

VALENTINE Yes. Well, a piano.

Hannah picks up the algebra book and reads from it.

HANNAH '... a method whereby all the forms of nature must give up their numerical secrets and draw themselves through number alone.' This feedback, is it a way of making pictures of forms in nature? Just tell me if it is or it isn't.

VALENTINE (Irritated) To me it is. Pictures of turbulence—growth—change—creation—it's not a way of drawing an elephant, for God's sake!

HANNAH I'm sorry.

She picks up an apple leaf from the table. She is timid about pushing the point.

So you couldn't make a picture of this leaf by iterating a whatsit?

VALENTINE (Off-hand) Oh yes, you could do that.

HANNAH (Furiously) Well, tell me! Honestly, I could kill you!

→ VALENTINE If you knew the algorithm and fed it back say ten thousand times, each time there'd be a dot somewhere on the screen. You'd never know where to expect the next dot. But gradually you'd start to see this shape, because every dot will be inside the shape of this leaf. It wouldn't be a leaf, it would be a mathematical object. But yes. The unpredictable and the predetermined unfold together to make everything the way it is. It's how nature creates itself, on every scale, the snowflake and the snowstorm. It makes me so happy. To be at the beginning again, knowing almost nothing. People were talking about the end of physics. Relativity and quantum looked as if they were going to clean out the whole problem between them. A theory of everything. But they only explained the very big and the very small. The universe, the elementary particles. The ordinary-sized stuff which is our lives, the things people write poetry about—clouds—daffodils—waterfalls—and what happens in a cup of coffee when the cream goes in—these things are full of mystery, as mysterious to us as

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the heavens were to the Greeks. We're better at predicting events at the edge of the galaxy or inside the nucleus of an atom than whether it will rain on auntie's garden party three Sundays from now. Because the problem turns out to be different. We can't even predict the next drip from a dripping tap when it gets irregular. Each drip sets up the conditions for the next, the smallest variation blows prediction apart, and the weather is unpredictable the same way, will always be unpredictable. When you push the numbers through the computer you can see it on the screen. The future is disorder. A door like this has cracked open five or six times since we got up on our hind legs. It's the best possible time to be alive, when almost everything you thought you knew is wrong.

Pause.

HANNAH The weather is fairly predictable in the Sahara.

VALENTINE The scale is different but the graph goes up and down the same way. Six thousand years in the Sahara looks like six months in Manchester, I bet you.

HANNAH How much?

VALENTINE Everything you have to lose.

HANNAH (Pause) No.

VALENTINE Quite right. That's why there was corn in Egypt.

Hiatus. The piano is heard again.

HANNAH What is he playing?

VALENTINE I don't know. He makes it up.

HANNAH Calloë called him 'genius'.

VALENTINE It's what my mother calls him—only *she* means it. Last year some expert had her digging in the wrong place for months to find something or other—the foundations of Capability Brown's boat-house—and Gus put her right first go.