

Genes, Polymorphisms, and the Making of Societies

Genes, Polymorphisms, and the Making of Societies

A Genetic Perspective
of the Divergence between East and West

Hippokratis Kiaris, PhD



Universal-Publishers
Irvine • Boca Raton

*Genes, Polymorphisms, and the Making of Societies:
A Genetic Perspective of the Divergence between East and West*

Copyright © 2021 Hippokratis Kiaris. All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the publisher, except in the case of brief quotations embodied in critical reviews and certain other noncommercial uses permitted by copyright law.

Universal Publishers, Inc.
Irvine • Boca Raton
USA • 2021
www.Universal-Publishers.com

ISBN: 978-1-62734-345-9 (pbk.)
ISBN: 978-1-62734-346-6 (ebk.)

For permission to photocopy or use material electronically from this work, please access www.copyright.com or contact the Copyright Clearance Center, Inc. (CCC) at 978-750-8400. CCC is a not-for-profit organization that provides licenses and registration for a variety of users. For organizations that have been granted a photocopy license by the CCC, a separate system of payments has been arranged.

Typeset by Medlar Publishing Solutions Pvt Ltd, India
Cover design by Ivan Popov

Library of Congress Cataloging-in-Publication Data

Names: Kiaris, Hippokratis, author.

Title: Genes, polymorphisms, and the making of societies : a genetic perspective of the divergence between east and west / Hippokratis Kiaris, PhD.

Description: Revised and extended edition. | Irvine : Universal Publishers, 2021. | Includes bibliographical references.

Identifiers: LCCN 2021021087 (print) | LCCN 2021021088 (ebook) | ISBN 9781627343459 (paperback) | ISBN 9781627343466 (ebook)

Subjects: LCSH: Human genetics--Social aspects. | Human genetics--Variation. | Human behavior. | Cultural evolution. | Genes--Social aspects. | Genetic polymorphisms--Social aspects.

Classification: LCC QH431 .K425 2012 (print) | LCC QH431 (ebook) | DDC 599.93/5--dc23

LC record available at <https://lcn.loc.gov/2021021087>

LC ebook record available at <https://lcn.loc.gov/2021021088>

*To my wife Ioulia
To my daughter Frosini and my son Harris,
For their patience, criticism and inspiration*

Contents

Preface.....*xi*
Preface of 1st Edition.....*xv*

PART I

Introduction

Chapter 1: The Concept3
Chapter 2: Genes, Polymorphisms, and Genetic Heterogeneity11
 2.1. Genetic Markers and Analysis 18
Chapter 3: Biological Anthropology and the Distribution
of Human Populations As We Know Them Today21
 3.1. Humans Around the World Are More Similar
 Than They Are Different 25
 3.2. The Contribution of Mitochondrial DNA-related
 Studies 27
 3.3. Archaic Humans: The Neanderthals 28
 3.4. Modern Humans Migrate Out of Africa..... 30
Chapter 4: The Rise of Personal Genomics41
Chapter 5: Greeks versus Chinese: The Prototypic Behaviors49
Chapter 6: Population Trends versus Individual Traits63

PART II

Personality Traits at the Population Level

Chapter 7: Exploratory Activity and Novelty-Seeking:
The Case of Dopamine Receptor D469

- 7.1. DRD4 Alleles Have Different Frequencies
in Different World Populations..... 70
- 7.2. DRD4 and Human Migrations 74
- 7.3. Nomads and Settlers..... 76
- 7.4. A Gene for the Liberals 79
- 7.5. DRD4 and Financial Risk-Taking..... 81
- 7.6. DRD4 and Substance Abuse..... 85
- 7.7. Summarizing on DRD4 as a Prototype Westerner’s Gene 86

**Chapter 8: Serotonin Transporter and the Emergence
of Collectivism89**

- 8.1. Association between 5-HTTLPR and Depression 91
- 8.2. The Sociality Gene? 92
- 8.3. The Greek Confucius and the Chinese Aristotle 95
- 8.4. A Gene for Happiness 97
- 8.5. Combined Polymorphisms in DRD4 and 5-HTT
Promoter 99
- 8.6. MAAO and Collectivism 102

**Chapter 9: COMT, Altruism, and the Evolution of the
“Warrior versus Worrier” Strategies 107**

- 9.1. COMT and Taxes 114
- 9.2. COMT and Governance 117
- 9.3. Oxytocin Receptor, Optimism and Self-Esteem..... 121

Chapter 10: Leaders and Followers 123

Chapter 11: Eastern versus Western Traits Are “En Bloc” 129

 11.1. Some Personality Traits are Linked, but not Genetically,
 in Easterners and Westerners..... 136

 11.2. Divide and Conquer: The Genetics of Social Networks
 and their Impact in Social Organization
 in East and West..... 146

PART III
Perspectives

Chapter 12: On the Fluctuations and Oscillations of Behavioral Trends 155

Chapter 13: Trends 161

 13.1. Can Novel Cultural Trends Emerge During
 Globalization? 167

Chapter 14: Isaac Asimov’s Psychohistory and the Prediction of History..... 171

Epilogue 177

References 179

Notes 193

Preface

In 2020, the world experienced the COVID-19 pandemic, the deadliest event of our lifetime. The development of a vaccine was announced in late 2020, but deaths will continue increasing, and it will take a few years until normality, as we knew it, returns.

As of December 2020, more than 1.5 million people died from COVID-19 worldwide. In the U.S. alone, the most advanced technologically and the world's wealthiest country, the death toll approached 300,000 cases. In China, on the other hand, in which the pandemic originated, COVID-19 related deaths were about 5,000. The difference is even more striking if numbers are expressed as fractions of the total population. In the United States, with approximately 330 million people, COVID-19 deaths accounted for about 1 in every 1,000 people. In China, however, with a population of 1.4 billion, deaths by COVID-19 were less than 1 in 300,000 people.

The two countries responded to COVID-19 differently. Restrictions in the mobility of the population from one region to another, business and school closures, accessibility and enforcement for testing and other measures were directly responsible for limiting the health-related damages in China and they are based on how stringent the imposed regulations are. At the same time, they reflect how willing people are to follow such mandates. One could argue that a regime that is more totalitarian can easily impose laws that limit individuals' freedom while a more liberal government cannot. Imagine what would happen in the U.S. if Congress passed a law, as early as January 2020, when the emergence of the epidemic became visible, forbidding people traveling freely from Georgia to South Carolina. But the actual question is deeper than that. Could a regime similar to that in China survive in the U.S. or Western Europe? Of course, there is North and South Korea, and until recently East and West Germany and the Soviet Union, which followed different paths. However, the discriminating factor has to do with the force applied to maintain the contrasting regulations,

and we can easily see what happened when these forces were weakened, and the people were allowed to express themselves more freely.

To survive and to reflect their population's mentality, different regimes require a certain degree of acceptance. For example, we can see this based on how China and the United States handled the pandemic differently. We see that in the Eastern vs. Western cultures as well as how they developed over the years. We see that collectivism characterizes Easterners, while individualism describes the West; this goes beyond narrowly viewed political systems as we see them today. In Japan, for example, a technologically advanced and rich country in the Far East, or even in tiny Singapore, collectivistic values exist and are recognized to a degree much more prominent than in the various advanced countries of the Western world.

Behavioral traits such as altruism, exploratory seeking, risk taking, conscientiousness (the tendency for responsibility, hard-working, goal-directed activities and organization) show different intensity in Eastern and Western people and generally speaking, characterize today their societies, as they did in the past years. However, the real question is whether Easterners and Westerners are inherently programmed for collectivism and individualism, respectively.

Popular TV shows, frequently based on books that appeared during the last few years, revolve about a common theme, that of alternative history. *Fringe*, *The Man in the High Castle*, *The Plot Against America* are only some of the several examples. The protagonists can be historical or not figures, see themselves in an alternative world, in which foundational historical events occurred differently, "streaming" history to alternate paths. Yet, characters and society remain the same. Maybe the share of power has shifted from one group to another, yet, regardless of whether in the end the balance returns back to "normal," struggles were the same as we recognize them in today's "real" society. More importantly, the same social powers are still recognizable in this alternative Universe. Intuitively and instinctively, this is the response to my previous question: People have certain innate traits, so societies are likely hardwired for different cultures as well.

Being different is the cornerstone of this book without any attempt to imply that one is better than others. What is advantageous for one can be a disadvantage for the other. As people evolved and developed different cultures, they followed their different paths throughout history. But now, people are forced to live together. Information, goods, people, and even

diseases travel faster than at any other time in history. Several different cultures have developed in the world that should be not be regarded as just the “in-between” of the East and the West. It is only because East and West, as I will later explain, epitomize all the differences, the comparisons become less complex and more typical.

The main goal of this book is to understand the true nature of our differences and how these evolved and developed throughout the history of our species. To do so, I will start from when the first humans appeared in Africa. Then, I will describe how they moved around the world to colonize the Earth and what types of genes they carried with them. I will also describe the typical Easterners and Westerners as well as how they and their cultures relate to the ancient Greeks and Chinese. I will conclude by providing some specific examples for some genes that are known to predispose for different personality traits, how they are distributed in populations worldwide, and how they may associate with the behavioral traits we recognize in the Western and Eastern cultures.

I would like to thank Professor Ryan Nichols (University of California, Fullerton) for his constructive criticism, critical reading and useful suggestions. Also, I would like to acknowledge the help of Dr Jeff Young, my publisher, for making this second edition possible. Special thanks also to my daughter Frosini, who studies Political Sciences at the Honors College of the University of South Carolina and very responsibly undertook the challenging task to edit her father’s writings!

Preface of 1st Edition

I am neither a geneticist nor a historian or anthropologist. As a biologist by training, I have received some academic and formal training in genetics. My knowledge—that is, ignorance, actually—in history and cultural anthropology is only empirical and superficial. Therefore, by having this excuse, I hope that I will avoid the rigorous critique from the academic experts in these fields. To such experts, my thoughts may seem naive and oversimplistic, or that I have “re-invented the wheel”—which, intellectually, is even worse. With these reservations constantly accompanying my endeavor, I have continued writing this book.

The issues I attempt to explore all spin around one central question: Why the different populations around the world have developed different and distinct cultures that eventually led to different historical outcomes and different ways, according to which the corresponding societies have been organized, and, in general, distinct ways by which life has been viewed and perceived. These and other relevant questions are examined in view of the different frequencies in various genetic polymorphisms in genes affecting behavior. Furthermore, I attempt to focus on a comparative outline, both cultural and genetic, of peoples and populations from the two major cultural lines and civilizations that have appeared in human history and persist until today: the Eastern (Asian) and Western (European and American). In other words, these questions are reduced to why the Western line of thought has been dominated by Aristotle’s *reason* and *logic*, while the Eastern line of thought has been dominated by Confucius’s *harmony, collectivism, and context dependency*. The main idea of this book is that the presence of different genes in the corresponding people has actually dictated the acquisition of these distinct cultural and historical lines, and that an alternative outcome might have been unlikely. Based on current trends related to the globalization of cultures and economies, some predictions are finally being made on the development of human cultures and the potential future of human history.

I want to thank Joanne Asala for her great job in editing the text and making it comprehensive and Dr Jeff Young, my publisher, for his help and valuable suggestions during all stages of preparation of this book. Finally, I want to express my gratitude to my wife Ioulia for her constructive comments, critique and patience for the whole duration of this project.

PART I

Introduction

CHAPTER 1

The Concept

The central notion of this book is based on a very simple idea—so simple that it can be considered as self-evident. If the genetic make-up of individuals, affects—if not dictates— their behavior, then shouldn't this also affect collective decisions and actions, if examined at the level of groups of people that share certain genetic characteristics? Shouldn't people that are genetically similar among each other exhibit similar trends in their decisions that have affected their culture and history? Such groups of people, with a genetically distinct identity, can be considered entire nations or even what we call races and ethnic groups. No matter how stringent the definition of homogeneity is, especially genetic homogeneity, it is really arbitrary and quantitative. In any case, though, it involves groups of people that genetically are more uniform than other people that belong to other “racial” populations. Therefore, it is conceivable that history, at least the part of it that reflects the outcome of certain decisions and reactions of human individuals, is also affected by the genetic identity of the people involved. In other words, different people would have made different choices that, in turn, would have created a different outcome to their history. If we take this a step even further, then instead of history we can extrapolate to whole cultures, that more collectively can describe the various manifestations of human intelligence and provide the frame at which choices are being made.

These are all applicable at the various levels of organization of such groups, from families in which the genetic relations are so apparent, to the anthropological bands and tribes and races—notwithstanding that there is not a scientific consensus regarding what, exactly, the human races are or how many (Molnar, 2005). This term historically was defined by using a combination of both biological and socio-cultural criteria. Regardless of whether Asian people can be classified into five or fifty groups, whether or not they represent a distinct and single “race” or many different races,

it is clear that they are in principle more “identical” among each other and distinct as regards their physical characteristics when compared to European people, and vice versa. This is due to the existence of several features among them that largely reflect (and are reflected to) their genetic identity. Not that all Europeans can pass as Europeans by looking only at their physical appearance, or Asians for Asians. Many cases exist of individuals with intermediate (or mixed) characteristics that point to the fact that there is a continuum in the intensity of these features. Furthermore, it tells that it is not a single or only a few, but rather a combination of several different features that is used to describe different people. Thus, there are abundant grey zones that do not allow drawing strict barriers between distinct populations. In addition, for certain features the geographical localization may be tighter than that of others increasing the complexity of how different “races” are defined.

Quantity, or abundance in one group versus another is the key. Take curly hair for example. Thicker hair is harder to become curly, which explains why Chinese have straight hair. Variations in genes such as *FGFR2* and *EDAR*, which are found more commonly in Europeans than in Chinese, are responsible for this difference (Fugimoto et al., 2009). Of course, Chinese with wavy hair or Europeans with straight hair are not impossible, just not very common. Generally speaking, traits that manifest in lower frequencies in certain groups while they are more common in other groups of people, or features that are stronger in the one group and milder in the other contribute to the differences we recognize today in different populations. This can be due to the occasionally extended interbreeding, the mixing up of genes of diverse populations, that could be intensified during specific historical periods between people of different ethnic groups. It could also be due to the fact that there is not a single genetic characteristic present in all people of the same population and absent from all others. Unless, of course, we are talking about a small, frequently isolated population. Take skin color as an example. Several genes contribute to the color of our skin, hair, and eyes that come in different “versions.” These different versions result in the production of particular pigments at various levels, that in turn, determine our color complex (Sulem et al., 2007). Interestingly enough, Asians and Europeans present these versions at different frequencies, which is why East Asian blue-eyed, blond people are that uncommon (Table 1). Thus, a single (and objective) criterion to classify an individual as a member of a specific race does not exist.

Table 1. Frequency of alleles determining hair, eye and skin pigmentation in Europeans and East Asians

	Population frequency (%)	
	EUR	EAS
rs1805008 C	94	100
rs1540771 C	49	72
rs1042602 C	63	100
rs1393350 A	24	0
rs12896399 T	43	35
rs1667394 T	76	27
rs12821256 C	12	0

It is all a matter of frequencies, ratios, and intensities—but we’ll come back to that later. We’ll see that characteristics, such as the epicanthic fold or the double eyelid, are considered typical for East Asians and are usually accompanied by light skin color.

At the same time, though, we have also seen individuals that belong to Western populations who have considerably darker-than-average color skin types, accompanied by pronounced double eyelids, characteristics that are considered more “typical” for African and East Asian people respectively. Frequently, notwithstanding not exclusively, in the world of showbiz, such exceptions and deviations from the mainstream characteristics are more common than in the average population, which probably implies the attraction, the appeal these “minority” traits elicit—a fact that possesses apparent implications in providing certain mating advantages!

Notions related to the genetic classification and the eventual categorization of the various “races” emerge when traits are discussed. Those are of course wrong scientifically and are completely outside my intentions. Even when we subsequently describe examples of certain genetic features that superficially may be taken as disadvantages, we have to keep in mind that those should be judged as such only within the certain context that they have appeared and stabilized in a given population. Certain examples point to the fact that even disease-related genes, such as those responsible for the development of sickle cell anemia and Glucose-6-phosphate dehydrogenase (G6PD) deficiency, have an eventual role in conferring resistance against infectious diseases. Thus, what can be viewed as a disadvantage in

the first instance is certainly an advantage at a different environment. Many more are the cases of genes that, while not responsible per se, can modulate the development or the severity of specific diseases and have a different prevalence among people of different origin.

Obviously, since even in cases that involve pathological conditions the distinction between “harmful” and “beneficial” is not clear-cut, when we talk about behavioral traits, the whole picture becomes even more complicated. It is much more difficult to classify a characteristic as purely advantageous or disadvantageous for the individual that bears it when we focus on characteristics that affect human behavior and personality. For example, novelty-seeking is a behavioral trait related to the tendency for increased risk-taking and exploratory excitability. This trait, historically, might have produced a positive influence in individuals, since it might have facilitated progress and advancement. It is noteworthy to mention that it has also been related, genetically and behaviorally, with increased incidences of drug addiction. Does this remind you of Western people (or people of European descent) and their civilizations? How about the observation that the specific polymorphism that is related to this trait is quite uncommon in Asians?

As we will see in subsequent chapters, recent complex analyses and genetic modeling suggest that these polymorphisms, such as those related to novelty-seeking, are likely associated with the migratory patterns of human populations, providing a direct hint on how genetics might affect the history of certain people. And not co-incidentally, speaking about the migratory pattern of behavior, the easier (or more efficient) adaptation into a new environment is intrinsically linked to novelty-seeking behavior. We will discuss all of these issues in much greater detail in subsequent chapters, along with other analogous traits. Thus, what is positive in a specific view can be negative in another. The level of complexity increases even more by the observation that certain genetic traits, depending on the exact conditions that are being studied, may affect a variety of behavioral trends and patterns, and what we see and record is actually the collective outcome of all these behavioral variables.

Another issue that may arise throughout this book is related to the concept of “free will.” In that sense, genetically speaking, the unavoidable question is this: How free is our will if we are actually hardwired, or at least predisposed, against certain behaviors, choices, and reactions that differ among individuals? Genetics though provide just the frame.

How our specific responses will be formulated depends on several other factors as well, that collectively we classify under the wide term of environment. However, no matter what the correct answer may be and whether the actual balance is shifted towards nature or nurture, our only rational option in life, both as individual persons and as members of a larger group or community, is to keep on trying to extract the best out of what we have. Within this context, as individual persons we experience the option for a will that is really free.

Keeping these issues in mind, my whole point is that different people respond or are more likely to respond, differently against similar stimuli, and that these responses are likely more common among people that are more similar genetically. The latter is quite likely to occur with people that belong to a group or population with similar (or more homogenous) genetic imprint. Thus, if against the same stimulus or during an encounter, A people are more possible to elicit a type-K response while B people are likely to elicit a type-L response, then A and B people are likely to take consecutively different decisions through historical time: The A people will repeatedly respond with a K-type response while the B people respond with an L-type response. And, importantly, the genetically similar offspring of these people will continue to make similar decisions whenever they face similar challenges, thus exhibiting an apparent consistency in the building of their culture and norms. These decisions eventually will be reflected in their collective history. If, for example, this K-response is to retreat and negotiate when they deal with offensive actions, while the L-response involves confrontation and “fight back” decisions, then it is quite likely that A people will be less prone to warrior-type cultures than B people. We can also imagine that another genetically regulated trait exists that makes A people more co-operative than B people. It is conceivable in that case to expect that the A people will develop cultures and societies at which their individual members will exhibit increased interdependency than the B people. Thus, their cultures will be more “collective,” when compared to those of the B people, who in turn will have a tendency toward individualistic cultures.

Imagine now, another hypothetical example in which populations consist of a mixture of A and B people at different ratios. Such is the case for all “real” populations in which genes come at different versions. Each has different frequencies in the various groups of people. To properly operate, societies need both leaders and followers, novelty seekers, and those

who are reluctant to change. Additionally, they require individuals who relentlessly follow instructions and routines, as well as rebels who do not. Instead, when the entire process becomes dysfunctional, they are the ones who think innovatively and provide resolutions. Kastoriadis (1964)¹ suggests this when describing the worker's role in production of goods but can be readily applied to the operation of the society as a whole as well: "... *the worker experiences the absurdity of a system seeking to turn him into an automaton, but obliged to call on his inventiveness and initiative to correct its own mistakes*". However, what are the consequences of having people with these personality traits in different ratios in society? The complexity increases, even more, when we consider that it is actually a combination of traits that produce the outcomes of potential interest.

Of course, the unbiased question is whether such genetically regulated traits exist that can affect those types of cultural and historical decisions. This is a main focus of this book, and we will try to address it as we move forward.

Consistently with these, it is not only the socio-economical environment, the geography, the natural phenomena, the occurrence of certain disasters and diseases or other exogenous factors that have affected and will continue to affect the history of humans, but also the genetic signature of the people. Therefore, in any attempt to explain human history, the genetic profile of the corresponding people should also be taken into consideration, along with the other conventional, exogenous factors. Even if this is not feasible technically as yet, it is rather likely that in the near future and to a certain extent will be. And in that case, we can even go one step further; besides explaining the past, we might also be able to "predict" the future. This may sound like a science-fiction scenario right now, but if we were able to "measure" behavioral tendencies and the genetic structures of given societies, then the prediction of possible outcomes against specific conditions could be made. Since retrospectively we can explain various outcomes of history, then why not be able to predict them? The "complexity" factor is, of course, a chief parameter. Yet, the chaos theory in mathematics tries to do precisely that. It tries to explain events that appear as random but eventually follow specific rules and can be subjected to modelling.

That this "runs in the family" does not only refer to diseases or certain physical features, but also to behaviors, our likes and dislikes that, conventionally, we used to attribute only to certain socio-environmental factors—in other words, to the way we "grew up." For example, that ancient

Greeks (or, to use a present-day example, the Kennedy family) were deeply political may reflect, at least in part, their genetic signature. A certain predisposition against specific behaviors, such as the tendency of not taking things and conditions as a given, in combination with the desire to lead, may manifest as an attraction to politics. Or to science. You need to feel that something is not “right”, or adequately explained to be able and build into that and make a change.

Not that the environment—in its widest sense—is not playing a major role, of course. On the contrary, actually! However, in order to formulate characters and mentalities (as well as physical characteristics and diseases), the environment needs to interact with the given genetic background, and the result will be as specific as it can be for each individual. Thus, the behavioral pattern that emerges is not the sole result of the environment, but is also greatly affected by the genetic information carried by each and every person as well. This is, of course, a given, a basic and elementary knowledge of biologists. The notion of context dependency ranges from the study of the genetic basis of behavioral traits, and it affects the interpretations of those attempting to understand the response of individuals against certain stimuli, to the elucidation of the effects of the (micro)-environment in cellular differentiation and disease. Or to why the same carcinogens cause cancer in some individuals but not in others. It is increasingly appreciated that the magnitude and the extent of any biological response is greatly influenced by the genes of the individual.

In a reductionist’s approach on addressing how genes affect behavior, the emphasis is given to the prediction of how individuals will respond to a specific (socio-economical) environment, or in other terms, to the building up of “characters” and personalities in their wider sense. It is reasonable, though, to speculate that analogous mechanisms will also operate at a larger scale as well, at the level of populations, and in that case, the outcome will be reflected not to individuals’ decisions, but rather to collective decisions that are capable of affecting history. By extrapolating from these ideas and projecting them to whole populations, we can probably start to understand choices that may appear random. We can explain why certain paths were preferred over others, at least by certain people as compared to different groups of people. This way, we may understand why China was very successful in dealing with the containment of COVID-19 over the West. We may be able and appreciate why during its history, Europe was and still is fragmented to various countries with people feeling highly different than their