advertisements in salt, working for companies that valued the specific artistic quality of her personal style. **15**

Looking back, we may call these animators pioneers of powder animation, but at the time they were simply working with an interesting material that best suited their temperament and the stories they wanted to tell. What attracted these artists to sand was not the novelty of working with a strange material, but the actual properties of that material. You can draw with the sand, but in that drawing process you push, mold, spread, and confine it. The combination of dimensional and linear properties can be frustrating for some artists and liberating for others. The only way to test your affinity is to dig into the sandbox and give it a try!

## Exploring the Technique

There are many things I could tell you about sand animation. We could talk about texture and light, color and layering, pre- and post-production. Eventually, we will get to a lot of these things, but at the beginning, the best way to learn is to dig your hands in and start animating. Let's not worry about perfection or plan a major opus. Let me simply introduce you to the sand.

To start, we will need just the most basic setup: a light table, a camera, and a frame capture program, all of which we learned about in Chapter 3. You will also need a glass box that you can put on the light table to contain the sand. Otherwise it will spread out and get all over your studio. You can make a box quite easily with a sheet of glass, some foam core, and masking tape. **16** Make sure the walls of the box are fairly high and all the seams are taped securely so no sand can escape.

And, of course, you will need some sand. Any sand will do – something you picked up on your last trip to the beach perhaps, or maybe from the hardware store or your nearest craft store. I find a quart is usually enough to start with. If you like working on a large surface, you may need more. I run my beach sand through a kitchen sieve to filter out any larger grains or odd bits of seaweed and shell. **18**



**16**  *A young animator plays in a home-made sandbox. Photo credit: Kevin Fosse.*

**#ProTip**  *Even though I can see the edge of my frame in the frame capture program, I use a dry-erase marker to put little marks in the corner. That way, when I'm looking at the glass, I know what will be on screen and what will be off.* **17**



**17**

**#ProTip**  *Sand likes to get in every nook and cranny in the studio. I wrap my keyboard camera buttons and anything I might get dirty while animating in plastic wrap before I start.*

If you are concerned about the sanitation of your local beach, you can wash the sand by putting it in a big bucket with a bit of dish soap and swishing it around. After the sand settles, pour out as much water as you can then rinse several times. Spread the wet sand on an old bed sheet in the sun to dry (which may take a day or two depending on how much sand you have).
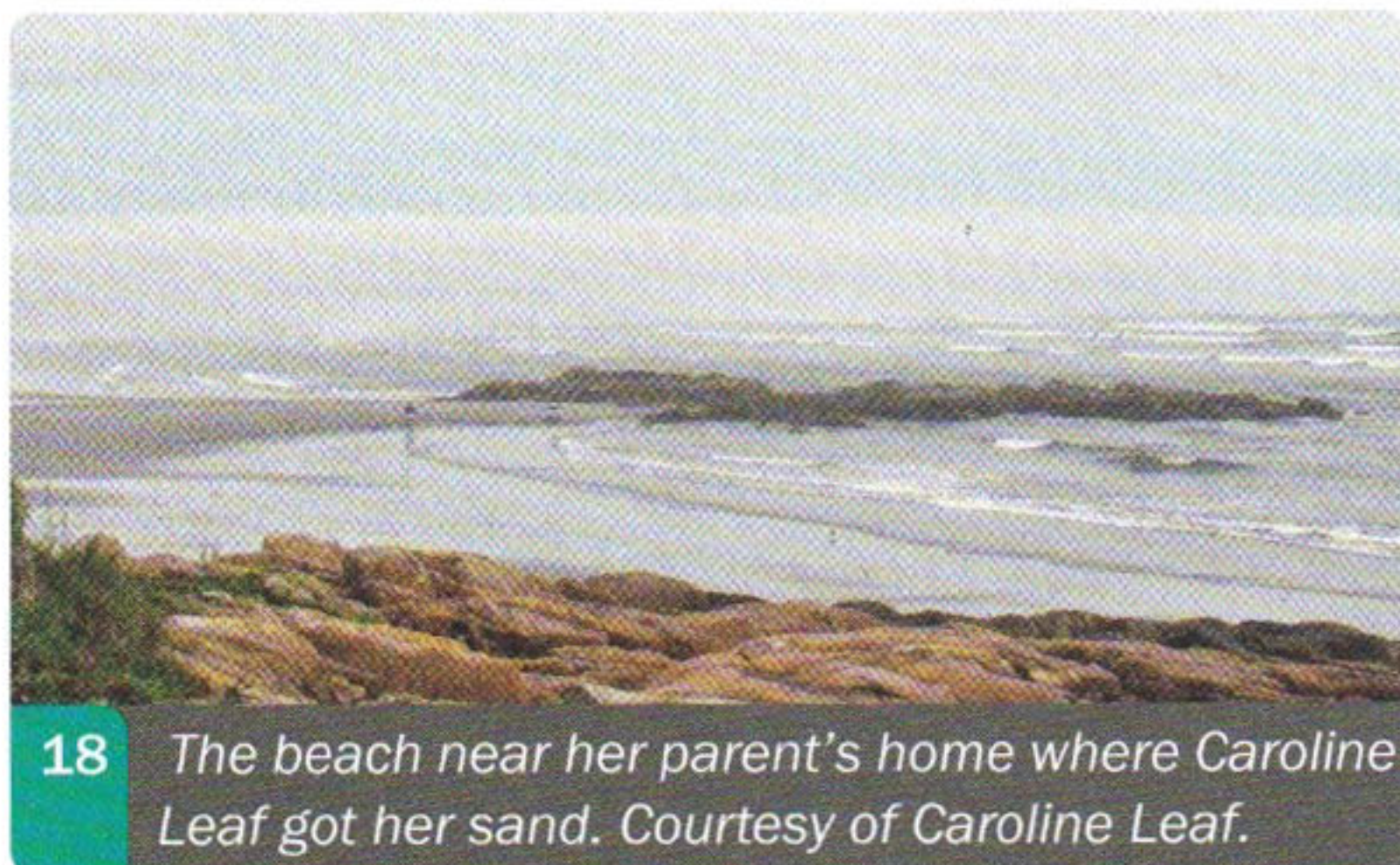


18    *The beach near her parent's home where Caroline Leaf got her sand. Courtesy of Caroline Leaf.*

*"For me the trick is to lose the fear . . . in the beginning, I thought, 'Oh, if I breathe maybe the sand will be ruined.' I did just little tiny things. I was afraid to move the sand. Don't be afraid with the sand! You can move it. Push it around."* 19

– César Díaz Meléndez



19    *César Díaz Meléndez's home-made multiplane light table.*

*When I do workshops, I introduce the technique with the idea of doing morphs. It's not because you can't do a morph with some other media like pencil and paper, but . . . the plasticity of the sand and morphing seem to go together so they reinforce each other.*

– Caroline Leaf

## Exercise

## Animating a Sandy Morph

(For this exercise, set the playback frame rate in your capture program to 12 frames per second.)

1. Put a small pile of sand in the middle of your table. 20

2. Use your entire hand to spread out the sand. Push it around a bit and note how it spills over the glass. See how much you can pile up before it starts to tumble down. See how thinly you can spread it and what sort of patterns you can make with your fingers. 21
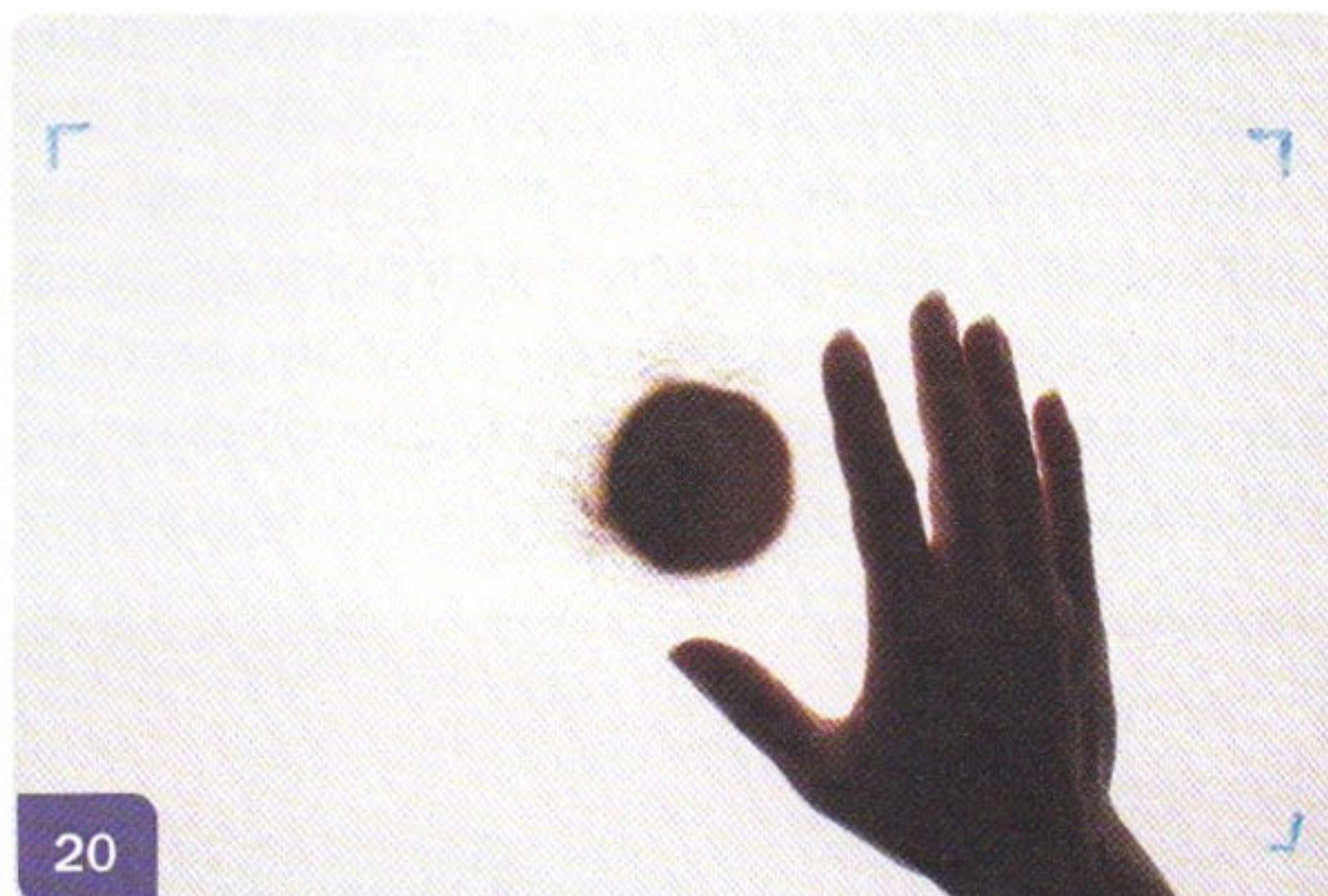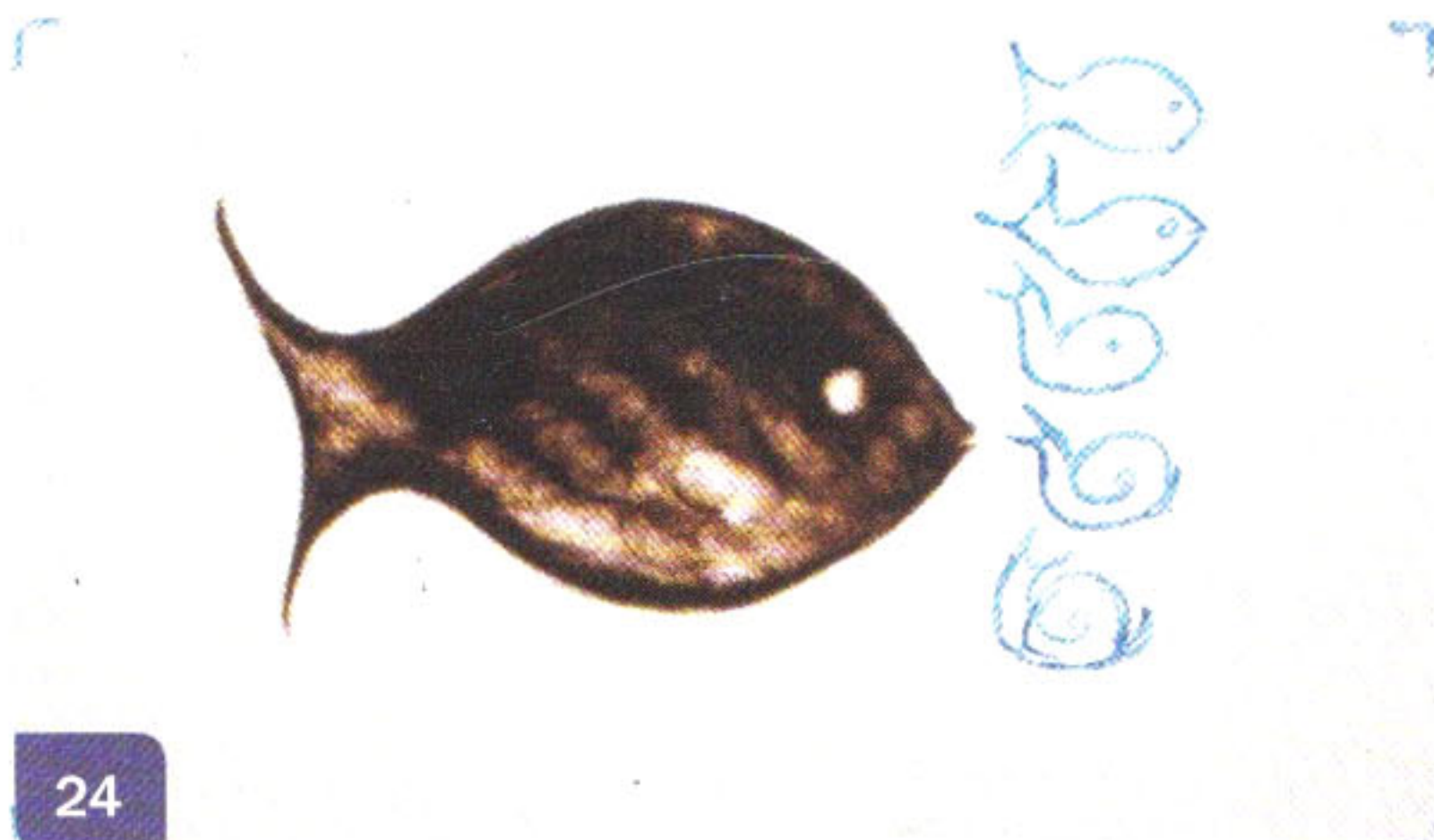


20

21
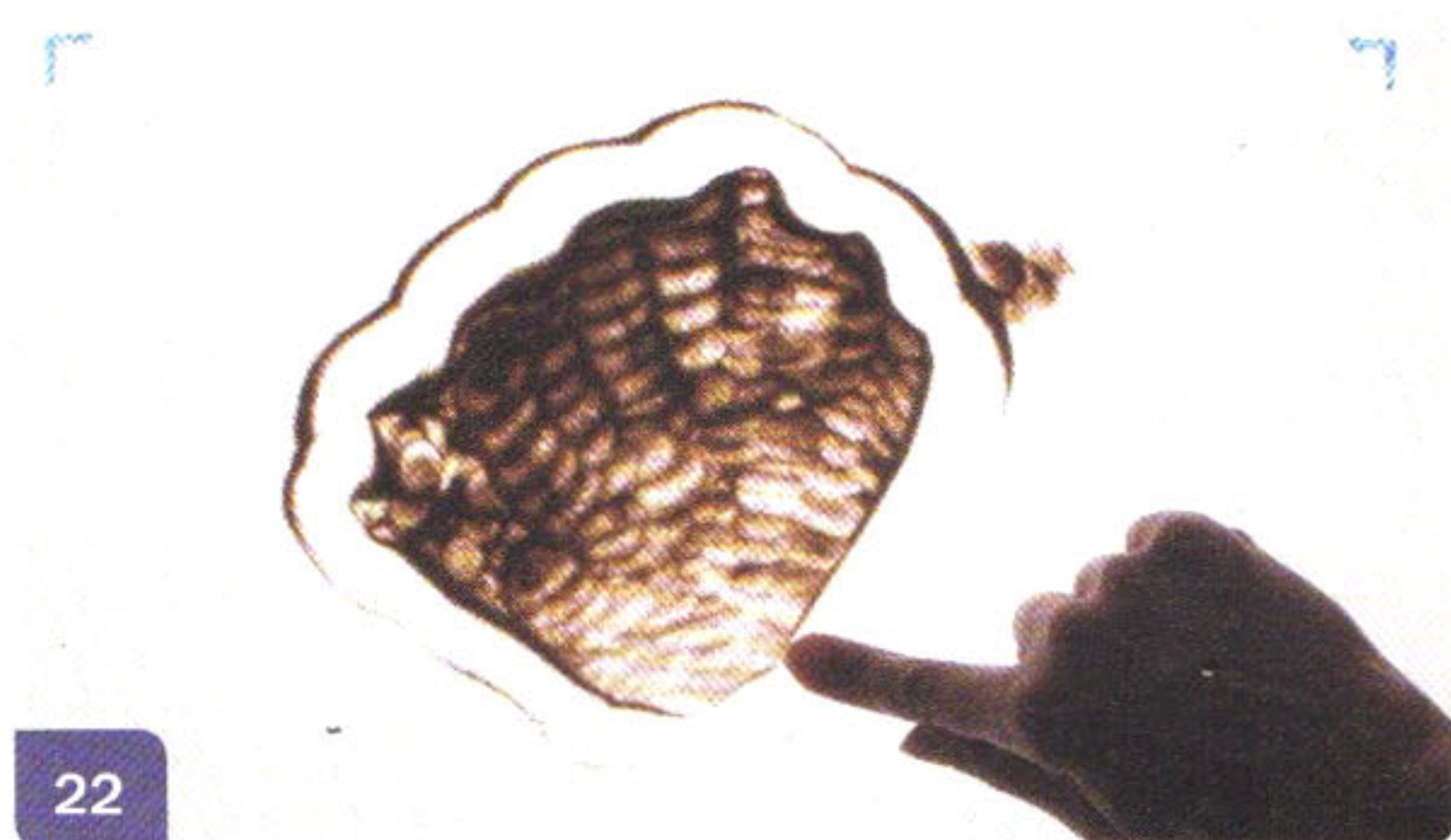


22



23



24

3. Feel the warmth of the lights coming through the sand and warming your hands. Spend five to ten minutes just playing and letting your mind relax. This is you and the sand saying "Hello!" 22

4. As you and the sand get to know each other, you may start to see recognizable shapes emerge, just as you might see shapes in the clouds on a warm spring day. Use your fingers to help one of those shapes emerge and become more defined. Add a few details but don't get too caught up in making it perfect. If you are feeling a bit hesitant about your abilities, just stick to a silhouette.

5. Once satisfied, take a frame. Now we will create an evolving hold. Use your finger or a paintbrush to lightly trace the edges without changing the original shape. If your image has any areas where a bit of light is showing through, pat those gently with your fingertips or hand, then take a second frame. Do this several more times, tracing the outline and lightly patting the textured parts before taking a frame. Don't worry if you aren't perfectly consistent. This puts just a little bit of movement in the sand and keeps it alive even while holding still. A more subtle approach is to tap the glass next to the drawing a few times – the vibration will shift grains just enough to provide a little shimmer. Repeat this process until you have 12 frames (a one-second evolving hold). 23

6. Over the next 12–24 frames, we are going to morph the image you have before you on the sand table into the new image. In your mind, break down the morph into incremental changes. You can plan this out by sketching out some thumbnails to guide you, or you can improvise and let the sand lead you to a new image as you move it. 24 Think about some of the basic animation principles we discussed in Chapter 3 that might apply, like easing or anticipation and follow-through. When I'm moving a large patch of sand, I work from the outside in, pushing the edge of the sand first to a new position so I can retain the basic shape and size of my drawing in the next frame, then I realign the interior details

25

with the outer edge. Finally, I'll smooth the edge with my fingers or a paintbrush.

7. Once the morph is complete, create another evolving hold for 12 frames by tracing the outline or tapping the glass by your new drawing. 25

8. You should now have three to four seconds of animation! Play it back and see what it looks like. We will continue working with this image in a few minutes so leave it on the table as you read the next section.



26  *Marieka Walsh's detailed rendering of a scene for* The Crossing.

You may have noticed with this first part of the exercise that there are several approaches to moving the sand. You can push it into piles and use your entire hand to move it on the glass or you can take a more delicate approach and use the tips of your fingers and fine brushes to create detailed lines and shading. We start off with simple drawings and silhouettes because we can move along quickly from frame to frame, making things move without getting caught up in the details. However, as you work more with the sand, you will start to develop a style that is suited to your temperament and aesthetic preferences. For example, Marieka Walsh's films are full of shading and



27  *A simple stylistic approach in Maryam Kashkoolinia's* When I was a Child *reflects the subject of the film.*



28  *Sand can become a linear drawing tool, as César Díaz Meléndez shows us in* No Corras Tanto – 2009.

moving texture. **26** Maryam Kashkoolinia uses simple character design and solid shapes, while César Díaz Meléndez's work has a linear quality that he manipulates quickly and intuitively. **27 28**

These animators harness different qualities of the sand to create their own unique aesthetic. They use the same tools and the same basic setup but the results are very different. Trust your intuition as you continue to experiment with sand and discover what feels enjoyable and natural to you. That will eventually become your own unique style.

**Animated Anecdote**

*"I remember one of the biggest and most important 'Aha!' moments was after I had made a number of films. I had always moved things back and forth across the screen. I was doing* The Owl Who Married a Goose *and suddenly I saw that the white was infinite space. It was depth and that was a huge revelation to me . . . After that I started moving things back and forth in depth as well as across."*

– Caroline Leaf

*"You've just got to go with the light. It's all about using the light to make things look good . . . you can do things that look really good with the sand because you have all this lightplay going on."*

– Anna Humphries

*"What I love about sand animation . . . is the darkness. I like the idea that you are pulling something out of darkness. You're peeling through that sand and finding texture and tone. I always start with a lot of sand on the lightbox and am teasing those images out."*

– Marieka Walsh



29

Let's continue with the animation we started, this time paying attention to the white space around the sand.
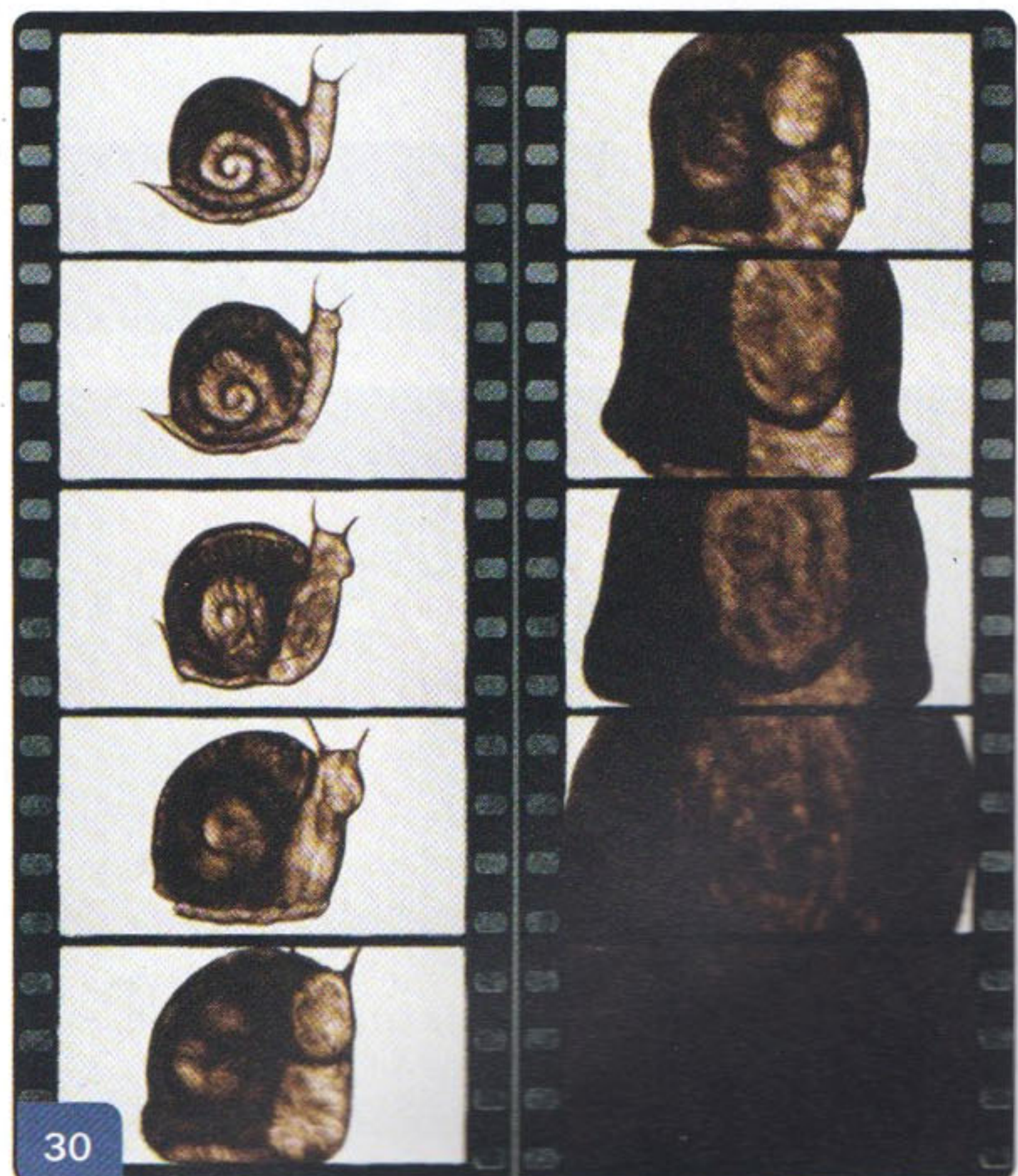
9. Picking up where we left off, let's bring our drawing "closer" to the audience by making it incrementally bigger. **29**

10. I will use the current frame as a starting point, pushing the sand outward along the edge to make the shape expand. Once I have the outline for the new frame, I fill in holes left in the sand.

    Slowly my drawing is filling the screen. I add more sand with each frame to fill more of the space. Continue animating until sand is filling almost all of the frame. **30**

11. Positive and negative space can become interchangeable. Continue to grow your drawing until it fills the entire frame, but now with each frame begin to pull away the sand from inside



30

the frame to reveal another drawing. Here we have an entirely different artistic look, with the white as the positive space and the sand as the negative space. **31**

12. Move your new drawing around. Remember to draw the next frame before obliterating the last one. As a finale, transform it into a negative space version of the very first drawing.



**31**
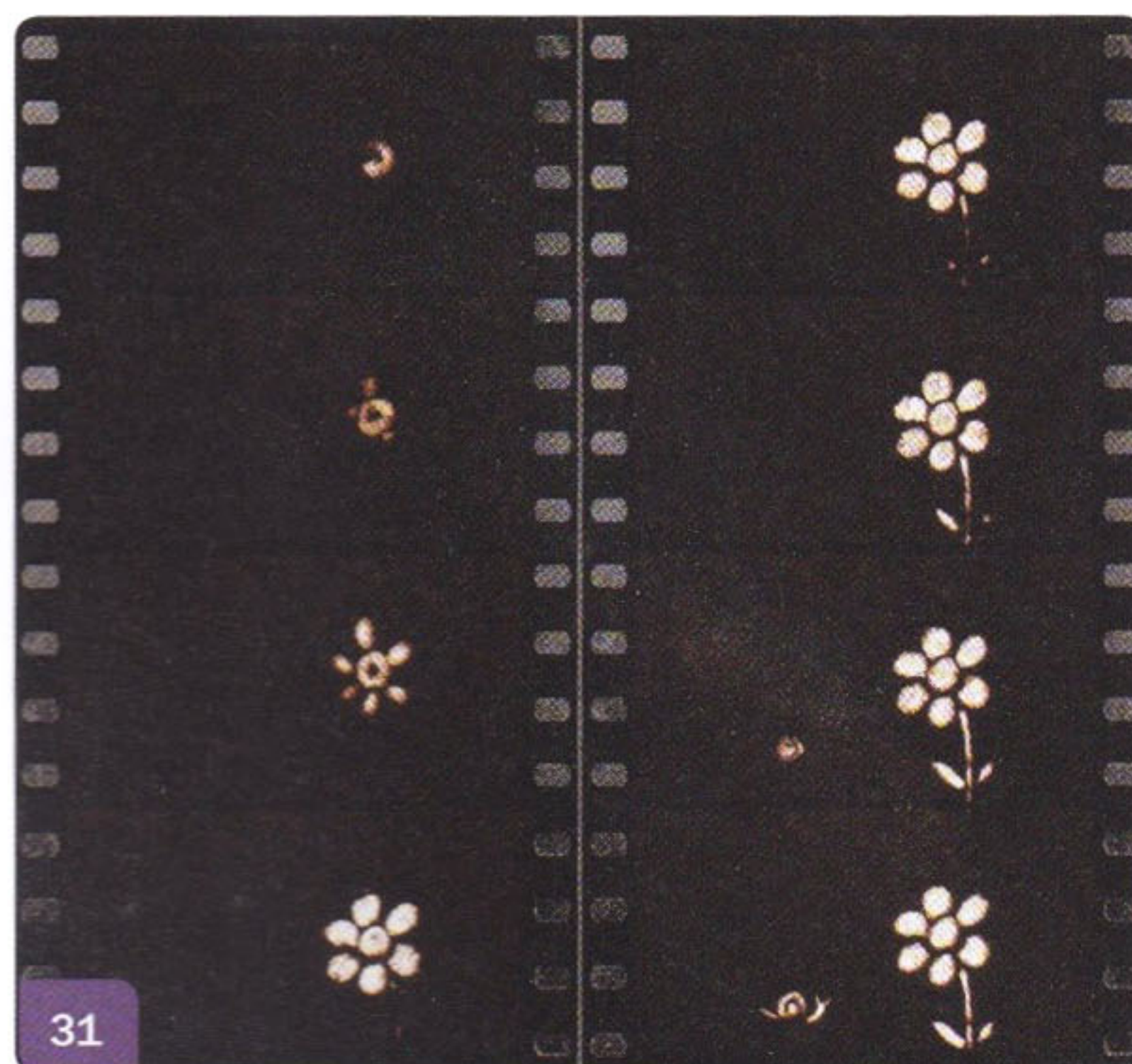


**32**  *Samples of sands and salts I've collected from friends around the world. The variations in texture and color offer a broad palette.*



**33**  *Dazzling gems created in colored sand by Anna Humphries for the music video* It Might Be Real *– 2012.*

## The Sandy Studio

### Materials

Different types of sand have different qualities and part of the fun is learning what hidden imagery is in each type. Large grains of sand reflect light beautifully, like little glass stones, but they do not stick to each other well and are difficult to form into shapes. Very fine sand can create ethereal shapes and be spread smoothly over glass. You can get brightly colored sand at craft stores and it can either be top lit or backlit. **32** **33**

Sand is not the only thing you can animate. Any sort of powder or granules can be fluidly manipulated on a flat surface. For his films *Cumulus* and *The Well*, Philippe Vaucher used salt colored with food dye:
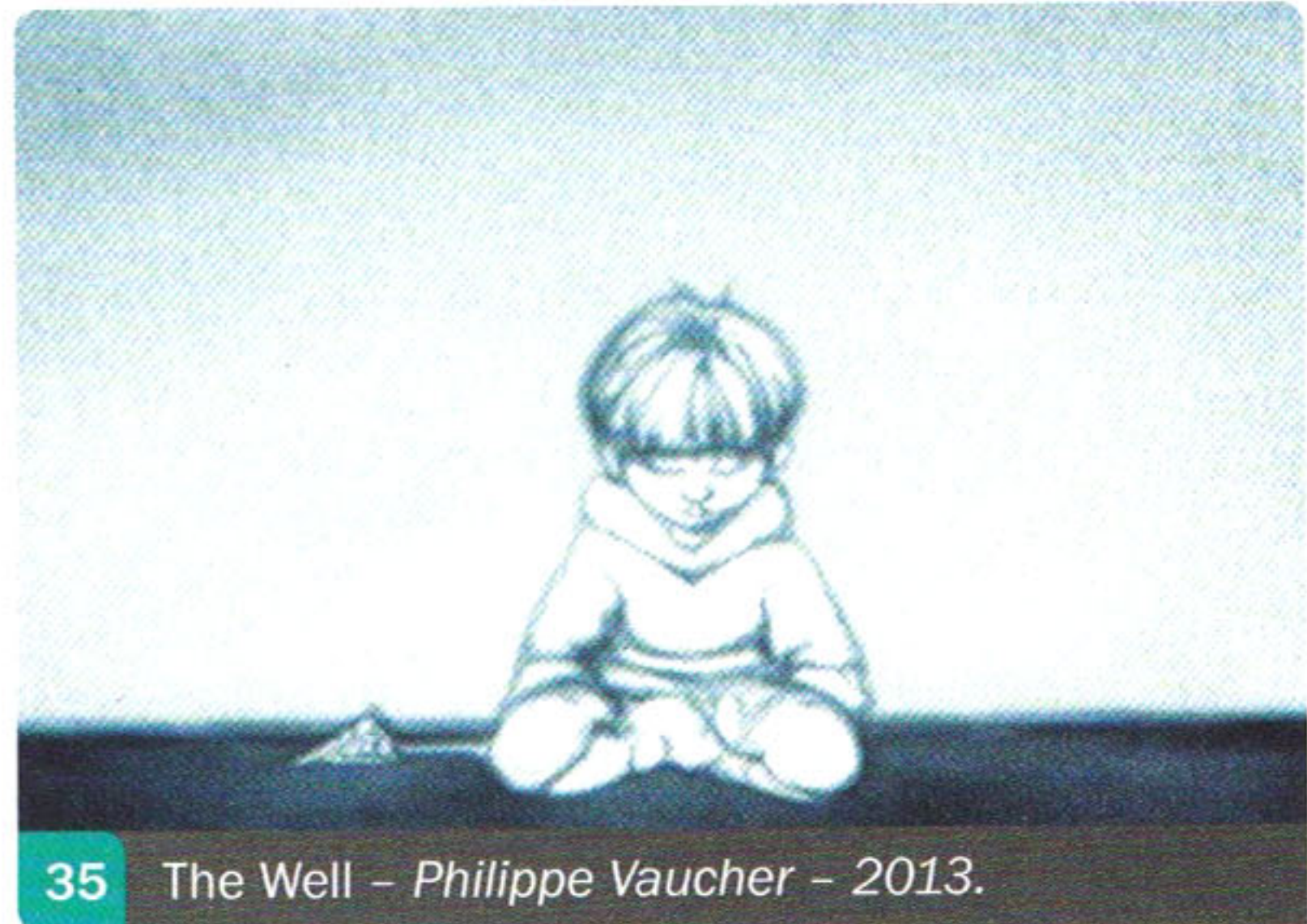
I have a small bowl, fill it with salt, and drop fifteen drops of undiluted dye in and mix it up

> "The sand that I like the best is some sand that a friend got for me from a river inlet just off a beach. It's really fine and it feels like velvet. It's beautiful to work with."
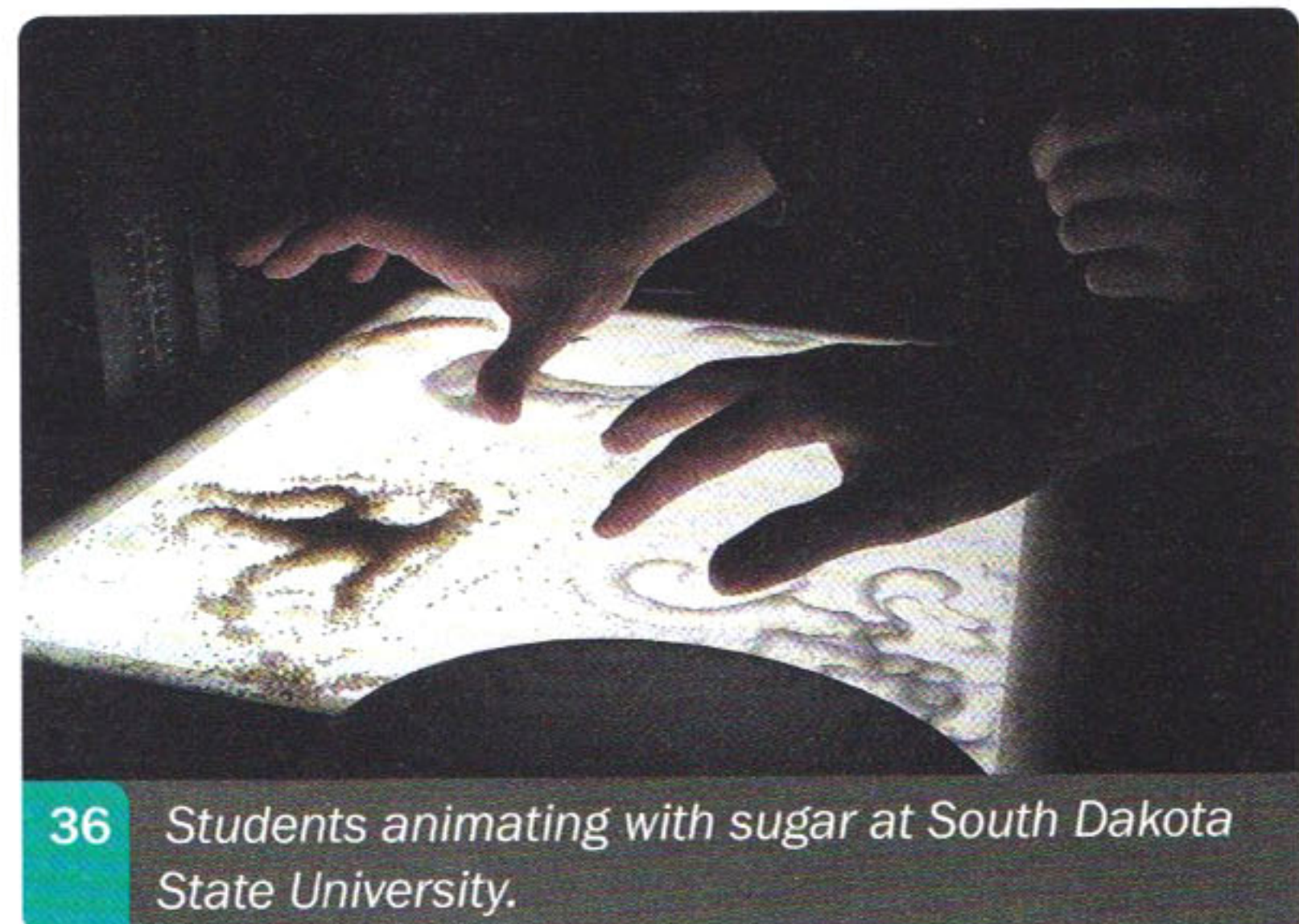>
> – Marieka Walsh

34   *Philippe Vaucher animates with colored salt. Courtesy of Philippe Vaucher.*



35   *The Well – Philippe Vaucher – 2013.*



36   *Students animating with sugar at South Dakota State University.*

with a spoon. After about 10 to 15 minutes of constant mixing, it's done . . . I tried different salts. Kosher salt is too thick, it looks pixilated - you see the blocks. So, a nice, fine salt works best.[7] **34** **35**

Sugar has a different quality than salt; baking soda is very fine and adheres to itself in unusual ways; you could use ground coffee, tea leaves, garden soil . . . what else can you think of? Perhaps a combination of various sands and salts will suit your work. **36** Finding the right material for your project can be an experiment in its own right. Start with what is readily available and turn its limitations into assets.

## Tools

In sand animation, your hands are your closest and most effective tools. Don't be afraid to get them dirty! See how many different types of marks you can make with the anatomy of your hands: fingertips, the fleshy part below the thumb, nails, palms, knuckles, the length of your pinky finger.

Paint brushes will give you a beautiful smooth line and are useful for pushing sand around in places that are too small for fingers. Different brushes will have different levels of stiffness and springiness. Philippe Vaucher uses rubber-nibbed brushes and foam brushes, available at arts stores or online. I most often use a soft flathead watercolor brush. Sometimes static will build up on the brush and the sand will stick

to it, depending on the type of fibers and the mineral content of the sand, so you will need to try out some different brushes to find out what works best for you.

Sharp, pointy objects like a kebab skewer or a blending stump are great for adding small details and drawing delicate lines. **37**

You will also want tools for applying, spreading, and collecting sand. Plastering tools are useful for creating even gradients. Tibetan monks have a variety of tools they use to make intricate sand mandalas, one of which is a metal cone for drawing very precise lines with a thin stream of sand. You can make your own by rolling a piece of paper into a tight cone and using your finger to control the amount of sand out of the end. Feathers are great for clearing away sand or adding unusual textures. **38 39 40 41**
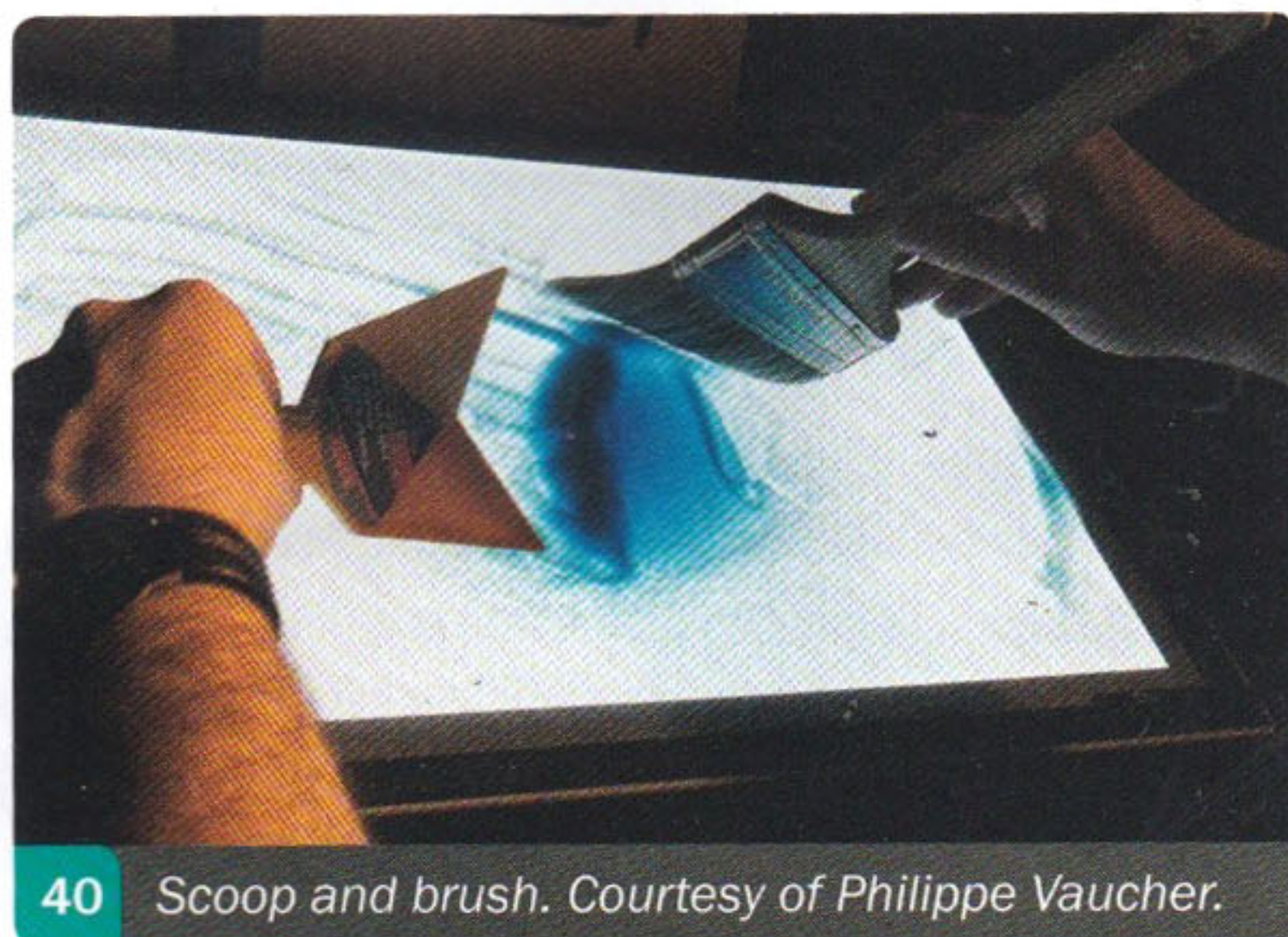
Textures are also fun to play with. You can press stamps, buttons, or other everyday objects into the sand to create patterns. **42**



**37**  *My favorite sand tools.*
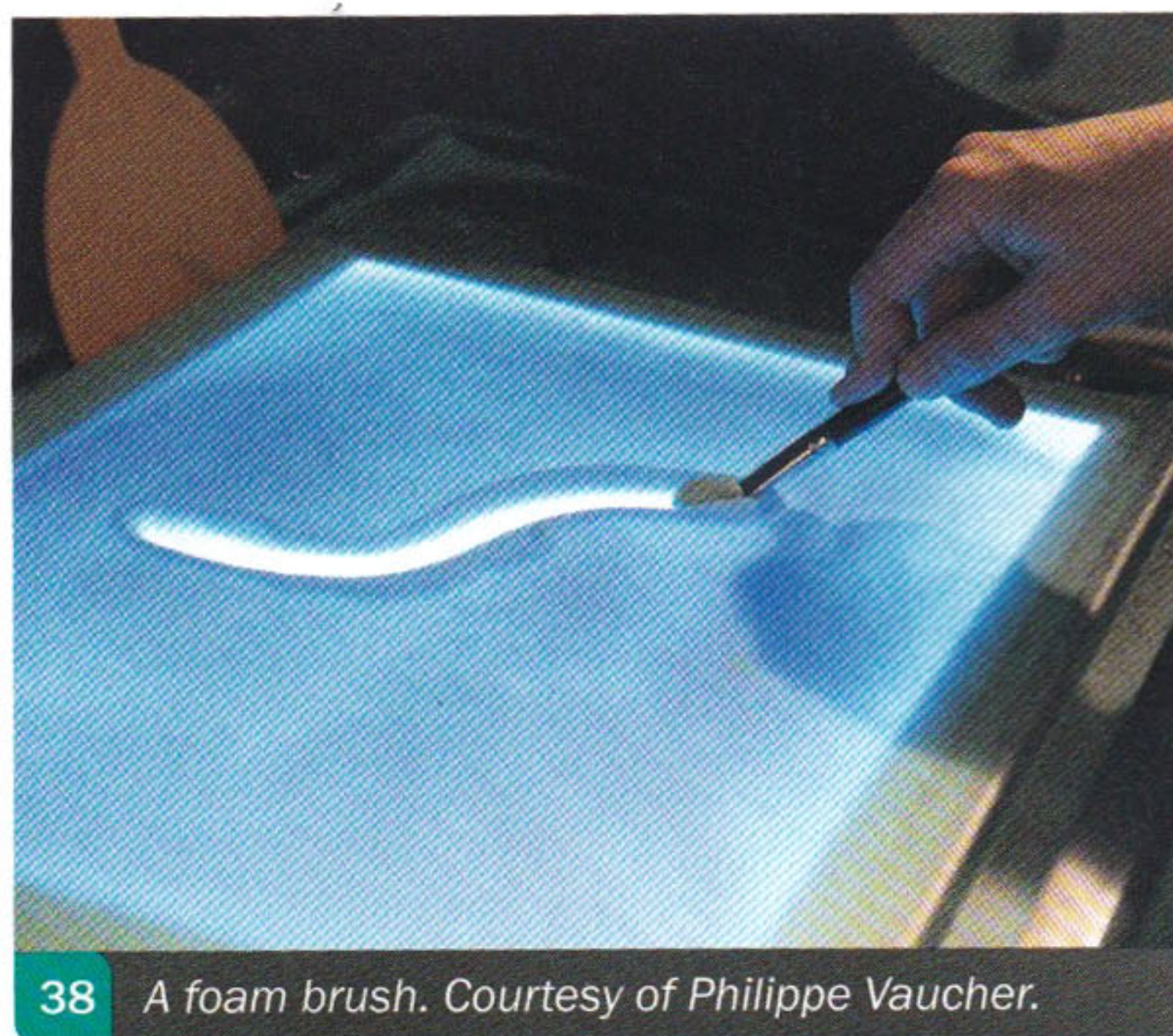


**38**  *A foam brush. Courtesy of Philippe Vaucher.*



**40**  *Scoop and brush. Courtesy of Philippe Vaucher.*



**39**  *Plaster scraper. Courtesy of Philippe Vaucher.*



**41**  *Tibetan Chak Pur tool for sand mandalas. Courtesy of Lynn Smith.*

Get in touch with your inner three-year-old and go play in the sandbox!

## In Practice

Here are some other project ideas for exploring sand:

- Make a series of abstract transitions from a fully black screen to a fully white screen. Think of abstract ways to bring the sand on and off the screen using form and texture. **43**
- Start with a negative space image and think of a way to transition to a positive space image. **44** **45**



**42** *Lynn Smith pressed small objects into the sand to create textures for the film Siena – 1999. Courtesy of Lynn Smith.*



**44**



**45**



**43** *An abstract animated transition.*

- Find different tools to make textures in the sand. **46**
- Things like a comb, a dry sponge, or bubble wrap can make interesting sand textures. Try animating the textures by redoing them each frame and observing the different rhythms that come from each type of texture.
- Create a ball with shading, then animate an imaginary light source moving around the ball by changing the density of the sand. **47**
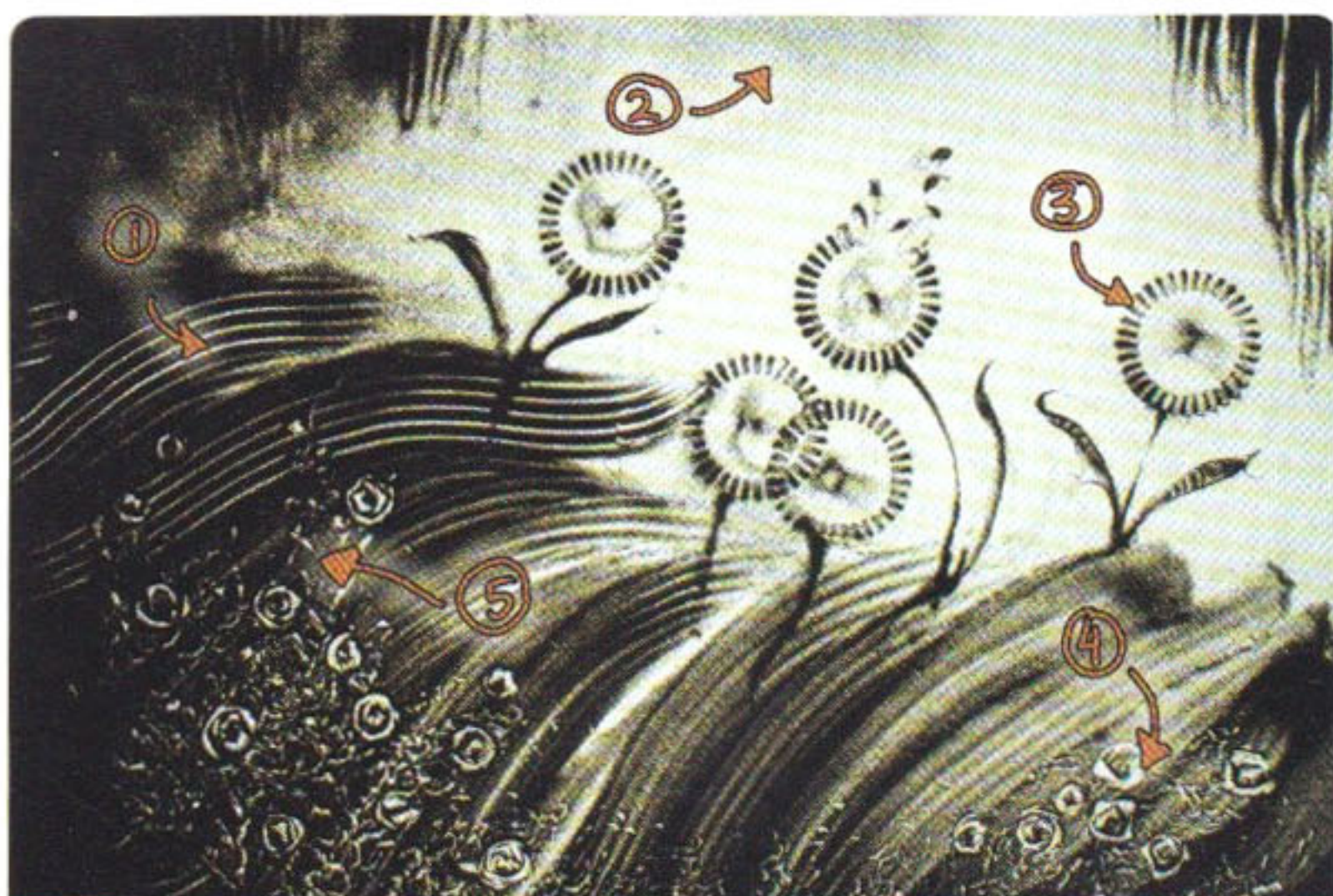


**46** *A garden made from kitchen utensils: 1 – meat tenderizer, 2 – sifter, 3 – lemon juicer, 4 – clothespin, 5 – crumpled aluminium foil.*



**47** *I used a roll of masking tape as a stencil to get this perfectly round ball.*
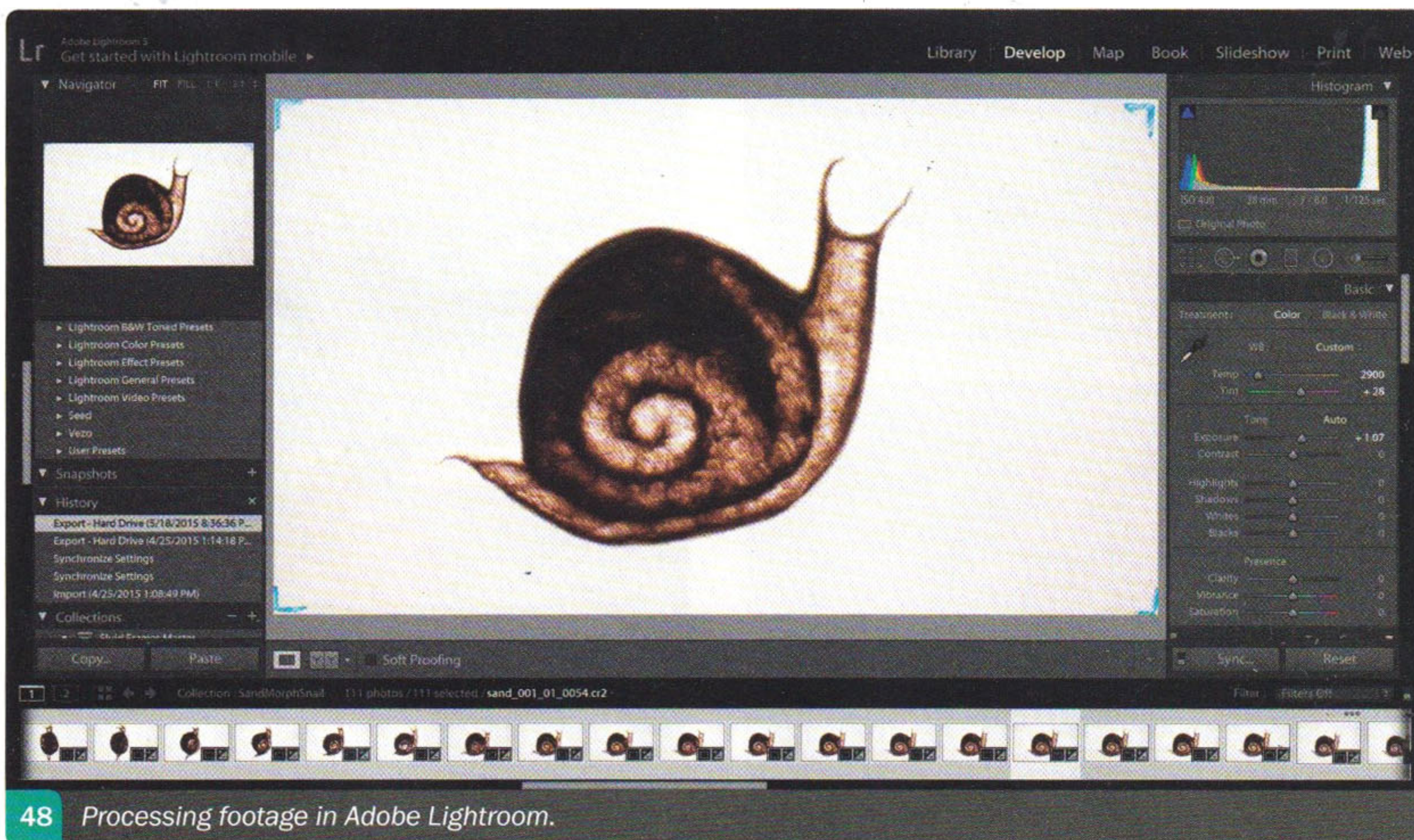


**48** *Processing footage in Adobe Lightroom.*

## Processing Footage

My personal workflow includes processing footage after it is shot. This is an optional step and can be skipped if you are completely satisfied with your exposure and composition during the shoot. However, one of the great benefits of shooting digitally is the option to make adjustments outside the camera.

Once I have shot a scene, I export it as a RAW frame sequence. Then I process the frames in Adobe Lightroom before I do anything further with them. I might crop out the edges of my sand table, adjust the white balance, and adjust the contrast and sharpness to bring out the best in the sand. I also export them as a PNG, JPG, or TIFF sequence to their own folder with a descriptive name. This keeps everything organized so when I have dozens of layers in After Effects, I know what I'm working with. **48**

If you don't have Lightroom, you can create an automated batch process in Photoshop that will develop an entire folder of frames or use a similar function in Adobe Bridge. Since you will have hundreds of frames, it's best to find a photo editing program that can automate your adjustments.

> **#ProTip**  *Create healthy working habits for yourself from the beginning. Wear a dust mask or bandana if you find yourself getting sensitive to the particles that inevitably get stirred up while animating. When you take breaks, turn on the overhead lights or go outside so your eyes can recover from the intensity of the lightbox.*

## Planning a Longer Sand Project

The best ideas come from the work. I love to experiment with materials because I often make unexpected discoveries when I don't have a specific goal in mind. After taking some time to get to know the sand, your brain will be sprouting with things you want to try, images you want to create, perhaps even the beginning of a story or a character that has risen out of the sandbox. At some point, you will want to plan a longer project in sand.

Let's look at two first films, by César Díaz Meléndez and Marieka Walsh. Both artists were new to sand animation and did not do extensive experimenting beforehand. They both had become excited about sand as a material for animation and had an idea they wanted to execute. The resulting films could not be more different.

After working 12 years in TV series animation, Meléndez began animating in sand in his spare time just for fun, and the ideas were multiplying. His first sand film, *No Corras Tanto* (2009), is a music video for his band, El Combolinga. **49**

> That was my excuse to try all the experiments I had in my head for the sand. What will happen if I blow on the sand? What will happen if I put some objects in there or if I use different colors? It was the perfect excuse to make every shot an experiment.[8]

The imagery moves between abstract moments and refined linear drawing but is always a playful and varied investigation of the properties of moving sand.
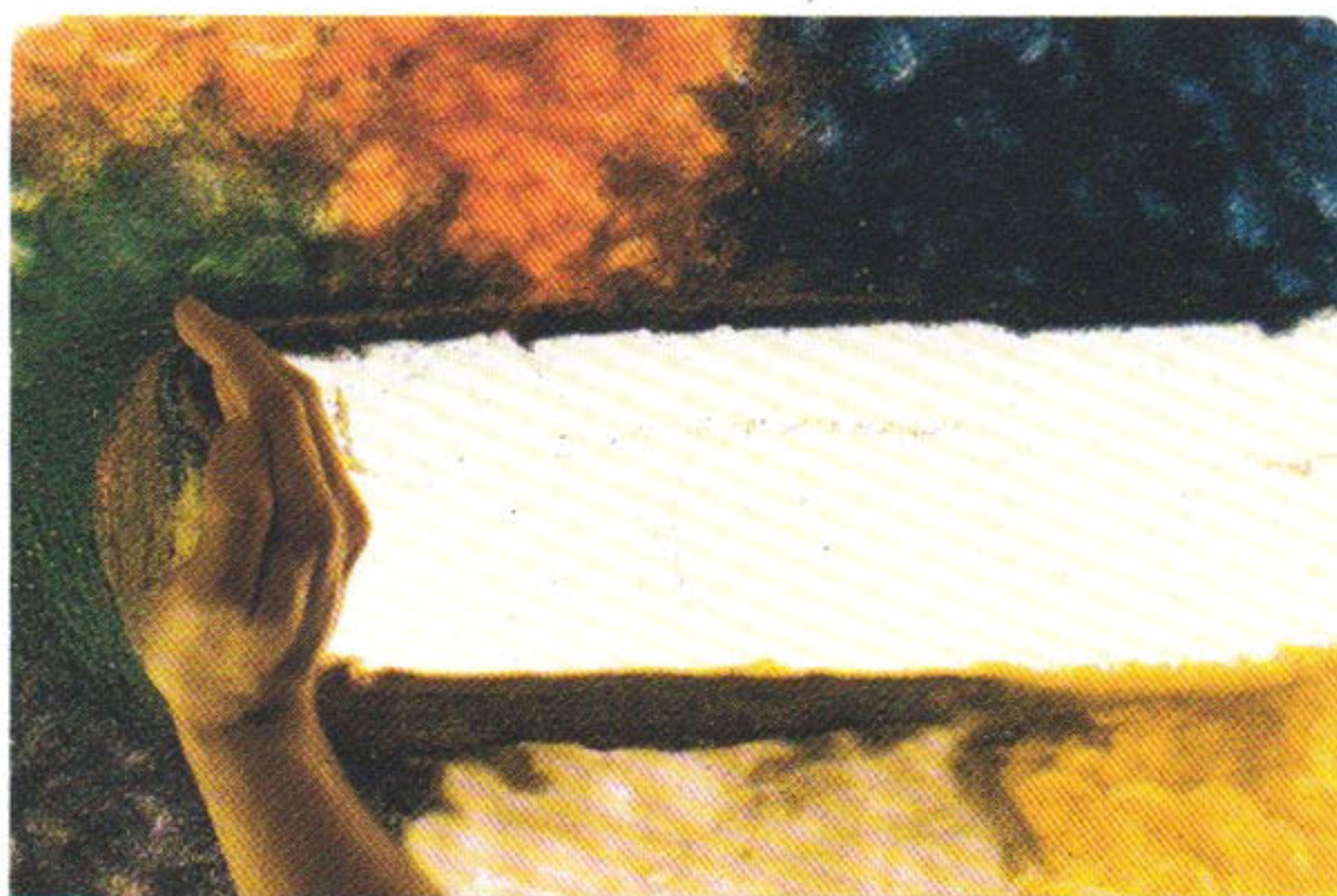
**49**  No Corras Tanto – César Díaz Melén

The improvisational aspect of the film was both a benefit and a detriment to Meléndez's workflow: "It was crazy because I didn't have any screenplay or storyboard. Each day I spent more time thinking of what to do than actually making animation."[9] Meléndez's eye for movement, developed over his years as a commercial animator, comes through in the segments of perfect lip sync and masterful human movement. Just when we are getting too caught up in the imagery, a shift from backlight to top light reminds us that we are watching moving sand. Also serving this purpose are the frequent appearances of the hand of the artist. Meléndez wants to bring the audience with him on his journey of experimentation and is careful not to let us fall behind. Watching his later films, it is clear that some of the discoveries made in *No Corras Tanto* became part of Meléndez's signature style. **50**

Marieka Walsh's first film, *The Hunter* (2011), was also sparked from her very first experiments. **51**

I saw *The Owl Who Married a Goose* and . . . was really drawn to the tonal ranges you can get with sand, how fluid it was and what Caroline Leaf did with it. That afternoon I started building a box and got some sand and spent the entire weekend drawing things in sand and experimenting . . . Those first few images are what sparked the story of *The Hunter*.[10] **52**



**50**  No Corras Tanto – *César Díaz Meléndez – 2009.*



**51**  The Hunter – *Marieka Walsh – 2011.*



**52**  *Marieka Walsh animating* The Hunter. *Photo credit: Toula Anastas.*

Walsh took those images and built a story around them, learning by doing. In contrast to Meléndez's very loose stream of consciousness, Walsh had a highly structured story that was driving the imagery. Her imagery maximizes those tonal qualities of the sand which made her fall in love with the medium. To move us through the plot, she uses classic editing techniques, close-ups, and long shots, which also help minimize the need for movement in her highly detailed drawings and create an appropriate atmosphere for the dramatic storyline. **53**

Walsh shot on 35mm film, so was unable to use any reference footage or even see her animation until the film had been developed. The first shot took her five days instead of her estimated half a day,[11] and she quickly realized that making the film she wanted to make would require an act of perseverance and determination.

> The big problem I had with *The Hunter* was everything just moved way too fast. Even though I felt like I was moving things in the smallest increments, they just weren't small enough. Now, sometimes I say to myself, if I can't see that they've moved, that's a good thing.[12]

Toward the end of the film, Walsh had the negative scanned and was able to work with a compositor to incorporate walk cycles and layering in some of the shots.

Both animators will readily tell you that their first films were incredible learning experiences and solidified their love for sand. Their subsequent work evolved in sophistication both in the storytelling and technique, but they would never have gotten there if they had not simply jumped in and started animating. The advanced techniques we will cover in the next chapter may help you grow as an artist and give you ideas, but if they start to feel overwhelming, simply close the book for a while and get animating. Experience is the best teacher and an experimental frame of mind will always lead you in the right direction.



**53**  The Hunter – *Marieka Walsh – 2011.*

## Compositing 101

In Chapter 3, we touched on the pros and cons of animating everything in-camera versus adding effects and movement in post. When it comes to sand, post-production should be a deliberate aesthetic choice based on how you want your final work to look. There are some very specific situations where compositing will save you a lot of time, but more often, trying to replicate an in-camera look through shortcuts and tricks will cost you more effort than working entirely in-camera – and will likely not look as authentic!

When running tests for her film *The Crossing*, Marieka Walsh tried several different ways to create the expansive ocean scenes with constant movement: "Ideally when I'm experimenting, I'm saying, 'Let's find the way that looks the best and will save me time.' But it usually works out to be, 'Well, this looks the best, but it's not going to save me any time!'"[13] Sometimes it takes Walsh up to 30 minutes to create one frame of animation, but the payoff for her perseverance is a screen full of undulating sand, something that no special plug-in or filter could ever replicate.