

# THE ORACLE

**Matthew  
Warren**

Part of

# WRITING THE FUTURE

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## **About the author**

**Matthew Warren is a freelance science writer based in Oxford. He has a background in psychology and neuroscience and holds a doctorate from the University of Oxford, where he studied how antidepressant drugs affect the way that people process emotional information. Matt previously managed communications for the biotechnology company Oxitec.**

**Matt grew up in New Zealand and when he's not writing likes to be outdoors, where you can find him hiking in the countryside or paddling on the Thames.**

***@mattbwarren***

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**The future is...  
data-driven –  
but we cannot  
always be  
reduced to  
numbers**

*If you can look into the seeds of time, and  
say which grain will grow and which will  
not, speak then to me.*

*- William Shakespeare, Macbeth, Act I,  
Scene iii*

**F**or the first twenty minutes of your life, you exist only in my arms. You are a blank slate, a bundle of infinite potential. I am mesmerised. I stare down at your face, crumpled and squished and blotched and perfect. Your mother is grinning from her pillow, still high on endorphins and opioids, black hair matted and eyes half-closed in pain and joy.

Then the nurse smears a drop of your blood onto her analyser and thousands of database entries flicker into life, mapping out your fate before you are even an hour old.

\*\*

The Oracle has become such a ubiquitous part of our lives now – of everybody’s lives – that it is hard to imagine a time before it existed. But you belonged to the first generation to grow up under the Oracle’s care. Our package from the hospital includes an introductory video which we watch when we get home, both of us plonked on the couch while Lucy rocks your bassinet with her foot.

***“Physicists believe that if we could map the exact position of every atom – every quark, every neutrino – in the seconds following the Big Bang, we would be able to predict everything that will ever happen. We would be able to see into the future”.***

The film is in fact a recorded lecture, given in a darkened theatre by the CEO of Genelytics himself, Blake Fox. It must have been a press event, as Fox is illuminated every few seconds by flashes of light from the camera operators squatting in front of the stage. It makes him look like a character in a stop-motion film, his movements jerky and his round, bearded face caught in strange moments of contortion.

***“Of course, this is purely theoretical: we will never be able to chart out the cause-and-effect of everything in the physical world. But could the same idea not be applied to people? What if we could know from birth your likelihood of suffering from any disease? And even better, what if we were able to tell you exactly what you could do throughout your lifetime to ensure that is the longest, healthiest existence possible?”***

***“Genelytics’ Oracle makes this a reality.”***

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We upload the Oracle’s software onto our household network. Your personal cloud is growing faster than you are: the few gigabytes that comprise your genetic

data and health records have already been joined by terabytes of information gathered by the home appliances as we feed you, bathe you, play with you.

Those records, we learn from Fox's lecture, along with data from millions of other individuals around the country, flow back to Genelytics' database. Here, at the nerve centre, the Oracle runs its algorithm, conducting an infinitely recursive analysis of the links between genetics, lifestyle and disease. But those streams flow both ways, and as more and more information cascades into the Oracle's central hub, it sends out updates to its users, providing them with empirical, personalised advice on how to live their lives to achieve the best health that their genes will allow.

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By eight months you are already walking – and you are quite the explorer. You find it hysterical to run out onto the lawn when it is wet, first thing in the morning before the dew has evaporated, or right after a rain shower. You make it a few paces and then collapse into giggles and we have to carry you back indoors to dry off.

At fourteen months, you say your first word, “toaster”, for reasons that neither of us can fathom. At eighteen months, your hair finally grows in, tight brown curls that fascinate you.

And as you leap from one milestone to the next, we are guided by the Oracle's advice. It tells us what babies of your genetic make-up should be fed, in order to receive optimal nutrition. It analyses the sleeping patterns of thousands of other children and advises us when we should put you to bed.

I am ashamed to say it now, but despite understanding the awesome power of the Oracle, I still doubt it. After all, who could know my daughter better than me?

\*\*

On the night of your third birthday party, we receive a message. Your mother and I are clearing up paper plates and wiping small, sticky handprints off the wall. You are in bed; you fell asleep even before your friends had left, overwhelmed by excitement and overfilled with cake.

My watch buzzes and I swipe the message up onto the living room screen.

*“New research relevant to Sally’s genomic vulnerabilities has just been published.”*

We are used to these alerts. But something in the Oracle's tone of voice this evening makes me stop picking up wrapping paper and sit down on the couch.

*“My algorithm has recently determined the genetic causes of a disorder called Funder’s disease.*



***Sally's genomic data indicates that she has a 96% likelihood of developing the syndrome. I have revised her calculated life expectancy down from 98 to 24 years old. I will continue to provide guidance to ensure that Sally has the highest possible chance of living a healthy life."***

The screen goes quiet. I look over at your mother, paused mid-movement, staring absently at the birthday card in her hand. It has a drawing of a patchwork elephant wearing a frilly party hat, with balloons tied to the end of its trunk.

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Fünder's disease, we learn, is a rare neurodegenerative disorder that typically appears suddenly, in a person's early twenties. It causes fast deterioration of higher cognitive functioning – the first noticeable symptoms are usually a lack of impulse control and poor problem solving, progressing to an inability to learn new information and ultimately a loss of the sense of self. Patients die within 18 months of symptom onset.

The disorder has a complicated genetic profile, and you have almost all of the risk genes.

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We want a second opinion. We arrange to meet with our family GP. In the waiting room I flick through an ancient, yellowing wildlife magazine. I read the same sentence over and over, not taking anything in. Yet I still remember the photo on the cover: two macaque monkeys sit facing each other on a rock, foreheads pressed together, silhouetted by the evening sun. They are looking down at their baby, held tightly by the mother.

Dr Moore calls us in to his office. The entire lower half of his face is obscured by the array of screens on his desk so that we can't see his mouth move when he speaks. It gives him the unnerving impression of a ventriloquist, sans dummy.

We tell the doctor about your diagnosis.

*"Let's take a look"*. Dr Moore taps furiously on his keyboard. For a full two minutes he doesn't say a word, his eyes darting back-and-forth between his displays. Finally, he removes his glasses and begins chewing on the arm.

*"I've consulted with the Oracle. It seems that She has already made Her recommendations to you."*

His voice rises at the end of the sentence and I'm unsure whether or not he is asking me a question. I tell him that we wanted a doctor's viewpoint.

Dr Moore sighs and slides his glasses back on to his nose. *"The Oracle has determined the optimal lifestyle changes to institute in Sally's life based on her*

*risk. If you follow the Oracle's instructions to the letter, then She calculates that Sally's risk of developing Funder's will decrease by..." – Dr Moore glances down – "...up to 18%. I know that might not seem like much, but it is the only option you have to ensure that Sally has the best prospect of living a long and healthy life."*

He stands up and walks around his desk, placing a sweaty hand on my lower back as he opens the office door to indicate it is time to go. *"The Oracle represents the most sophisticated healthcare algorithm ever created. Trust Her."*

\*\*

And so we put our complete faith in the Oracle's advice. Each morning we consult with Her (if nothing else, the doctor's use of pronouns catches on). Once every few months some new data relevant to your condition emerges from the Oracle's never-ending analysis of Her expanding database.

We incorporate the latest advice into your daily life. When the Oracle informs us that children who consume a higher-than-average number of calories have a greater chance of developing the disease, we program the kitchen appliances to limit your weekly intake. After we learn that lower levels of sun exposure seem to be related to a reduced incidence of Funder's, we don't let you out of the house without a hat and long sleeves.

\*\*

Then, when you are seven, we take you out of school. We break the news to you on a Saturday morning. You are standing in the kitchen doorway, wearing the bright orange backpack you insisted on carrying around everywhere; it is much too big for you and you would sometimes topple over with its weight, then get cross when I stifled a laugh.

The latest data shows that people who experience fewer viruses as children are much less likely to develop Funder's; it has something to do with protecting the immune system. The Oracle instructs us that you must spend as little time as possible around potential sources of disease, chief amongst them being other children.

You barely speak a word to me for the next month. I know you love your school, with its bright, colourful classrooms covered in pupils' artwork. You want to be a painter when you grow up; your teacher says you are a gifted artist. I know you have a crush on Daniel with the crew cut and wonky teeth, whose father always flirts with the younger mothers waiting at the school gates.

But we have to do what's best for you.

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By the time you are ten, you are to be kept indoors whenever possible. The Oracle makes it clear that the pollution and high temperatures of the outside world constitute an unacceptable risk to people like you.

You take to sitting by the bay windows in the living room, watching the squirrels chase each other up the big oak tree in the front garden. You ask me why they are still allowed to climb the tree, why the neighbour's cat can still walk through the dewy grass. Won't they also get sick?

I tell you that you are special and we need to keep you safe for a while. The outdoors can be dangerous; remember the time you broke your arm in the playground? You nod absently, but I can see you don't really understand. You turn back to the window, eyes wet and glistening. It breaks my heart that you are not yet able to grasp the situation, that you can't see that this is a small price to pay for the possibility of a full life.

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Around the same time, the health service announces that life expectancy has exceeded 100 years for the first time in history. This is, according to health secretary Sylvia Burley, almost entirely due to the country-wide adoption of Genelytics' "revolutionary" algorithm and personalised genomic guidance.

Watching the news on her watch, your mother bursts into tears. I tell her that we shouldn't give up hope; that there is still a chance that you could make it that far yourself. But when she looks up I am surprised to see her smiling.

***“I know,” she sniffs. “I am thankful for that possibility every day. Can you imagine what our lives would be like without the Oracle? We are truly blessed.”***

**\*\***

***“New research shows that a sedentary lifestyle may increase the risk of developing Funder’s in children with similar genetic profiles to Sally. She must significantly increase her daily activity.”***

We install a treadmill in your room, which the Oracle programs to provide you with the optimal exercise regimen. You are now a teenager, and have started picking fights with us whenever you see the opportunity. It is exhausting, but part of me is glad that you are no longer that melancholy, withdrawn child.

To begin with, you refuse to exercise. You say that you will do nothing until we *“reinstate some basic human rights”*. You have always been melodramatic. But eventually boredom sets in, and you grudgingly take up your workout routine.

We reward you by buying some old mystery books from the musty shop down the road where you once enjoyed spending long Saturday afternoons reading. Weeks later I find them still sitting, unopened, in the corner of your room.

**\*\***

One day in the height of spring, I accidentally leave your door unlocked. I come home to find you sitting silently on the lawn, legs crossed, curls swaying in the breeze, a broad smile on your face. A fine layer of dust coating your hair, cheeks red under the intense sun.

I am beside myself. I roar at you, furious that you would so readily disobey the Oracle and put your future health at risk. In truth I am angry at myself, for failing to protect you. You are still only a child, a child who just wanted to feel the wind on her face. But in that moment I am too ashamed to admit my mistake.

It becomes clear that by acting as intermediaries for the Oracle, we are unnecessarily introducing human error into your care – failings that could cost you your life. So we decide to give the Oracle complete control over your bedroom network. She instructs your fridge to precisely follow your nutrition regime. She monitors the airflow and controls the room temperature. She turns the lights off when you are to go to sleep.

And eventually, She calculates that the benefits of Her sole care outweigh the advantages of any parental input, and She shuts us out completely.

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It's now almost 15 years since we received that first message from the Oracle. Eighteen since I held you in my arms and saw in you all that unbridled potential. Two since I last saw your face.

I hope that you can understand the reasons behind the sacrifices that you've made – that we've all made – under the watchful eye of the Oracle. Although you may have been too young to fully comprehend it, She has always had your best interests at heart.

Through everything we have done, your likelihood of suffering from Funder's has decreased spectacularly, down to only 80%. Where once only four of every 100 people like you would live past your twenties, now, thanks to the Oracle, almost one-fifth survive.

Your childhood may have been different from others' – even challenging at times – but take joy in the knowledge that the unparalleled power of the Oracle's data has guided us every step of the way. She has given you the greatest chance of leading a rich and fulfilling life.

It is nothing short of a miracle.



## **About Kaleidoscope Health & Care**

**Kaleidoscope brings people together to improve health and care.**

**We find new ways to overcome old barriers. We enable constructive conversations on difficult topics, using inspiring events to encourage clarity of purpose and rigorous problem-solving. Our approach to collaboration is systematic, evidence-based and cost-effective.**

**Our services enable you to collaborate with rigour. We provide everything required to support effective connections, conversations and networks, from design to management to events. We provide consultancy to help you resolve complex issues through practical, sustainable changes.**

**As a not-for-profit organisation, we seek to work with our clients in a spirit of kindness, trust, and openness. Our multi-disciplinary team includes clinicians, policy makers, managers, specialists in communication and digital technology, and more.**

**Could we help you to solve your problems? If so, get in touch, we'd love to hear from you.**

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