我们自己吹出来的彩虹

那个下午没什么特别，就是风停了，太阳正好斜过来，照在小区楼下的空地上。我们端着一盆自己兑的泡泡水站在空地边上：半盆清水，挤进洗衣液，加了一勺白糖。书上说糖能让泡泡结实一些，我们打算验证。

先用一根吸管试。吹出来的第一个泡泡只有指甲盖大，晃晃悠悠离了吸管，往上走。它走到半空，我们全都看见了：泡泡的肚子上转着一圈颜色，粉、绿、蓝，一小片一小片地流动，像谁把彩虹剪了一角贴在上面。

那不是我们画上去的，也不是地上什么反光。太阳从那个方向来，光穿过比头发丝还薄几十倍的肥皂膜，一部分光被膜留下，一部分光被膜弹走，两股光撞在一起，有的颜色被加强，有的被抵消，颜色就转出来了。物理课上刚学过薄膜干涉，笔记里它只是一段干巴巴的字。可此刻它悬在半空，圆滚滚，慢悠悠，谁抬头都能看见。

一个三四岁的小男孩从滑梯那边冲过来，伸着手去抓泡泡。他没抓到，泡泡在他指尖前破了，水点落在他手背上。他愣了一下，然后仰着脸大喊：彩虹！彩虹在我手上碎了！他妈妈从长椅上站起来笑。接着第二个孩子跑过来，第三个，第四个。他们不关心薄膜和光，他们只关心下一个泡泡什么时候破，破之前能不能摸到。

我们把那盆泡泡水吹见了底。白糖到底有没有让泡泡更结实，我们没数清，只记得有个大泡泡落地没破，被一个小女孩小心翼翼地踩破了，她为此懊恼了很久。这个没做完的验证不要紧，往后有的是下午。

回家的路上我在想，彩虹原来不用等雨。一层比头发丝薄几十倍的膜，一个有太阳的下午，就够了。科学最动人的地方，也许就是它把美讲得明明白白，又把美留得完完整整。

The Rainbow We Blew Ourselves

That afternoon was nothing special. The wind dropped, the sun slanted in just right, and lit up the open ground below our building. We stood at the edge of that ground holding a basin of homemade bubble solution: half a basin of clean water, a squeeze of laundry detergent, one spoon of sugar. The book said sugar makes bubbles tougher, and we meant to test it.

We tried a straw first. The first bubble came out no bigger than a fingernail, wobbled off the straw, and rose. Halfway up, every one of us saw it: a ring of color turning on the bubble's belly, pink, green, blue, flowing in small patches, as if someone had cut a corner off a rainbow and pasted it there.

We had not painted it on, and it was no reflection from the ground. Sunlight comes from that direction, passes through a soap film tens of times thinner than a

hair; part of the light is held back by the film, part is bounced away, the two meet, some colors get strengthened and some cancel out, and the colors come out. We had just learned thin-film interference in physics class, where it was a dry paragraph in our notes. But now it hung in midair, round and slow, visible to anyone who looked up.

A boy of three or four came running from the slide, reaching for a bubble. He missed; the bubble burst just before his fingertips, and droplets landed on the back of his hand. He froze for a second, then shouted with his face tilted up: A rainbow! The rainbow broke on my hand! His mother stood up from the bench, laughing. Then a second child came, a third, a fourth. They did not care about films and light. They cared only about when the next bubble would pop, and whether they could touch it before it did.

We blew the basin empty. Whether the sugar really made the bubbles tougher, we never counted properly; we only remember one big bubble that landed without popping, which a little girl carefully stepped on, and regretted for a long time. That unfinished test does not matter. There will be plenty of afternoons.

On the way home I thought: a rainbow does not have to wait for rain. A film tens of times thinner than a hair, one afternoon with sun, that is enough. Perhaps the most moving thing about science is that it explains beauty clearly and still leaves beauty whole.

女儿的手心上停着一小片彩虹

接女儿放学那个傍晚，校门口卖泡泡水的摊子前围着一圈人。五毛钱一小瓶，她仰着脸看我，我点头。她拧开盖子，把吹管凑到嘴边，没有立刻吹，先像大人那样端详了一下瓶子里的泡泡水。

第一个泡泡没吹成，只吹出一串小沫子。她不气馁，把吹管在瓶口蘸了蘸，这一回吹得又轻又慢。一个圆鼓鼓的泡泡离了吹管，晃晃悠悠往西飘。西边的太阳正低，光斜斜地打过来，泡泡的肚子立刻亮了，上面转着颜色，粉的、青绿的、孔雀蓝，一小片一小片，像有人拿极细的笔在上面不停地换颜料。

女儿追着那个泡泡跑出去几步，张开两只手去接。泡泡落在她手心里，破了，她手心湿了一小片。她盯着自己手心看，然后抬头喊：爸爸，彩虹在我手上！她喊得那么笃定，好像彩虹本来就该住在泡泡里，只是今天搬出来给她看一眼。

我在花坛边站着，忽然想起白天办公室的窗户。那个钟点，光也是斜的，我对着电脑从来没注意过。此刻我认真看那些泡泡：每一个上面都有彩虹，无一例外。后来我告诉她，那是光在肥皂膜里前后两层上弹了一下，两下碰头，有的颜色叠得更亮，有的颜色互相抵消，剩下的就是她

看见的这些。她听懂多少我不知道，她只说了一句：那光在里面一定很挤。

回家的路上她把最后一瓶泡泡水吹完，瓶子空了，她把它捏扁，郑重地放进垃圾桶。路灯亮起来之前，最后一个泡泡带着它的彩虹从我们头顶飘过去，她仰头目送它，像送一个朋友。

那天晚上我在她的日记里替她记了一句：泡泡里的彩虹不是画上去的，是光自己排出来的队。写完我自己又看了一遍。大人总以为奇迹要花钱买，其实它五毛钱一瓶，就在放学路上等着。

A Little Rainbow Resting in My Daughter's Palm

The evening I picked my daughter up from school, a crowd ringed the bubble-water stall by the gate. Five cents a little bottle. She looked up at me, and I nodded. She unscrewed the cap, brought the wand to her lips, and did not blow at once; first she studied the solution in the bottle the way grown-ups do.

The first attempt failed, producing only a string of foam. Undaunted, she dipped the wand at the bottle's mouth, and this time blew soft and slow. A plump bubble left the wand and drifted west. The sun was low in the west, its light slanting across, and the bubble's belly lit up at once, turning with color, pink, pale green, peacock blue, in small patches, as if someone kept changing paints on it with an impossibly fine brush.

My daughter ran a few steps after it, both hands open. The bubble landed in her palm and popped, wetting a small patch of skin. She stared at her palm, then looked up and shouted: Daddy, there is a rainbow on my hand! She shouted it so matter-of-factly, as if a rainbow were supposed to live inside bubbles and had simply moved out today for one look at her.

I stood by the flower bed and suddenly thought of my office window. At that hour the light slants too, and facing my computer I had never once noticed. Now I really looked at the bubbles: every one carried a rainbow, without exception. Later I told her it was light bouncing off the front and back layers of the soap film; the two bounces meet, some colors stack brighter, some cancel each other, and what is left is what she saw. How much she understood, I do not know. She said only one line: the light must be very crowded in there.

On the way home she finished the last bottle. When it was empty she crushed it flat and placed it solemnly in the trash bin. Before the street lamps came on, the final bubble floated over our heads carrying its rainbow, and she watched it go with her face tilted up, like seeing off a friend.

That night I wrote one line in her diary for her: the rainbow inside a bubble is not painted on; it is light lining itself up on its own. After writing it I read it

again myself. Grown-ups keep believing miracles must be bought. Actually they cost five cents a bottle, waiting on the way home from school.

一只泡泡的一生

我的一生有十一秒。这个数字是我猜的，不过对一只泡泡来说，十一秒和一辈子是同一个词。

我的出生地是一根弯头吸管的口。一个初中生把嘴唇贴上去，吹得很轻很稳——后来我猜，他是故意的，他想让我活得久一点。我吸足了那层水膜，慢慢胀大，脱离吸管口的时候，我听见底下有人喊：这个大！我确实大，我有拳头大，我全身是一层比头发丝薄几十倍的水和肥皂，中间裹着一团空气，那就是我的身体。

我往上升。操场上的太阳从侧面打过来，打在我身上。这是我最骄傲的时刻：我的肚子上开始转颜色。粉、绿、蓝，一圈一圈流动。那不是我自己有的颜色，是光替我排的队。光钻进我前边的膜，又钻进后边的膜，两股光碰头，有的颜色叠在一起更亮，有的颜色互相抵消，剩下的就挂在我身上转。他们管这个叫薄膜干涉，在物理课本的某一页。我不懂这个词，我只负责好看。

底下那群孩子开始追我。一个扎羊角辫的女孩边跑边惊呼：彩虹！彩虹飞起来了！其他孩子跟着仰起脸。他们伸出手，我躲得开——不是我会躲，是风替我拐了个弯。我看见那个女孩的手在我身下合拢，扑了个空，泡泡水溅了她一袖子，她笑得比抓到还高兴。

第十一秒，我落向草坪。我知道我要碎了。我这一身膜太薄，撑不住自己。落地前最后半个身子还朝着太阳，我把我全部的粉、绿、蓝都转到朝上的那一面。然后我碎了，水点落在草叶上，我的十一秒结束。

如果你那天在操场上，你见过我。你大概不记得了，没关系。第二天下午，那个学生会再吹出一只我，彩虹照旧。美这个东西就是这样，它不靠一只泡泡活着，它靠一层膜和一缕光，谁凑齐了，它就再来一遍。

The Life of a Single Bubble

My life lasted eleven seconds. That number is my guess, but for a bubble, eleven seconds and a lifetime are the same word.

My birthplace was the mouth of a bent straw. A middle school student pressed his lips to it and blew very gently, very steadily; later I guessed he did it on purpose, wanting me to live a little longer. I filled out with that film of water, swelled slowly, and as I left the straw I heard someone below shout: this one is big! I was big, fist-sized. My whole body was a film of water and soap tens of times thinner

than a hair, wrapping a pocket of air inside. That was me.

I rose. The sun on the playground struck me from the side. That was my proudest moment: colors began turning on my belly, pink, green, blue, ring after ring, flowing. The colors were not mine; light lined them up for me. Light entered my front film and my back film, the two beams met, some colors stacked brighter, some canceled out, and what remained hung on me, turning. They call it thin-film interference, on a certain page of the physics textbook. I do not know the word. I am only in charge of looking good.

The children below started chasing me. A girl with two pigtails ran and shouted: A rainbow! The rainbow is flying! The others tilted their faces up. They reached out their hands, and I got away; not because I dodge, but because the wind turned a corner for me. I saw the girl's hands close beneath me on empty air, soap water splashing onto her sleeve, and she laughed harder than if she had caught me.

In the eleventh second I fell toward the grass. I knew I was going to break. My film is too thin to hold myself up. In my last half-second I still faced the sun, and I turned all my pink, green, and blue to the upward side. Then I burst, droplets landing on the grass blades, and my eleven seconds ended.

If you were on that playground, you saw me. You probably do not remember. That is fine. Tomorrow afternoon the same student will blow another me, and the rainbow will come as usual. Beauty works this way: it does not live in one bubble. It lives in a film and a ray of light, and whoever assembles both gets it again.