

HOW TO SPEND A TRILLION DOLLARS

Saving the world and solving the
biggest mysteries in science

ROWAN HOOPER



PROFILE BOOKS

First published in Great Britain in 2021 by

Profile Books

3 Holford Yard, Bevin Way

London WC1X 9HD

www.profilebooks.com

1 3 5 7 9 10 8 6 4 2

Typeset in FournierMT
to a design by Henry Iles.

Copyright © Rowan Hooper 2021

The moral right of the author has been asserted.

All rights reserved. Without limiting the rights under copyright reserved above, no part of this publication may be reproduced, stored or introduced into a retrieval system, or transmitted, in any form or by any means (electronic, mechanical, photocopying, recording or otherwise), without the prior written permission of both the copyright owner and the publisher of this book.

A CIP catalogue record for this book is available from the British Library.

ISBN 978-1788163453

e-ISBN 978-1782836100

Printed and bound in Great Britain by Clays Ltd, Elcograf S.p.A.
on Forest Stewardship Council (mixed sources) certified paper.

Contents

Introduction: Project Trillion	9
1 Level up humans	15
2 Cure all disease	33
3 Go carbon zero	59
4 Save life on Earth	87
5 Settle off-planet	117
6 Find some aliens	139
7 Redesign our planet	165
8 Turn the world vegan	199
9 Discover a new reality	225
10 Second genesis	247
Epilogue: How to spend it	273
Photo credits	280
Acknowledgements	282
Endnotes	284
Index	298



INTRODUCTION

Project Trillion

YOU KNOW THAT DAYDREAM where you suddenly come into a vast fortune? You could buy a castle or a tropical island hideaway, help out all your friends, do a bit of good in the world. But what if it was a truly incredible sum? What if you had a *trillion dollars* to spend, and a year to do it? And what if the rules of the game were that you had to do it for the world – make some real difference to people’s lives, or to the health of the planet, or to the advancement of science.

A trillion dollars – that’s *one thousand billion* dollars – is at once an absurdly huge amount of money, and not that much in the scheme of things. It is, give or take, 1 per cent of world GDP. It’s what the United States spends every year and a half on the military, or in less time if there’s a big war on. It is an amount that can be quite easily rustled up through the smoke and mirrors of quantitative easing, which officially is the mass purchase of government bonds but which looks suspiciously like the spontaneous creation of money. After the 2008 financial crash, more than \$4.5 trillion was quantitatively eased in the US alone.¹ All the other major economies made their own money in this ghostly way.

And it is not just governments that have this kind of money. Two of the world's biggest companies, Microsoft and Amazon, are each worth over \$1 trillion; Apple Computer stock is valued at \$2 trillion. Amazon boss Jeff Bezos has a personal fortune of around \$190 billion, and could become a trillionaire – the world's first – by 2026, while the world's richest 1 per cent together own a staggering \$162 trillion. That's 45 per cent of all global wealth.²

There is so much money out there, sloshing around. At the start of 2020, private equity firms held \$1.45 trillion in what they call 'dry powder', and what the rest of us call 'cash': piles of money sitting around awaiting investment.³ Just *imagine* what you could do with it. Just a little bit of it, just a measly trillion dollars. You could send probes across the solar system. You could eradicate malaria – hell, you could cure *all* diseases. You could start a settlement on the Moon. You could launch an interstellar mission to another star. You could build a massive particle collider to explore the nature of reality like never before. You could solve global poverty. You could build new kinds of quantum computers and try to develop artificial consciousness. You could work to increase human lifespan. Then again, maybe you could try to transition the world to renewable energy. You could buy and preserve the rainforests. You could try to save all endangered species. You could refreeze the melting Arctic. You could reduce the amount of carbon dioxide (CO₂) in the atmosphere. You could launch a new, sustainable agricultural revolution. You could even create a new life form.

If it sounds like I'm getting carried away, let me just say that all these ideas are projects which scientists are thinking about and even working on, but which are hampered by lack of resources. The world is full of extraordinary opportunities, and the vast majority are never undertaken. Those challenges that

are tackled mostly either fail or only inch forward imperceptibly and infuriatingly slowly. And the problems of the world, most of which we've created, are so expensive to solve that they are left to fester or are kicked into the future for someone else to deal with. Climate change is the most obvious one. Many of the opportunities we reach for founder for lack of funding or of the political and social will to carry them out. They are among the grandest, boldest and most brilliant ideas humans have ever had, confronting some of our biggest challenges. With a trillion dollars you could make them happen. At the very least, you could have a lot of fun trying. Such was my viewpoint as I set out to write.

And then coronavirus hit.

Suddenly, as after 2008, money has been found. In March 2020, the United States Congress approved an economic stimulus package worth \$2.2 trillion, aimed at mitigating the impact of coronavirus; another \$2 trillion ended up being borrowed/created in the rest of the year. Around the same time, the leaders of the G20 group of nations agreed on a \$5 trillion fiscal policy stimulus. The European Union passed a €1 trillion economic rescue package. In June 2020, the International Energy Agency estimated that governments worldwide would be spending \$9 trillion in a matter of months on firing up their post-pandemic economies; another estimate put that figure at \$12 trillion.⁴ In 2020, globally, more than \$6 trillion was created through quantitative easing.⁵

Right now, tens of trillions of dollars in economic stimulus packages are being chopped up, partitioned, allocated, siphoned. What if *we* could spend that cash? If only we could divert some of it, scrape a bit here and there from governments and banks, or quantitatively ease a trillion dollars into existence and spend it before anyone noticed. Imagine the possibilities. Imagine

what we could achieve. What, say, could the World Health Organization (which has an annual budget of just \$4.8 billion) do with \$1 trillion for a global SARS-CoV-2 vaccination and treatment campaign? Or if the Intergovernmental Panel on Climate Change (IPCC – annual budget \$200 million) was given this sort of money and told to spend it on mitigating the impact of global warming? A trillion dollars could really move the dial. That’s what this book is about. We’ve seen in the response to coronavirus that money *can* be found. And we’ve seen over the months of lockdown and social distancing that civilisational changes can be made. Indeed we’re coming to recognise that they *must* be made. Writing this I often thought of Lin-Manuel Miranda singing, in *Hamilton*, ‘I’m not throwing away my shot.’ This, the shock and chance for reset that coronavirus has given us, is our shot. The victory of Joe Biden in the 2020 US presidential election makes dramatic change more possible.

But first let’s set some ground rules. You know the movie *Brewster’s Millions*? Richard Pryor’s character has to spend \$30 million in 30 days in order to inherit a \$300 million fortune, but isn’t allowed to own any assets at the end or give away the money. Under the rules of Project Trillion, spending must be broadly directed to saving both humanity and the planet. It can go towards improving human welfare, protecting and restoring the environment, advancing science and increasing our stock of knowledge, but it may *not* be used to form a new nation state, nor destabilise existing ones, nor indeed be spent for military, media, political or investment purposes, including fiscal stimulus. It would be tempting to buy Fox News (value: \$20 billion) and repurpose it as a politically independent media operation, or to spend billions lobbying for (say) investment in renewable energy, and supporting politicians willing to stand up to fossil fuel companies. For that matter we might want to use the

trillion as a fiscal weight on the scales to force the introduction of a carbon tax. I also toyed with the idea of forming a religion. Another time, perhaps. But I wanted to try and keep Project Trillion manageable. We'll have enough to think about by limiting the spending to merely protecting the future of humanity and all life on Earth.

We're sitting on top of a pile of money. Floating on an ocean of cash. In each of the following ten chapters I pick a mega-project – or often a collection of projects – and see how a trillion dollars could make them real. This is a personal list, a mixture of solutions to the world's biggest and most pressing problems, and things I'm excited, moved and exercised by. There are projects that the world's top scientists are working on and problems that for the sake of the world desperately need solving.

The clock is ticking. Let's get spending.

Aritira - ንርጉ
- Djibuti - ጅቡቲ
- Susan - ሲሰን
- Keena - ክኒና
- Soma - ሶማሊ



1

Level up humans

AIM: *To eradicate world poverty. Specifically, to lift the global millions living in extreme poverty above the poverty line, to break them free of the poverty trap and to set them up at for a lifetime at a level above \$2 per day subsistence.*

DURING MY RESEARCH FOR THIS BOOK, only one of the dozens of people whom I spoke to – as it happens, a Harvard professor – refused to play along with the premise: to spend the money on *things*. ‘You should give the money to the poor,’ he said. ‘Yes, but it’s a thought experiment,’ I countered. ‘What if we couldn’t give it away and *had* to spend the money on, say, a science project.’ ‘No, it’s morally wrong and you should give it to the poor’, he insisted. It was as if I really had the money and was about to spend it on something he disagreed with. At first I was frustrated, but then I thought, okay, let’s see. What *would* happen if we gave it all away?

When people are asked if we should give away public money, the reply is often: ‘But won’t people just waste it?’ Sure, they might. But questioning how poor people will spend money is effectively the same as asking if we should try to raise their

incomes in the first place. And the answer to that question is undoubtedly yes. As we emerge from the crisis of coronavirus, the way we rebuild the world has to be green and sustainable, but it also has to be inclusive and levelling.

Even with the huge economic challenges of the global pandemic, we're living in the richest society the world has ever known. Our resources, and here I mean ours as a society not ours with the trillion bucks in our back pocket, are far greater than those of the richest of emperors, queens and chieftains of the past, and far beyond the imagination of most of the billions of people who have ever lived. If we have the means, we should try to raise people out of poverty. It's as simple as that.

Or so it seems simple until you try to do it. Do we build roads? Sewerage systems? Should we subsidise education? Pay for better reproduction health care for women? Improve nutrition? Should we just buy all poor people a cow and be done with it?

In fact, some aid programmes do purchase cattle for people. Sometimes it doesn't have the best outcome. Not everyone wants a cow. It's a pain to feed and water and house a cow. People say, 'Listen, thanks and all but can I just have the money that it cost to *buy* the cow, and *I'll* decide how to spend it?' Cows aren't what economists call fungible assets. They can't easily be exchanged. And they aren't climate friendly, either.

It's often the same with food aid, or medical supplies. Bags of flour and sugar are very welcome in the event of severe famine, but otherwise people would prefer seeds – preferably seeds of crops bred to grow in the local conditions. 'Even better,' they say, 'just give us the cash'. People given mosquito nets in well-meaning malaria-control programmes may end up using them for fishing. Emergency packets of Plumpy'nut peanut paste, malaria nets for the bed, and even pumps for the village well,

may all be very useful under the right conditions, but people would still rather have the cash.

\$ \$ \$

THE IDEA TO GIVE MONEY AWAY, not so much as a form of charity but as an improved way to run a society, has a long history. It starts with the idea, first floated by Thomas Paine in 1797, that landowners should pay an inheritance tax which is used to fund a basic income for everyone. Over the years many other thinkers, writers and politicians have played with the idea that all citizens be paid a set amount each month, regardless of whether or not they worked. Amazingly enough, a similar proposal, the negative income tax, was almost signed into law under the Nixon administration in 1969 but was voted down by Democrats who deemed the payments too small.

Since then, wealth inequality in the United States has grown to staggering levels; economist Thomas Piketty said it ‘is probably higher than in any other society at any time in the past, anywhere in the world’.¹ The US is the richest nation the world has ever seen, yet it has higher poverty levels than any other Western democracy. What if Nixon had got his negative income tax bill through the House? (The game of ‘what if?’ is a fruitless one – I often go back to the ‘what if’ of the Florida recount in 2000 and the election of George W. Bush – but the Nixon ‘what if’ is similarly intriguing and dismaying.)

Even before coronavirus hit, the idea of UBI – universal basic income – was being floated by a range of backers as diverse as Charles Murray of the right-wing American Enterprise Institute, Mark Zuckerberg, Elon Musk, Hillary Rodham Clinton and Black Lives Matter. When the pandemic changed the world, the calls for UBI were renewed. A guaranteed income would, say

supporters, cushion the economic impact of the virus, and even slow its spread, because many workers would not be obliged to return to work when ill. Some UBI-style payments were made in Ireland to people made unemployed by the pandemic,² and in the USA a one-off payment of \$1,200 was made to millions of citizens. House representative Alexandria Ocasio-Cortez saw the crisis as an opportunity and called for another look at UBI.³ Support for UBI was buoyed by the results of a trial in Finland in 2017 and 2018, where 2,000 people received unconditional monthly payments of €560. The results found that people with the payments worked six days *more* over the two-year period than a control group of 173,000 people on standard unemployment benefit, and that the UBI recipients also scored higher on financial well-being and mental health.

It's expensive, however. Entrepreneur Andrew Yang, a one-time candidate for the 2020 US presidential elections, proposed a \$1,000 monthly payment to all adult Americans. That's a nice idea, but it would cost \$2.8 trillion a year, and the federal government's total annual spend is only \$4 trillion, so it's tricky to see how it would work. And it's clearly not for us. We are richly endowed but even we don't have enough money to start a universal income scheme for the US, let alone the entire world. So, if we want to give our money away, we need to think of a different rationale.

Let's do some back-of-the-envelope sums. If we divide the \$1 trillion equally among the world population of 7.7 billion, each person would receive the (largely) non-life-changing amount of \$130. One of the big objections to universal basic income is that people vary in the amount they have to begin with. If we did start a \$1,000 scheme, we'd be giving that cash to people in poverty, but also to billionaires. So, for simplicity and efficacy, let's exclude people from developed countries from

our arithmetic. My justification, by no means watertight, is that people in poverty in the United States and Western Europe will mostly not die of malnutrition and disease. I don't want to underplay poverty in Western countries. Poverty in the US, for example, is measured by household pretax income, and if a family of four brings in \$24,339 or less they are classed as living in poverty. That's about 40.6 million people. The US has malnutrition and disease that is dragging down life expectancy, but there isn't starvation like in parts of Africa and South Asia and there are 607 billionaires in the country.⁴

Of course, there are billionaires everywhere these days. The richest person in Nigeria, Aliko Dangote, is worth \$10.4 billion. But such is the extent of poverty in Nigeria that even if Dangote were to decide one morning, perhaps after being visited by the Ghost of Christmas Future, to give away all his money to the poor of his country, it wouldn't make much of an impact. There are 90 million people in Nigeria in extreme poverty, and they would each get \$115 of Dangote's wealth. India's richest person is Mukesh Ambani, worth around \$56 billion (the money comes from oil),⁵ and again, even if Ambani was struck by a sudden Zuckerbergish urge to give away 99 per cent of his wealth, it would not solve the poverty problem in his country. We'll come back to what the billionaires could do if they all became infected with philanthropy later in the book, but for the purposes of this chapter, it seems clear that the problem of alleviating poverty in the developing world is greater than the poverty that exists in the West. We have to draw a line somewhere.

If we do exclude people in developed countries and divide the \$1 trillion equally, that still only gives each person \$161. So then let's exclude people earning above a certain amount. According to the World Bank, about 10 per cent of the world's population, or 760 million people, earn \$2 or less per day. (This proportion,

by the way, the proportion of people in extreme poverty, is the lowest it has ever been in human history.)

If we divide our \$1 trillion equally among these 760 million people, each one would receive \$1,315. It's a tidy sum by any reckoning, and a life-changing amount if you live in extreme poverty. Could we really do that? I fretted about the responsibility of having this money; wouldn't it be irresponsible and wasteful to chuck it away like this?

\$ \$ \$

SOME CHARITY PROJECTS and state-funded research have, it turns out, looked into just this scenario, and a growing body of evidence suggests that cash transfers are the most effective and efficient means of lifting people out of poverty. Charities such as Give Directly, as well as state governments running welfare schemes, have tested a range of different methods.

Sometimes people are just given money in a lump sum; or they may receive a smaller payment each month for a year, or over a longer term. Sometimes the money is given unconditionally, other times the payments come with instructions – it must be spent on children's education, for example. Sometimes everyone in a village gets the money; other experiments have looked at what happens when only the women receive it.

Let's have a look at what is known. First, about the classic question: won't people waste the money?

If poor people can rely on an unconditional income, say the doubters, they'll just gamble and fritter it away. They'll spend it on alcohol or tobacco or other naughty things that economists call 'temptation goods'. Such is the common expectation. In Kenya, contributors to a charity expressed concern that the money would be wasted on alcohol consumption. In Nicaragua,

a government official suggested that ‘husbands were waiting for wives to return in order to take the money and spend it on alcohol’.⁶ One is reminded of William James’s psychologist’s fallacy: the projection of one’s own concerns onto those of others.

Fallacy or not, the concern is widespread, which is one reason aid agencies support impoverished and environmentally impacted communities with goods and services rather than cash. Rather than sit in Washington, DC, and wring their hands over the matter, the World Bank decided to examine the actual consequences of cash transfers – to see what really happens when people are given money. The Bank conducted a thorough review of 30 studies of cash transfers to poor households in Latin America, Asia and Africa.

The review found that almost universally the money was not ‘wasted’ on frivolous or indulgent temptations, and often people spent *less* on temptations when they received the extra money.⁷ The authors of the review, David Evans and Anna Popova, concluded that the evidence is strong that cash transfers are not wasted on cigarettes or alcohol. ‘We do have estimates from Peru,’ they admitted, ‘that beneficiaries are more likely to purchase a roasted chicken at a restaurant or some chocolates soon after receiving their transfer.’ But Evans and Popova hoped that even the most puritanical policy makers would not begrudge the poor a piece of chocolate.

\$ \$ \$

WELL, OKAY, SO THE MONEY ISN’T WASTED. But if we are giving away all our cash, we want to ensure that it makes a difference. That it changes people’s lives permanently, that it doesn’t just lift them for a year, but rather sets them on a new course. There are studies into that, too.