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### Contingency, Evolution, and the Nature of History

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Contingency, Evolution, and the Nature of History  
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### Overview

This module explores the nature of history. Popular perceptions of history rely upon two flawed ideas. First, employing a naive interpretation of the theory of evolution, many believe that history is a slow march of progress toward more complex species and, after the development of humans, more complex human societies. Second, another prevalent attitude is that the history of life contains patterns that repeat and can be predicted if studied. Instead, this module emphasizes the role of luck and contingency in the history of life both before and after the arrival of homo sapiens. Beginning with an exploration of why these popular theories persist, the module will explore contingency through such critical moments as the Cambrian Explosion, the end of the dinosaurs, and moments after the arrival of homo sapiens such as the fall of Carthage, the Chinese decision to end its ocean-going exploration before the discovery of the Americas, and even the failed assassination attempt of Adolf Hitler in Munich in 1939. The result will be a richer more nuanced understanding of the nature of history and of change over time.

### Goals

- Students will gain a brief overview of the differences between the scientific theory of evolution and the way that the public perception of that theory has changed over time.
- Students will learn of the theory of chance and contingency in history.
- Students will explore the impact of particular events on history through several case studies.

### User Guide

This module can be included as a unit in a course of study of world history or in the biology curriculum as a follow up to a more traditional unit on the theory of evolution.

1. Assigned Reading: Stephen Jay Gould's *Wonderful Life*
  - a. Option One: Entire Book
  - b. Option Two: Chapters One and Five
  - c. Option Three: Chapter Five
2. Assigned Viewing
  - a. Alan Love's lecture at the Whyte Museum (Recorded Lecture available on YouTube)
  - b. "Ten Key Moments in World History" (Voice-Over PowerPoint Video)
  - c. Case Study: "The Lost Orders" (Voice-Over PowerPoint Video)
3. Assigned Project (Individual or Group): Study and Analysis of a Key Moment of Contingency in History
  - a. Option One: Written Essay
  - b. Option Two: Visual Presentation (PowerPoint, Poster, etc.)

## Materials

- Stephen Jay Gould, *Wonderful Life*
- Alan Love's "Chance, Evolution, and the Burgess Shale," YouTube <https://www.youtube.com/watch?v=unaCDRTjiPQ>
- Voice-Over PowerPoint: Ten Key Moments in History
- Voice-Over PowerPoint: Case Study of the Lost Orders

## Supplemental Materials

- Quiz on Stephen Jay Gould's *Wonderful Life*
- Group Exercise for Stephen Jay Gould's *Wonderful Life*

## Sample Implementation

### **Biology 101**

This suggested implementation would be follow the traditional introduction of the theory of evolution in an introductory biology course. Below are several ways to implement the module based on the amount of time available to the instructor.

#### *One Week*

Outside of Class: students are assigned to read Stephen Jay Gould's *Wonderful Life* or selected excerpts from the book (see options above).

Class Session One: Gould's book is discussed (perhaps using included group exercise) and selected parts of Alan Love's lecture is shown in class.

Class Session Two: students watch "Ten Key Moments in History"; afterwards, students discuss the videos as a class or in groups

Assignment: individual or group project on a key moment in history similar to what they saw in class session two.

#### *One Class*

Outside of Class: students are assigned to read selected excerpts from Stephen Jay Gould's *Wonderful Life* and watch "Ten Key Moments in History"

Class Session One: students watch selected parts of Alan Love's lecture and afterwards students discuss Gould and the videos as a class or in groups

Assignment: individual or group project on a key moment in history similar to one of the moments discussed in the video

*Part of One Class*

Outside of Class: students are assigned to read selected excerpts from Stephen Jay Gould's *Wonderful Life* and watch "Ten Key Moments in History"

Class Session: students discuss Gould and the video as a class or in groups

Assignment: students spend five minutes writing a short reflection on the reading and the video before discussion begins