Biologically Modified Justice

Theories of distributive justice tend to focus on the issue of what constitutes a fair division of 'external' goods and opportunities: things like wealth and income, opportunities for education and basic liberties and rights. However, rapid advances in the biomedical sciences have ushered in a new era, one where the 'genetic lottery of life' can be directly influenced by humans in ways that would have been considered science fiction only a few decades ago. How should theories of justice be modified to take seriously the prospect of new biotechnologies, especially given the health challenges posed by global ageing? Colin Farrelly addresses a host of topics, ranging from gene therapy and preimplantation genetic diagnosis to an 'anti-ageing' intervention and the creation and evolution of patriarchy. This book aims to foster the interdisciplinary dialogue needed to ensure we think rationally and cogently about science and science policy in the twenty-first century.

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CAMBRIDGE
UNIVERSITY PRESS

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University Printing House, Cambridge CB2 8BS, United Kingdom

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning and research at the highest international levels of excellence.

www.cambridge.org
Information on this title: www.cambridge.org/9781107129535

First published 2016

A catalogue record for this publication is available from the British Library

Library of Congress Cataloging-in-Publication Data
Names: Farrelly, Colin Patrick, author.
Title: Biologically modified justice / Colin Farrelly, Professor and Queens National Scholar Department of Political Studies, Queens University.
Description: Cambridge, United Kingdom : Cambridge University Press, [2016] | Includes bibliographical references and index.
Identifiers: LCCN 2016008443 | ISBN 9781107129535 (hardback) | ISBN 9781107568518 (paperback)
Subjects: LCSH: Biotechnology – Moral and ethical aspects. | Aging – Moral and ethical aspects. | Genetics – Moral and ethical aspects. | Distributive justice.
Classification: LCC TP248.2.F37 2016 | DDC 660.6–dc23
LC record available at https://lccn.loc.gov/2016008443

ISBN 978-1-107-12953-5 Hardback
ISBN 978-1-107-56851-8 Paperback

Dedicated to my three sons – Connor, Dylan, and Jake. Each and every day they provide me with inspiration, love, and laughter.

'Old ideas give way slowly; for they are more than abstract logical forms and categories. They are habits, predispositions, deeply ingrained attitudes of aversion and preference. Moreover, the conviction persists – though history shows it to be a hallucination, that all the questions that the human mind has asked are questions that can be answered in terms of the alternatives that the questions themselves present. But in fact intellectual progress usually occurs through sheer abandonment of questions together with both the alternatives they assume – an abandonment that results from their decreasing vitality and a change of urgent interest. We do not solve them, we get over them.'

John Dewey, *The Influence of Darwin on Philosophy and Other Essays* (1910), p. 19.

'The human mind must think with the aid of categories (the term is equivalent here to *generalizations*). Once formed, categories are the basis of normal prejudgement. We cannot possibly avoid this process. Orderly living depends on it.'

Gordon Allport, *The Nature of Prejudice* (1954), p. 20.

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Preface

The British novelist and scientist C. P. Snow delivered his famous lecture 'The Two Cultures' in Cambridge in 1959. Snow argued that Western societies were polarized between two different intellectual traditions – that of science and that of the 'literary intellectual'. These two intellectual traditions had very little understanding of, and appreciation for, the other.

Over half a century later, I believe Snow's concerns are still alive and relevant today. Indeed in *The Three Cultures*, Jerome Kagan suggests that the gulf between natural scientists and humanists has expanded since 1959. Kagan claims that Snow probably would 'not have anticipated the strident rejection of evolutionary theory by advocates of creation ideology and a public less willing to regard the rationally based conclusions of natural scientists as the soundest bases for all decisions' (Kagan 2009: 245). Scholars in the humanities/social sciences often have little engagement with those working in the natural sciences, and vice versa. The specialization of academic disciplines that has flourished since Snow's lecture has helped to further enlarge the gulf between the lines of inquiry pursued by scholars in the humanities/social sciences and the lines of inquiry pursued in the natural sciences.[1]

The two intellectual cultures that Snow described in 1959 are still evident in today's universities. Students and scholars in the humanities/social sciences have a very different understanding of the world from that of the students and scholars in the natural sciences. What perhaps all scholars in the humanities/social sciences and natural sciences share is a common belief and aspiration – they believe that the knowledge they create and disseminate can make the world a better place. But once one gets down to the details of this aspiration (e.g. What are the world's most pressing problems? How can they be remedied? etc.), there is often a significant degree of disagreement and misunderstanding between scholars in different academic disciplines. Why is this so?

[1] For a more detailed and concise analysis of these differences, see Kagan (2009).

A great deal of this disagreement and misunderstanding stems, arguably, from two *facts*: one about the world we inhabit and the other about how our minds perceive that world. Firstly, the world is an extremely complex place. And as such, attempts to understand this world will give rise to different, and sometimes competing, theories or accounts of how the world is and why things are the way they purportedly are. Secondly, humans engage in different types of 'categorical thinking' to make sense of the complex world we inhabit.

In order to make sense of our surroundings (especially our social life) it is common, perhaps even inevitable, that we engage in some sort of categorical thinking. Gordon Allport argued that we cannot avoid this process of making some generalizations about our environment. Orderly living depends on it (Allport 1954: 20). And the categories we develop to serve as the basis for normal prejudgement are ones that grow up from a 'kernel of truth'.

Scholars in different academic disciplines employ various forms of categorical thinking which are predicated upon different kernels of truth. Within the humanities and social sciences, these categories tend (for many, not all, disciplines) to focus on culture and human agency. Here are some common categories we typically divide the world into: countries (e.g. Canada, United States, England, etc.), religions, ethnicities, political systems (e.g. democratic vs non-democratic), and economic systems (e.g. market society vs communism).

These categories adopt a relatively narrow historical lens – they help make sense of the world, at best, over the span of only a few centuries or millennia. Like most political theorists, I regularly teach the history of political thought. And such courses typically always start with the Ancient Greeks – Socrates, Plato, and Aristotle. These thinkers are often considered as the origin of Western philosophy and political thought. The historical lens of political theory does not stretch beyond 2,000–3,000 years.

One distinctive feature of the outlook of many scholars in the humanities and social sciences is that we focus primarily (if not exclusively) on the *proximate* history of humanity, and typically the role of human agency within that history. The focus is on, for example, the history and legacy of colonialism, patriarchal institutions (e.g. the family), property, and government.

This stands in sharp contrast to the view offered by the natural sciences, especially biology. Rather than categorizing the world into distinct nations, ethnicities, religions, or economic and political systems, biology places all of us into the same category – we are members of the species *Homo sapiens*. And far from being the centre of the world (and history), our species is only one of a countless number of species that

have lived on this planet in the approximately 3.8 billion years since life began on Earth.

The evolutionary biologist Theodosius Dobzhansky famously remarked that 'Nothing in biology makes sense except in the light of evolution' (Dobzhansky 1973: 35). That is a vastly different perspective than the one typically adopted in the humanities and social sciences, where scholars attempt to make sense of the world without much reference to evolution. When it comes to factors that influence the health prospects of humans, for example, scholars in the humanities and social sciences tend to focus only on socio-economic and health institutions that distribute things like wealth and health care. But our health is also profoundly influenced by our genetic endowments and the *evolved biology of our species*.

The extensive historical lens of evolutionary biology dwarfs the minute scope typically adopted by disciplines in the humanities and social sciences. At its best, the historical lens of the humanities and social sciences is a proximate, human agency-focused lens. No doubt this perspective is very important, but it can also be very limiting. The categorical thinking employed by academic disciplines that adopt a proximate, human agency-focused understanding of history can impair our capacity for practical reason. Diverse types of knowledge, including those yielded by evolutionary biology, must be integrated into our normative theorizing if the theorist hopes to develop a theory of justice that will help us to improve the opportunities humans have for living flourishing lives.

If I had to succinctly summarize what I take to be *the* central reason political theorists should take biology seriously, it would be this – doing so can help us overcome the *moral myopia* we are susceptible to when we ignore the influence evolution, through natural selection, has on the behaviour and health prospects of the human species. Drumwright and Murphy define moral myopia as follows:

> We define moral myopia as a distortion of moral vision, ranging from shortsightedness to near blindness, which affects an individual's perception of an ethical dilemma. Moral myopia hinders moral issues from coming clearly into focus, particularly those that are not proximate, and it can be so severe that it may render a person effectively morally blind. If moral issues are not seen at all or are somehow distorted, it is highly unlikely that sound ethical decision making will occur.
>
> (Drumwright and Murphy 2004: 11)

Contemporary debates about distributive justice focus on a diverse range of goods and opportunities – things like the distribution of *wealth and income* (what Iris Marion Young (1990) called the 'distributive paradigm'), as well as *culture* (e.g. see the extensive debate on multiculturalism), and *political inclusion* (e.g. ideals of deliberative democracy). These

contentious debates have not been solved. But progress, as John Dewey noted over a century ago, does not require that we solve all the questions posed by the past. Instead, Dewey encourages us to move beyond old habits and ingrained assumptions by a change of *urgent interest*, which this book attempts to invoke. It aims to convince the theorist that insights from the biological sciences (especially evolutionary biology and genetics) ought to be incorporated into our normative theorizing about the duty to aid and the demands of distributive justice.

Political theorists examine political concepts and ideals such as equality, freedom, and justice. We attempt to bring precision to these contested concepts (e.g. equality of what?) and critically assess the viability of rival accounts of normative aspirations. The goal of such an intellectual exercise is, at least for those of us with a practical orientation to the discipline, to help us develop *emancipatory knowledge*. Theorizing about the demands of equality and justice in our non-ideal world can help us to critically reflect upon, draw attention to, and redress or transform patriarchal traditions, non-democratic institutions, or the shortcomings of a market society, and so on.

Can insights from evolutionary biology and genetics help the political theorist develop emancipatory knowledge about the kind of society, institutions, and culture we should aspire to realize in the world today? I decided to write this book because I believe the answer to this question is an emphatic 'Yes!' This book has taken me a long time to write (over fifteen years). Its interdisciplinary scope and application meant that I had to learn about topics typically outside the scope of interest and expertise of the political theorist, such as evolutionary biology, medicine, and biogerontology. But engaging with these topics has, I hope, made me a much better political theorist. The evolutionary and life history of any species is replete with biological trade-offs. Evolutionary theory 'explains the origins and development of species through time, while life history theory provides an explanation of the evolution of important life events such as growth and reproduction in a species' (Bribiescas 2006: 2). Evolution by natural selection is far from perfect. Engaging with biology means taking the non-ideal realities of our biology and environment seriously rather than bracketing them or focusing one's attention on idealized hypothetical examples that abstract away from our evolutionary and life history.

The significance evolutionary biology has for political theory becomes evident if we conceive of the discipline in the way outlined by John Dunn (1990) in his article 'Reconceiving the Content and Character of Modern Political Community'. Dunn claims that the purpose of political

theory is to diagnose practical predicaments and to show us how best to confront them. Doing this, he adds, requires us to develop the following three distinct skills.

1. Ascertaining how we got to where we are and understanding why things are this way.
2. Deliberating about the kind of world we want to have.
3. Judging how far, and through what actions, and at what risk, we can realistically hope to move this world as it now stands towards the way we might excusably wish it to be.

(Dunn 1990: 193)

The biologically modified account of justice advanced in this book aspires to develop these three distinct skills in the context of the practical predicaments that arise from the genetic revolution and an understanding of our species' evolutionary and life history. The three skills identified by Dunn require a political theory to be well grounded in terms of both the empirical assumptions and normative aspirations it relies upon.

Dunn's first skill, when applied to the focus of this book, requires the theorist to have a basic understanding of human biology. What are genes? And what role do they play in the development of different phenotypes (such as disease)? How has our species' evolutionary and life history influenced our susceptibility to chronic disease in late life or the creation of patriarchy? To exercise this skill one must have a basic understanding of the complex relationship between our biology and our external environment. Sometimes the story of human disease is the story of a single malfunctioning allele (e.g. single-gene disorders such as Huntington's disease). But in the case of the most prevalent multifactorial diseases (such as cancer and heart disease) the story of why disease develops is more complex – such as a combination of environmental factors (e.g. smoking, diet) and mutations in multiple genes.

Furthermore, there are also ultimate (or evolutionary) causes at play. The inevitability of death due to hazardous external environments (e.g. predation, starvation, etc.) means that reproduction is made a higher biological priority than is indefinite maintenance. So the post-reproductive period of the human lifespan, unlike the pre-reproductive and reproductive periods, is influenced by a significant *decline* in the force of natural selection. And this makes us vulnerable to *multi*-morbidity in late life. Senescence itself was not selected for; it arose from evolutionary neglect rather than evolutionary intent (Carnes 2007). And thus evolutionary biology offers many useful insights which the political theorist should take seriously in aspiring to understand why humans are susceptible to the most common chronic diseases today, especially in late life.

The second skill requires us to exercise our abstract aspirational skills. What kind of society should we aspire towards in terms of harnessing the new knowledge yielded by the genetic revolution, for example? Should we strive to ensure that everyone has a 'genetic decent minimum' (and what would constitute such a minimum)? Should we invoke some notion of 'genetic equality'? Or is a principle of maximin appropriate? Perhaps we should reject any 'patterned' principle of *genetic* justice. It is important, I shall argue, that the theorists temper their exercise of this second abstract skill with the first and third skills Dunn emphasizes. Empirical knowledge of our biology and the diverse and complex challenges we face ought to have a significant impact on the kind of distributive ideal we seriously entertain and debate. Sometimes the story of mitigating genetic disadvantage is a story about direct intervention (e.g. gene therapy), but in many cases we can reduce the risk of disadvantage by pursuing other kinds of interventions (e.g. changing diet, exercising, retarding ageing, etc.).

The severity and onset of the disadvantages our natural endowments confer can also vary from minor (e.g. slight learning disability) to major (e.g. suffering, disability, or premature death) and from early onset to late onset. These kinds of considerations will have an impact on how stringent the duty to mitigate our biological vulnerabilities is.

Integrating our understanding of human biology with our normative ideals will help ensure we do not make prescriptions that are based on poor science (e.g. genetic determinism) or that ignore the fact of scarcity or the risks associated with both genetic intervention and non-intervention. Thus, Dunn's third skill requires us to place the aspiration to mitigate genetic disadvantage within the larger context of 'societal fairness'. Directly mitigating the natural lottery of life (via genetic therapy, for example) is only one of many competing demands justice places on us as a society. We should not take the insular view that mitigating genetic disadvantage is the only requirement of justice (nor should we ignore this duty). Early-onset diseases are often very rare conditions, and some could be avoided by utilizing screening technologies. But the most prevalent diseases in the world today are age related. Thus, very difficult questions arise concerning how best to proceed in terms of investing scarce public funding in treatments for specific diseases versus basic research on the ageing process itself. This third skill thus requires the theorist to adopt a wide lens when asking what would constitute a fair, proportionate, and effective strategy for combating the various forms of disadvantage that pervade our ageing societies.

Once ideas of justice and equality are integrated with insights from the biological sciences, I believe it will become obvious that many of the modes of categorical thinking employed by contemporary political theory

must be revised or modified if we hope to meet the challenges of the twenty-first century. Not only should we aspire to emancipate humanity from the harmful effects of colonialism, poverty, and capitalism, for example, but we should also aspire to emancipate humanity from many of the tragic and undesirable outcomes and limitations of having our bodies and minds shaped by the process of evolution by natural selection. These constraints include our susceptibility to disease and disability in late life, as well as the creation of a sexual division of labour. Bringing insights from biology to the forefront of political theory can help the normative theorist generate novel and diverse forms of emancipatory knowledge. At least that is what I hope this book achieves, if it is successful.

This book covers a diverse array of topics, from ageing and genetic intervention, to gene patents, patriarchy, and reproductive freedom. The arguments and analyses developed in the book are not driven by one *unified* normative theory. Instead, I consider a variety of normative theories, including 'empirical ethics', deliberative democracy, John Rawls's theory of 'justice as fairness', and Marx's account of historical materialism. My primary goal is not to vindicate or exhaustively defend any one of these theories. Instead, I hope to show how our normative theorizing can lead to new emancipatory knowledge once we incorporate insights from evolutionary biology and genetics into our moral thinking.

These diverse fields of inquiry help provide the contours of the 'contextual inquiry', to borrow a phrase from Joseph Carens (2000), of a *biologically modified* account of justice. As Carens (2000: 2) points out, a contextual political theory adopts the strategy of moving back and forth between theory (e.g. accounts of freedom, equality, utilitarianism, contractarianism, virtue ethics, deliberative democracy, etc.) and context (e.g. global mortality in 1970 and in the ageing world of 2010, reproductive freedom in a liberal democracy, etc.). The contextual foci of my inquiry – namely, human biology and advances in the biomedical sciences – are largely neglected ones in political theory. And this is, I believe, unfortunate. Our normative theorizing about justice is impoverished when we neglect to consider the important role novel advances in the biomedical sciences can play in helping us create and sustain the conditions necessary for human populations to flourish. If political theory is to offer us practical guidance for tackling the challenges of the twenty-first century, then this deficiency must be mitigated. I hope this book goes at least part of the way towards redressing this neglect.

This book has taken a long time to write, and I have incurred many debts to generous colleagues, conference participants, etc. who have commented on various parts of the book over the fifteen years it took to write. Hillel Steiner and I co-taught a graduate-level seminar at Manchester University in 2002, which proved to be a real catalyst for my interest in

these topics and helped me to realize that political theorists should take these issues seriously. Hillel has remained a source of continued support, for which I am very grateful. In 2006/7 I spent a sabbatical as a Research Fellow at Oxford's Centre for the Study of Social Justice and was also a visitor in Oxford's Program on Ethics and the New Biosciences. I am grateful to Adam Swift for making the former possible, and to Julian Savulescu for making the latter possible. This was an ideal sabbatical, permitting me to combine my intellectual interests in non-ideal theory and advances in the biomedical sciences. In the final stages of the book, I spent a sabbatical term in 2013 teaching in the University of California Los Angeles' (UCLA's) Department of Public Policy, where I taught a small graduate seminar on the topics covered in this book.

Many parts of the book were presented at conferences and seminars where I received invaluable feedback from the audience and other participants. These include presentations at the University of Birmingham, the University of Manchester, the Canadian Political Science Association, the Joint Session of the Aristotelian Society and Mind Association, the Lofoten Seminar on Genetics and Justice in Røst, Norway, the University of Toronto, the University of Waterloo, Wilfrid Laurier University, Stanford University Law School, University College Dublin, Oxford University, Exeter University, McGill University, Queen's University, the International Association of Biomedical Gerontology, and the University of Arizona.

Three experts on the biology of ageing are worth mentioning here as they took time to read various chapters of this book, explain complex concepts to me, and correct some of the many mistakes I made while trying to come to grips with the science of biogerontology. They are Jay Olshansky, Bruce Carnes, and Aubrey De Grey. A significant portion of this book would never have been written had it not been for the generosity of these scholars who took the time to help explain to a political theorist why research on ageing is so significant to the health prospects of today's ageing populations. I am grateful to my editor John Haslam for his support and patience in seeing this book through to completion. The three anonymous referees for Cambridge University Press provided excellent critical feedback on a complete draft of the book. Their probing questions and useful suggestions helped me improve the arguments I developed. I also want to thank Lori Fulsom-Farrelly and my parents, Patrick and Angela Farrelly, for their support over the years. The book is dedicated to my three children – Connor, Dylan, and Jake. The inspiration to write this book came from my conviction that a rational and cogent discussion of the regulation of new biotechnologies could help better ensure a healthier and happier future for their generation.

The bulk of this book was written during the decade I spent teaching a seminar titled 'Science and Justice' to students at Waterloo University and Queen's University. I tested out new ideas with my students, altered my own views in light of points or concerns they raised in class, etc. The experience of teaching this course during a period of rapid scientific advancement reinforced my belief that teaching is invaluable to research (and vice versa). I owe a debt of gratitude to all the students who helped fuel my enthusiasm and curiosity about the issues addressed in this book.

This book develops and modifies arguments I previously published in a series of journal articles. I am thankful to the publishers for permitting me to reprint material from the following publications:

'Empirical Ethics and the Duty to Extend the Biological Warranty Period', *Social Philosophy and Policy*, 30(1–2) (2013), 480–503.
'Normative Theorizing about Genetics', *Cambridge Quarterly of Healthcare Ethics*, 22(4) (2013), 408–419.
'Patriarchy and Historical Materialism', *Hypatia*, 26(1) (2011), 1–21.
'Equality and the Duty to Retard Human Ageing', *Bioethics*, 24(8) (2010), 384–394.
'Why Aging Research?', *Annals of the New York Academy of Sciences*, 1197 (2010), 1–8.
'Framing the Inborn Aging Process and Longevity Science', *Biogerontology*, 11(3) (2010), 377–385.
'Preimplantation Genetic Diagnosis, Reproductive Freedom, and Deliberative Democracy', *Journal of Medicine and Philosophy*, 34(2) (2009), 135–154.
'Towards a More Inclusive Vision of the Medical Sciences', *QJM: An International Journal of Medicine*, 102(8) (2009), 579–582.
'Aging Research: Priorities and Aggregation', *Public Health Ethics*, 1(3) (2008), 258–267.
'Genetic Justice Must Track Genetic Complexity', *Cambridge Quarterly of Healthcare Ethics*, 17(1) (2008), 45–53.
'Has the Time Come to Take on Time Itself?', *British Medical Journal*, 337 (2008), 147–148.
'Gene Patents and Justice', *Journal of Value Inquiry*, 41 (2–4) (2007), 147–163.
'The Genetic Difference Principle', *American Journal of Bioethics*, 4(2) (2004), W21–28.
'Genes and Social Justice: A Rawlsian Reply to Moore', *Bioethics*, 16(1) (2002), 72–83.