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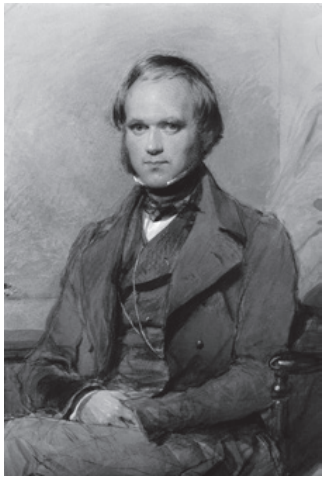
Introduction

1.1 About Darwin's "Dangerous Idea"

Sections 1.1-1.5 provide an introduction to and overview of the book, including key terms like "biological knowledge," the geological, cultural evolution and historical timescales and the key events, places, people and ideas we will explore.

This book is named after **Charles Darwin** (1809–1888), a British naturalist and the founder of the **theory of evolution by natural selection**, one of the most important and controversial ideas ever published. Darwin's evolutionary theory has been called a "dangerous idea" by many authors, including some who agree with it[1] and for many different reasons. Perhaps you already know that Darwin's evolutionary theory claims that human beings evolved from apes. This idea clashed with certain religious views and some feared that Darwin's theory was immoral and would threaten beliefs that were essential to society. This is one reason Darwin's theory has been called "dangerous" – it challenged religious beliefs that had guided society for a long time.



Charles Darwin
Credit: Wikimedia Commons

But evolution has had a powerful impact not just on religion but on other ideas too. For example, many of us believe that human society has "evolved" from "primitive" beginnings to the "advanced" scientific and technological culture we have now. Looking at our technological society of computers and cell phones and it seems obvious that we have come a long way from our "primitive" ancestors. The idea that society has also evolved is another way in which Darwin's theory has influenced our thinking. It seemed to "prove" that human society had also evolved. But what about other societies that don't have the technology we have? What about those societies that don't have the same beliefs or ideas as our own society, such as faith in science,

1 The phrase is from Daniel Dennet's book, *Darwin's Dangerous Idea. Evolution and the Meanings of Life*, New York: Simon & Schuster, 1995.

technology, economic competition, etc.…? Are they less "evolved" than our own society? Some people thought so, and they used the idea of evolution to justify the domination and even extermination of those they thought were "less evolved" or "primitive." Even today, some writers use evolutionary ideas to claim that some groups of people aren't as able or as intellectually gifted as others because they haven't "evolved" as much or are not as "fit." This is yet another reason why Darwin's evolution idea has been called "dangerous": it can be and has been used to oppress others.

Can ideas be dangerous? Whether or not Darwin intended it, it seems all too easy to use his theory of evolution to support even the most immoral or unethical acts. In the wrong hands, it seems, even the most scientific ideas can be twisted to serve the most destructive of purposes. This was the case for Darwin's ideas of evolution, natural selection and "survival of the fittest" Ideas, in short, can indeed be dangerous, whether those ideas are scientific, religious, political or economic.

But ideas can also be truly amazing and inspiring, and this includes the idea of evolution itself and many other ideas we consciously or unconsciously follow in our daily lives. For example, evolution implies that all human beings are related because we evolved from a common ancestor. It also means humans are "related" to other creatures because all creatures are descended from other, previous ancestors. Some have taken this to mean that we are all "family" and connected together like a huge network in the web of life with one part dependent on the other. Damage to one part of the web will affect another part – we are not just isolated individuals like separate islands disconnected to each other. As the poet John Donne put it

> *No man is an island, entire of itself [...] any man's death diminishes me, Because I am involved in mankind.*

If this is what evolution teaches, it would seem we ought to show greater care and compassion for each other and for other life forms. But this is indeed a far cry from how many would interpret "the survival of the fittest"! Today, some people credit Darwin's theory and evolution for making us more aware of our connection to other creatures and our connection to the environment, one of the most important issues of our time. One can see that whether ideas are dangerous or beneficial depends on how we *interpret* the work of

influential writers like Darwin. But not every interpretation is equally valid. It is one goal of this book to provide a more accurate interpretation and understanding of Darwin's theory than is often presented.

As shown below, ideas like evolution are a key part of knowledge, whether of ourselves or of our environment. Learning about such ideas is also crucial to our personal development and identity since we also look at the world and ourselves through the ideas we have received from parents, society, peers, media, teachers and other authorities. Becoming conscious about the ideas we carry around with us enables us to decide for ourselves which of these to accept and which to reject or modify. Thus, we need to study ideas carefully so that we can learn to recognize their dangers and use them to benefit rather than to harm humanity and ourselves. This is essential to becoming an educated, conscious and contributing member of society. Learning about ideas, in short, helps us to grow as people and to answer the basic questions many humanities courses address: Who are we? Where have we come from? Where are we going? What does it mean to be a human being? What is the best way to live?

The next section provides a more specific understanding of the kinds of ideas we look at in this book, including its main goals. As you will see, Darwin's theory is only one part of what we examine here.

Summary of 1.1: About Darwin's "Dangerous Idea"

Making summaries of each section as shown below in a notebook can help you retain the key ideas covered. Try this yourself for the following sections.

- Charles Darwin's key idea = evolution by natural selection
- Darwin's idea called "dangerous" because
  - Threatened religious views
  - Used to justify oppression of various cultures, people
- But ideas can also inspire (e.g., evolution shows unity of human race, all life)
- Understanding ideas important for personal growth and for benefiting humanity

1.2 Overview of the Book

This book examines the development of **biological knowledge** with special emphasis on Darwin's **evolutionary theory**, its origins, basic elements, and its impact on our history and our lives today. But we will also look before and beyond Darwin to **knowledge** in general and **scientific knowledge** in particular and how science became the dominant form of knowledge in the modern period. This will prepare us to better understand *the main theme of this book:* ***biological knowledge, its origins, growth, use, misuse and impact on human life, thought, society and the environment from the earliest period to the present time***. The book thus adopts a **historical approach** beginning "at the beginning" (prehistoric biological knowledge) and moving toward the present (contemporary biological knowledge). *It tries to develop a continuing story or narrative – the story of humanity's quest for knowledge about life and how this quest has transformed that very life itself.* How the book is divided is briefly explained below.

Chapter 2 covers a very long time scale in human history but is necessary to provide some of the key background facts and ideas we need to better understand the development of science and religion in our culture, Darwin's theory, as well as to provide a glimpse of the importance and impact of **biological knowledge** before the modern period. The chapter also provides some of the basic ideas, facts and events necessary to begin to understand the origin, development and meaning of culture, society, civilization and Western civilization in particular. We begin by examining the development of biological knowledge from the very beginning of human life in the **prehistoric period** (section 2.1 on "Prehistoric Biological Knowledge"). This section shows that certain kinds of biological knowledge – possessed by the small nomadic **hunting-gathering and scavenging** cultures – were absolutely essential to the earliest humans and remain so to the few peoples who still make their living in these traditional ways. Note that this chapter does not trace the evolution of humanity from its ape-like ancestors but examines humans who are already humans in the same sense that we are, except that they lived in different time periods and cultures.

In section 2.2 of the same background chapter, we examine the invention or discovery of **agriculture** and **animal husbandry** – perhaps the most important of all applications of biological knowledge since it triggered the change from small, **nomadic cultures** to large, complex and **sedentary, urban civilization**. The origin of civilization and its connection to agriculture in the Ancient Middle East is emphasized. Next, some of the biological knowledge of the **ancient civilizations** and especially the contribution of the **ancient** Greeks are examined, especially in relation to the birth of **philosophy,** the origin of Western **science** and to the beginnings of a scientific form of biological knowledge.

The impact of **religion,** most specifically the **Judeo-Christian-Islamic tradition** on our ideas about human beings and human nature, is also examined in this chapter, in the context of "**Medieval** Biological Knowledge." Some of the key events in the **modern period** will then be described, including the 17th and 18th century **Scientific Revolution** that paved the way for Darwin later in the 19th century.

Chapter 3 explains Darwin's **theory of evolution by natural selection, the most important concept in the book.** A thorough understanding of this idea is necessary to understanding the subsequent chapters.

Chapter 4 looks at the impact of evolution on religion, especially on Christianity. We examine a variety of reactions to Darwin's theory, including its rejection by fundamentalist churches in the USA and accommodations to it by other Christian churches.

Chapter 5 provides some examples of how evolutionary theory was used and misused to justify various political **ideologies** that promoted "struggle for survival" and "survival of the fittest" as the best ideas by which to organize human society. These ideologies, called **social Darwinism**, are now seen as dangerous misapplications or distortions of Darwin's theory but they are a useful warning to us about how easily some ideas can be put to destructive purposes.

Chapter 6 investigates the development of **genetics**, which has always been intimately tied to **evolutionary theory**.

Chapter 7 examines **Eugenics**, another example of a social or political movement influenced by Darwin's biological theory. This ideology promoted a supposed "improvement of the human race" through selective breeding of humans. Ideas like eugenics and social Darwinism were often categorized as belonging to the "nature" side of the "**nature vs. nurture debate.**" This chapter ends by examining the role that social Darwinism and eugenics played in the ideological background to **World War II**, and especially to Nazi ideology and to the mass killing known as the **Holocaust**. The war provides a crucial turning point in the book, exemplifying the destructive consequences of some of the social Darwinist ideologies examined earlier.

Chapter 8 brings us into the **post-war world** and introduces us to the "**nature-nurture" debate**, showing how and why "the nurture assumption" triumphed over "the nature assumption" in this period. A connection is made between the triumph of the nurture assumption and the struggle for social, racial and economic equality in the post-war period.

Chapter 9 returns to an examination of scientific developments in the present day by looking into what has been called the **biological revolution**. This chapter opens up for study the Pandora's Box of **genetic engineering**, **cloning**, and **gene therapy** that biological knowledge and technology are presently developing. We examine the claims that the Biological Revolution encouraged a return to biological ideas about human nature in our own time.

Chapter 10 focuses on the resurgence of biological explanations of **human nature**, including the new disciplines of **sociobiology** and **evolutionary psychology**. Also examined is the resurgence of "scientific racism" exemplified in the publication of *The Bell Curve* in the 1980s. These are all recent attempts to try and unearth the alleged biological roots of human nature, behaviour and mental ability, using the Darwinian framework of evolution by natural selection. Whether these represent a shift back into the direction of "nature" explanations of human nature and the consequences of such a shift are raised. The last section deals with **transhumanism,** a renewed attempt at the biological "improvement" of the human race. The aim

here is to encourage students to think critically about the role that science and scientific knowledge should play in our understanding of what human beings are and in what kind of society we should have.

Chapter 11 invites students to answer questions arising from the prospect of a "Humanity 2.0" and our ability to genetically "improve" ourselves by taking over from nature the evolution of the human race. Given all we have learned, does the prospect of genetic enhancement open up undreamt of possibilities or is it, literally, the *end* of humanity?

Almost every topic raised in this book has been the subject of literally hundreds, if not thousands, of texts, which often differ in the interpretations and assessments made here. It is important to stress that a fuller account of these topics would require further study of these texts (some of which are listed in the footnotes and bibliography). It is the sincere hope of this teacher that this book will indeed spark interest in the topic and further reading by the students.

1.3 What Is Biological Knowledge?

This book does not just focus on Darwin's theory of evolution. It also examines some aspects of what we have named **biological knowledge**, of which Darwin's theory of evolution is only one (albeit important) chapter. **Biological knowledge *is human knowledge of the living environment*** *and includes knowledge of plants, animals, micro-organisms and human beings* as well since we are also living beings. The term ***bios*** is ancient Greek for "life" or "living." Understanding living things and being able to use them has been a prerequisite for human life on Earth long before Darwin, the science of biology[2] or even science itself was invented, but it is part of what biological knowledge is all about. This knowledge includes some very basic things essential to the survival of the human race from the earliest times, like, for example, knowledge about how to get or produce

2 In this book, we use the word "biology" to mean the modern science of biology which began in the 19th century, and the term "biological knowledge" to mean the much older knowledge of living things that began when the human race began but also includes the modern science of biology.

food, clothing and shelter. Before our age of supermarkets and box stores, people had to learn how to find and/or produce all of these. Getting food is an example of biological knowledge for two reasons: first, food is obtained **from the bodies of *living* (*bios*) creatures** (plants and animals); and second, **it involves *learning* all of the skills needed to make living creatures into something useful,** like food. Biological knowledge involves both human understanding and use of living beings. Thus, skills like the tracking, hunting or scavenging of animals, gathering of edible (eatable) plants, processing them and cooking them are all examples of biological knowledge. Just think about the skills required even today about how to make "our daily bread." Such skills are the product of thousands of years of accumulated knowledge about the wheat plant and how to plant, nurture, breed, harvest, care, preserve and process it into flour and safely ship it to your local bakery or supermarket. And then there is the skill, called baking bread, of how to actually transform that flour with other ingredients (some also derived from living organisms, like sugar and yeast) into something we can eat. All of this is part of biological knowledge, as is anything having to do with knowledge and use of living beings.

What Is Life?

Why is a tiny insect a living thing while a rock is just a lump of matter? Defining what life is might seem simple, but it's actually quite tricky. We cannot say that life includes whatever breathes or moves because plants do not "breathe" or move. We cannot even say that living things reproduce because donkeys and certain kinds of ants, for example, are sterile, and viruses don't even have reproductive equipment. Regardless of all this, we propose the following – living things are entities that are able to:

- extract energy from their environment
- respond to their environment
- maintain and repair themselves
- reproduce

One complication about the concept of biological knowledge must be dealt with, however, and that is that it is based on a distinction between *things which are alive* (biological beings) and *things which are not alive.*[3] This way of categorizing reality may seem obvious to us, but it may not have been the way our ancestors categorized reality. For our ancestors, mountains, waterfalls, the sky, the sun and stars and indeed the very earth itself were alive and conceived as powerful and living superhuman personalities. Sometimes, whatever was capable of movement on its own was seen as "alive." This included clouds or fire or other such things. Thus, when we say "biological knowledge" we should not assume people had *our* ideas of what was "biological" or alive. It should, therefore, be clear that our present-day distinctions between what is alive and not alive are the product of a long historical process, including the development of philosophy and the beginnings of the science of taxonomy which we will examine later.

Despite the problems of the concept of biological knowledge, we can still recognize how knowledge of the living world remained crucial to survival and required a broad range of skills. Whether as basic or vital as "our daily bread" or as "high tech" and complicated as cloning a sheep or making "custom made babies" through genetic manipulation, all of these involve acquiring knowledge and use of living **organisms**. Thus, biological knowledge is as old as the human race and as new as designer babies and, like many other forms of knowledge, it has grown and developed. Today much of biological knowledge has been transformed and systematically organized into a science – the science of **biology**. Darwin's theory of evolution has been crucial in turning biological knowledge into biological science. One author calls it "the key unifying idea of biology." But we ought to remember that from the viewpoint of biological knowledge, Darwin's theory and biological science, in general, are just one example of the continuing growth of our biological knowledge, though a rather important one!

3 My sincerest thanks to the anonymous reviewer of this book who pointed out this problem with the concept of "biological knowledge."

1.4 Darwin's Tea Party Website

Besides this book, a key resource for students is the "Darwin's Tea Party" website. Here you will find copies of the course outline, Weekly Schedule of readings, required readings, and instructions for assignments, PowerPoint presentations, videos, notes, and more. It is important to look at the website since it can help greatly in your success in the class. It can be found at the following address:

http://dc37.dawsoncollege.qc.ca/humanities/gabriel

1.5 Questions to Introduction

1. Why is Darwin's evolution theory sometimes called "dangerous"?
2. In what way can Darwin's evolution theory also be considered "inspiring"?
3. What is "biological knowledge"?
4. How is biological knowledge different than "biology" or "biological science"?