by explaining the difference between flappers and rowers. Clown fish are rowers who tend to propel themselves by moving their pectoral fins in a horizontal motion. At higher speeds they wiggle their entire body. Blue tangs, like Dory, are flappers, who flap their fins up and down to move and almost never wiggle their entire body. The result was that Father's movements were more fluid and graceful, while Dory tended to flit sharply about."

Summers adds, "In most animated films with fish, the characters move back and forth with no visible propulsive device and that really offends the eye. You don't need to be an ichthyologist to know there's something wrong with that kind of locomotion. It'd be like watching a horse trot with two of its legs still. In 'Nemo' if a fish is moving, its fins are moving. There's a sort of kinetic feel to the characters that tells you they're underwater. They're not acting in air. When they flap around, it has consequences for their whole bodies. They did a heck of a job making clear the differences between living in an incompressible fluid like water and compressible fluid like air. I was completely knocked out. This was an amazing group to work with and we had a lot of fun in the process."

The starting point for any good animated performance is the vocal talent, and with "Finding Nemo," the filmmakers had some of the very best.

According to Andrew Stanton, "With Albert Brooks you get more than a voice, you get an established persona. He always knows how to maximize the entertainment value of any moment. Even when his character wasn't asked to be funny in a scene, he knew exactly how to play it for entertainment. At the recording sessions, he would bring his own sensibilities to the material and just kind of run with it. We learned to just start the tape rolling and give it a tail slate at the end. We didn't want to interrupt his creative flow. He would just get these ideas and go again and again. He's such a hard worker and very eager to please.

"Ellen DeGeneres was someone I wanted for the role from the start," adds Stanton. "Even before the character was named Dory, I knew I needed someone to help Father find his son. In the middle of thinking about this character one evening, my wife was watching the "Ellen" show on TV and subconsciously I could hear her doing her schtick of changing her mind five times before a sentence finishes. Usually I don't like to trap myself into writing specifically to a character, but this seemed like such a good match that I decided to go with my gut and hope the planets would align. I called Ellen up to see if she might be interested and I basically told her that I had written the part for her and that I'd be in trouble if she didn't take it. She was so nice and she said, 'Well then I'd better take it.' She brought a real kindness and gentleness to the part, along with the rhythm and the quirkiness. Both she and Albert have a way of saying things that are unique to them.

"Alexander Gould brought a genuine, untainted quality to the voice of Nemo," recalls Stanton. "It's amazing how many kids sound prepped or have some preconceived notion of what a good actor should sound like. Alex sounded real and he totally understood direction. We were really lucky to find him."

TECHNICAL TRIUMPHS: A NEW HIGH WATER MARK FOR COMPUTER ANIMATION

Water has traditionally been one of the most difficult things to create effectively and economically in computer animation. Faced with a film that was set largely underwater, the technical team on "Finding Nemo" had to find new ways to meet the enormous demands of the production and solve some of the problems that had been encountered by others in the past. Supervising technical director Oren Jacobs led the effort to give Stanton and his team exactly what they wanted.

"Our starting point was to watch a lot of films with underwater scenes and analyze what made them seem like they were underwater," explains Stanton. "What made them not seem like they were in air? It was a bit like getting a great cake and trying to figure out how somebody baked it by breaking it down. We came up with a shopping list of five key components that suggest an underwater environment – lighting, particulate matter, surge and swell, murk, and reflections and refractions."

Jacob adds, "Even before we had a finished script, we knew we had a story about fish in a coral reef. That was enough for our global technology group to begin coming up with tools for making water move back and forth. Coral reefs are organic living things so it's not a static set like the door vault in 'Monsters, Inc.' Early on, we took a diving trip to Hawaii with some of the film's key players. Then we looked at every Jacques Cousteau, National Geographic and 'Blue Planet' video we could find. We also studied every underwater film from 'Jaws' and 'The Abyss' to 'The Perfect Storm' to understand what the filmmakers chose to caricature. We came up with our own idea of what audiences expect to see with water and developed our own ratios and proportions."

Under Jacob's supervision were six technical teams specializing in different components and environments seen in the film. Lisa Forsell and Danielle Feinberg were the CG supervisors responsible for the Ocean Unit. David Eisenmann and his team handled the models, shading, lighting, simulation, etc. for the Reef Unit. Steve May headed up the Sharks/Sydney Unit, which tackled the submarine scene, shots inside the whale and most of the above-water scenes in the Harbor. Jesse Hollander oversaw the Tank Unit, which created all the elements for the fish tank. Michael Lorenzen was in charge of the Schooling/Flocking team, which created hundreds of thousands of fish plus key elements for the turtle drive sequence. Brian Green led the Character Unit, which created the look and complex controls for nearly 120 aquatic, bird and human characters.

The Ocean Unit was responsible for such scenes as the school of moon fish, which form different objects (an arrow, a lobster, a boat, etc.), the angler fish chase, and the turtle drive in the East Australian Current. The unit's most challenging and impressive scene, however, was the jellyfish forest. This rich and colorful moment finds Marlin and Dory in an ever-expanding and increasingly dangerous sea of deadly pink jellyfish.

Forsell explains, "This scene involved several thousand jellyfish. Our unit built the model for a single jellyfish and put a lot of work into the build-up of jellyfish density. This involved creating a simulation for the group that controlled the movement of the tendrils, how quickly they swam and in what direction. We had some great reference footage and were particularly fixated on one species from Palau that we found at the Monterey Aquarium. David Batte wrote a whole shading system we called 'transblurrency.' Transparency is like a window and you can see right through it. Translucency is like a plastic curtain that lets light through but you can't see through it. Transblurrency is like a bathroom glass; you can see through it but it's all distorted and blurry."

For David Eisenmann and his team on the Reef Unit, the challenge was to create a caricatured version of the coral reef that would suit the purposes of the story. They were responsible for the film's rich and vibrant opening scenes and building the anemone home of Marlin and Nemo.

"Our group started with a realistic approach to the reef," he explains. "We were able to do that relatively easily but Andrew and Ralph [Eggleston] felt it was way too busy and distracting. There was just an immense amount of stuff. In order to get the characters to read and act against the background, we began to simplify things. We figured out how many different things we should build and how much variation there should be. The director wanted about 30% of whatever you see on the screen to be moving

to make it feel like it was underwater. For the reef scenes, this meant simulating movement for sponges, moss, grass and other kinds of vegetation.

"The reef is very stylized and almost dream-like," adds Eisenmann. "The color palette opens with purples and blues and jumps to vibrant reds and yellows. There is a real storybook, fantasy quality to it. As the story progresses to the drop-off, things become more real and less colorful. Because this is a journey film, our main characters travel quite a distance through the reef. Our modelers were able to keep the reef scenes interesting and exciting by mixing together different shapes and textures. We had a whole grab bag of vegetation we could use to populate a scene and, by putting different textures and shaders onto the catspaw and staghorn coral and the sponges, we could make it feel like completely different models from scene to scene. We spent about a year researching corals and sponges. In the end, we were able to take one basic form of sponge and shape, shift and mold it into more than twenty variations."

"Instead of building a reef set and flying a camera around, David and the Reef Unit had an amazing system for building the reef on a shot-by-shot basis," explains producer Walters. "They had an entire nursery of coral, plant life, etc. that they could throw together in different configurations and custom sculpt each shot for the needs of the story. They did an amazing job."

Picking up where the Reef Unit left off was the Sharks/Sydney Unit, under the direction of Steve May. This group took on a wide variety of scenes with diverse locations, including the submarine set where the sharks meet, the fishing net scene with hundreds of thousands of grouper fish, the scene inside the blue whale, and all of the shots in Sydney Harbor from the boat marina to the sewage plant.

May explains, "The submarine is supposed to be like a haunted house. It's very spooky and creepy. There are nearly 100 mines surrounding the sub and we worked hard to cover them all with moss and have them move with the surge and swell of the ocean. Inside the sub, it's supposed to feel very tight all the time. It's crammed full of knobs, valves and pipes. Because we had our own layout and modeling people, we were able to quickly build and dress the sub as we went. We knew what we needed and built customized parts along the way."

One of the big challenges for May and his team was simulating the splashing water inside the blue whale. "Pixar really hadn't done splashing water before," adds May. "We had to figure out a way to do three-dimensional water, develop the software and new techniques for running simulations to compute the motion of the water, and then render it to look realistic. And the entire time, the whale is swimming and going up and down. Water had to explode and splash all around as the whale's giant tongue lifts Marlin and Dory out of the water. This was a whole different water dynamic than the film's underwater scenes, and we had to allow for the large-scale behavior of the crashing water and the very small detailed behavior of our two fish characters. Those different resolutions were very difficult to accommodate. Lighting that scene was probably the hardest thing we've ever had to light because the entire set was moving, organic and filled with splashing water."

Jesse Hollander and the Tank Unit were responsible for all of the lighting, modeling, shading and rendering associated with the dentist's office and the fish tank. Creating the tank itself and dealing with issues of reflection and refraction were a major challenge for this resourceful group. They also built a wide range of set pieces for their scenes ranging from dental equipment to the tiki heads and volcano in the tank, and nearly 120,000 pebbles on the tank floor. Their work included new breakthroughs in the way cloth, human hair and skin are accomplished with computer animation.

"One of the biggest things that our unit had to develop for this film was the reflections and refractions connected with the tank," recalls Hollander. "Our starting point was the actual physics of what happens to light when it enters not just water, but a glass box filled with water. This meant computing for glass, then water, then glass into water. But in our movie, we're not dealing with just physics, we need to be able to have control over those physics. Most of the time we were able to achieve the effect we wanted by offsetting the camera. At certain angles inside the tank, there is something called TIR – total internal reflection – where the glass becomes a perfect mirror. We play off this quite a bit with the characters of Deb and Flo. At other angles, the view from the tank shows double imagery. Whenever we're inside the tank, we always

use reflections. Refractions become more of a selective thing and we only use them where necessary."

As with all Pixar films, attention to detail is critical. Hollander explains, "As far as the objects in the tank, we tried to give them a very cheap, kitschy Vegas feel – lots of color and cheap plastic. We went to a lot of effort building fake molding lines and flashing for the plastic items."

Another key contributor to the film's overall technical advances was Michael Lorenzen, who oversaw a group of animators and technicians in the Schooling/Flocking Unit. This unit helped to create spectacular crowd scenes that included tens of thousands of fish. They also populated the turtle drive sequence with up to 200 background turtles.

Jacob concludes, "The thing about 'Nemo' that makes me most proud is that we were able to get to a place where the director was able to concentrate on the filmmaking aspects of the film and was less hassled by technical limitations or frustrations. We were also able to give the animators faster models, many in real time. This was another major breakthrough. Overall, we reduced the render time for each frame and gave the director the visual richness he wanted and within the schedule and budget allowed."

FINDING "NEMO'S" LOOK AND STYLE: PRODUCTION DESIGN AND CINEMATOGRAPHY

Overseeing the production design for "Finding Nemo" was Ralph Eggleston, a Pixar veteran who had served in a similar capacity on the original "Toy Story" and had gone on to direct the Studio's Oscar®-winning short "For the Birds." He prepped for his role on this film with several diving trips and a visit to Sydney Harbor to get the lay of the land and sea. The film's two directors of photography – Sharon Calahan and Jeremy Lasky – brought their expertise to the areas of lighting and layout, respectively, to help capture Stanton's vision for the film on screen.

"The music, the color and the lighting, to me, are the things that really give the underlying emotion of every scene," says John Lasseter. "And the lighting and color in 'Nemo' is always used for storytelling. Ralph Eggleston is a master at that, and Sharon Calahan knows how to get that on the screen."

"One of the biggest decisions we had to make was how much to caricature reality," recalls Eggleston. "Fish have an almost caricatured shape to begin with and Andrew was fairly adamant that he didn't want to overly anthropomorphize the characters. And so we actually had to go the other way and bring the world closer to the caricatured nature of the fish. If we put these fish in anything that looked even quasi-real, it wouldn't work. The characters and the world had to be on a parallel track.

"One of our first priorities was to make the fish seem appealing," he adds. "Fish are slimy, scaly things and we wanted the audience to love our characters. One way to make them more attractive was to make them luminous. We ultimately came up with three kinds of fish – gummy, velvety and metallic. The gummy variety, which includes Marlin and Nemo, has a density and warmth to it. We used backlighting and rim lights to add to their appeal and take the focus off their scaly surface quality. The velvety category, which includes Dory, has a soft texture to it. The metallic group was more of the typical scaly fish. We used this for the schools of fish."

Eggleston and Calahan shared a love for the soft, bright Technicolor films of the 1940s and had frequently discussed making a brand new CG animated film that looked like it was from that period of time. With "Nemo" they got their chance. The underwater setting lent itself to soft backgrounds and characters with a glow around them.

Eggleston says, "'Nemo' doesn't look like a three-strip Technicolor film, but rather a modern version of the quality you could achieve with this process. Another big inspiration for us was Disney's 'Bambi.' It's a very impressionistic film. Things fall off in the backgrounds, and you focus on the characters. That's the approach we adopted. The film begins with an intense Garden of Eden coral reef. From there, the underwater backgrounds tend to become more impressionistic with just a mountain or sandy bottom in view."

Describing "Finding Nemo" as the most complex film Pixar has ever made from a lighting perspective, Calahan observes, "A big part of our job was creating believable underwater environments. And that took on many forms since we had clear

water, super-murky water and even water in a fish tank. We had to figure out the common elements so that stylistically we could tie them all together."

Calahan credits Stanton with "having an amazing eye for forms and designs. Design themes and strong graphic elements are really important to him and he really gravitates towards them. Which is great because it creates a strong visual structure for the film. He's also a lot of fun to work with because he is willing to take some risks and experiment. Andrew also took a real interest in what lighting could do to plus the emotional content of the movie."

In the end, Pixar's technical team exceeded even their own expectations. Eggleston notes, "Seeing the coral reef up there on the big screen is simply amazing. Every piece of coral is backlit and the entire set is like a jewel underwater. I always thought it would look good but I had no idea it would look like this. I was the third person to work on this film, so I've been part of the technical process since the beginning, and still I found myself sitting in the theater thinking 'How did they do this?'"

THE SOUNDS OF "FINDING NEMO": THOMAS NEWMAN'S SCORE AND GARY RYDSTROM'S SOUND EFFECTS MAGIC

Music and sound effects are integral parts of any motion picture experience and the filmmakers at Pixar have always used these elements to maximum advantage. With "Finding Nemo," Andrew Stanton got a chance to form a new collaboration with composer Thomas Newman, and continue a long-standing relationship with multiple Oscar®-winning sound designer Gary Rydstrom.

Newman, a five-time Oscar® nominee and a recent Emmy winner for his theme for "Six Feet Under," was a major inspiration for "Finding Nemo" even before he came on board. Stanton wrote the screenplay for the film while listening to Thomas Newman scores on his headphones. During the editing process, Newman's music was used in the scratch track as much as possible.

Co-director Lee Unkrich describes Newman's music for "Nemo" as "a very lush orchestral score that has a lot of very quirky and interesting instrumentation layered in. There's an unexpected quality about it. You don't always know what you're hearing or what some of the sounds are. He does a lot of overdubs, where he'll gather a group of musicians together apart from the orchestra session and have them play lots of interesting percussion and instrumentation. Then he'll layer that into the music that's been recorded on the soundstage with the orchestra.

"It's been a real joy to work with him and he's been working with us very much as if he's a part of Pixar," adds Unkrich. "We wanted him to have as much freedom as possible. He's been an amazing collaborator who wants to support the film in every way he can. He knows how hard we've been working on it and wants the film to be great. This is really the first big action film he's scored. His music often has a moody and darkly humorous quality."

Producer Walters agrees, "Thomas would play everything for us on his keyboard sequencer at his house. Towards the end of production, we would go down there almost once a week and hear all the music to picture mocked up in his studio. It was an unbelievably good working experience. By the time we got to the recording sessions, we had heard everything but it sounded so much better with a 105-piece orchestra. For our film, he also did his signature overdubs, where he goes in with his posse ahead of time and records things to go on top of the orchestral stuff. With the turtle drive scene, the music breaks into a full-on classic surf rock sound. His score is very classy and it plays the emotions a lot."

The filmmakers came to regard Newman's score as being practically a character in the film. His reputation for originality and intensifying mood and character through music added an additional level of entertainment and enjoyment.

Seven-time Oscar®-winning sound designer Gary Rydstrom has worked on every one of the Disney/Pixar features released to date and preceded that with work on such Pixar shorts as the 1989 favorite, "Knick Knack." He once again lends his incredible talent to complete the experience of "Finding Nemo." Complementing the visual excitement of the film, Rydstrom's inventive catalogue of sounds adds to the sensation of being underwater.

"This was a movie with no feet, no footsteps and no traditional foley," says Rydstrom. "So one of the basic things we had to do was make a believable

movement track for all the various fish, and give each of them their own character. One of my favorite sounds was the one we came up with for Nemo's damaged fin. It has a little flutter almost like a wing flap. I created a very simple flapping sound with a paper towel. There's almost a hummingbird quality to it. Marlin propels himself with tail flaps so he sounds a bit neurotic. For him, we basically used the sound of the fish character in the Pixar short "Knick Knack." Dory makes more of a smooth cutting sound as she moves through the water. She's just going through life having a good time. We tried every trick in the book to differentiate the main characters with sound.

"For the sharks, I used a device where I could modulate real sounds with my voice," continues Rydstrom. "I took real water sounds of various types and growled into a microphone so that my vocal characteristics would shape the river-gurgle sound or whatever we happened to be using. This gave a deep scary feeling to their water movement. If you listen carefully during the shark chase, the water sounds are saying 'Nemo.' It's kind of my own subliminal Beatles trick.

"One of the things we discovered early on was that things actually recorded underwater are boring, so we ended up manufacturing a lot of the sounds. We did go to a pet store with a lot of aquariums and stuck our mikes in the tanks and moved them through the water. For the fish tank in the film we wanted a contrast with the wide-open ocean. Occasionally, you hear weird, cheesy filter buzzes, goofy bubbles and things that happen in real aquariums."

Rydstrom recorded sounds in the ocean, in jacuzzis and even in a coastal cave to get the sound of water sloshing and crashing. The latter ended up being used to approximate the inside of a whale. The sound of Marlin and Dory bouncing on jellyfish proved to be a bit elusive. Rydstrom finally got the desired effect when he bounced his finger on a hot water bottle to get the nice little muted, watery "glug" sound he wanted.

In a true example of suffering for one's art, Rydstrom's assistant, Dee, even recorded her own visit to the dentist. The brutal dental drill heard in "Finding Nemo" is actually Dee getting a filling done.

According to John Lasseter, "Gary Rydstrom has done the sound design on every one of our films since 'Luxo Jr.' and he's always taught me how the sound can help our films and help the worlds in our films to be more believable to the audience. And on 'Finding Nemo,' Gary has done some of his very best work. Water swishes can get repetitive, but he worked so hard to make it very special. He is a great collaborator and he always adds so much to our films."