

HOW CHRISTIANITY LAID THE FOUNDATION FOR MODERN SCIENCE

...AND MANY OTHER THINGS, SUCH AS HUMAN
RIGHTS AND INDIVIDUAL FREEDOM

PART I: THE PSYCHOLOGY OF EUROPE

NELS HOFFMAN

LOS ALAMOS FAITH AND SCIENCE FORUM

MY GOAL IS TO SHOW YOU EVIDENCE THAT:

- Christianity has profoundly affected the way you think
 - ...even if you are an atheist or non-Christian (assuming you are Western-educated)
 - ...through its influence on your psychology, and the psychology of Western Europe, over many centuries
 - Psychology: your perceptions, assumptions, attention patterns, motivations, heuristics (“rules-of-thumb”), and interpretations
- Christianity thereby laid the foundation for the Renaissance, the Scientific Revolution, the Enlightenment, and the Industrial Revolution



Boniface felling the Holy Oak of Jupiter, near Fritzlar in Hesse, around 720 CE

WE WILL PUT MUCH EMPHASIS ON PSYCHOLOGY, IN THIS TALK

- My primary source is Joseph Henrich, *The WEIRDest People in the World: How the West Became Psychologically Peculiar and Particularly Prosperous* (Farrar, Straus and Giroux, 2020)

So let's begin with a
psychological test ...

WHO ARE YOU?

“I am ...”

WHO ARE YOU?

“I am

How do you answer this question?

... a teacher”

... a construction worker”

... a scientist”

...a mother”

...a Zoroastrian”

...a Bronco fan”

... honest”

... fearless”

... anxious and overworked”

PERSONAL
MEMBERSHIPS,
ABSTRACT
COMMITMENTS,
AND ATTRIBUTES

KIN
NETWORK
RELATIONSHIPS

... the daughter of Nathan and Bree Atkins ”

... the father of Pablo”

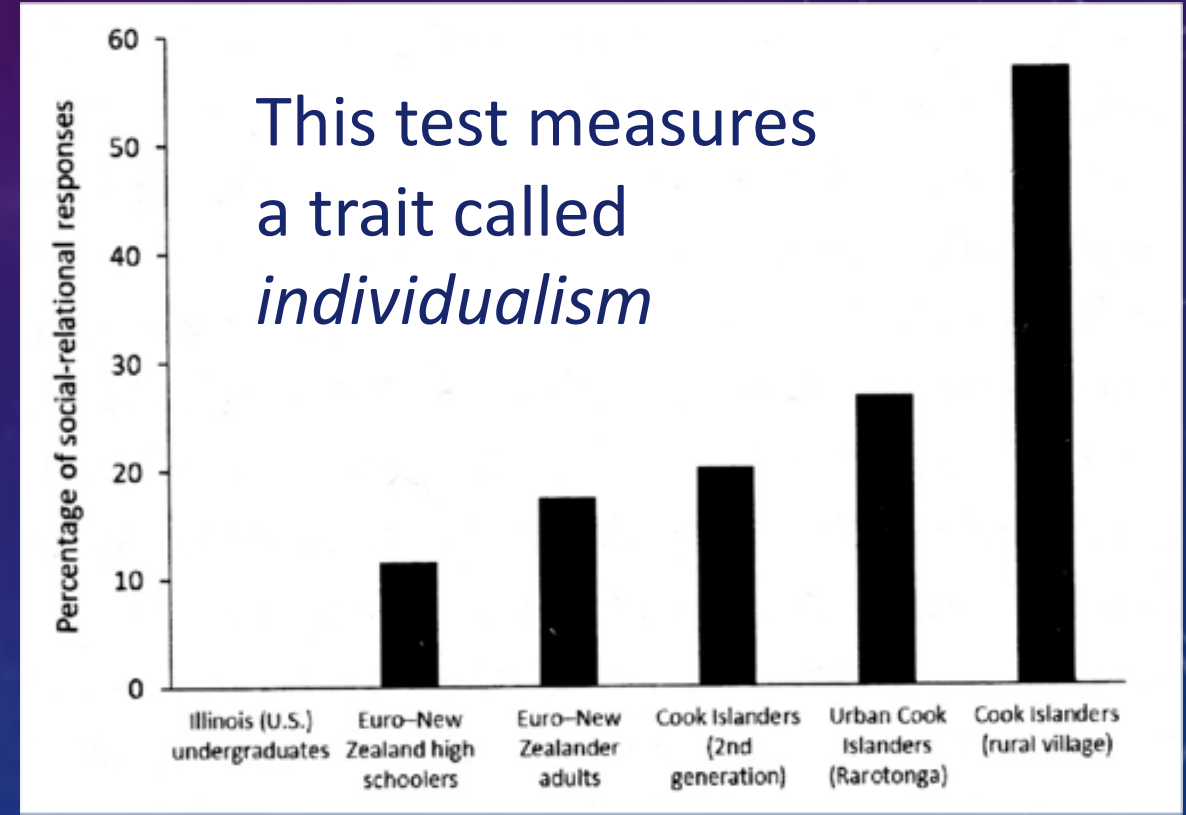
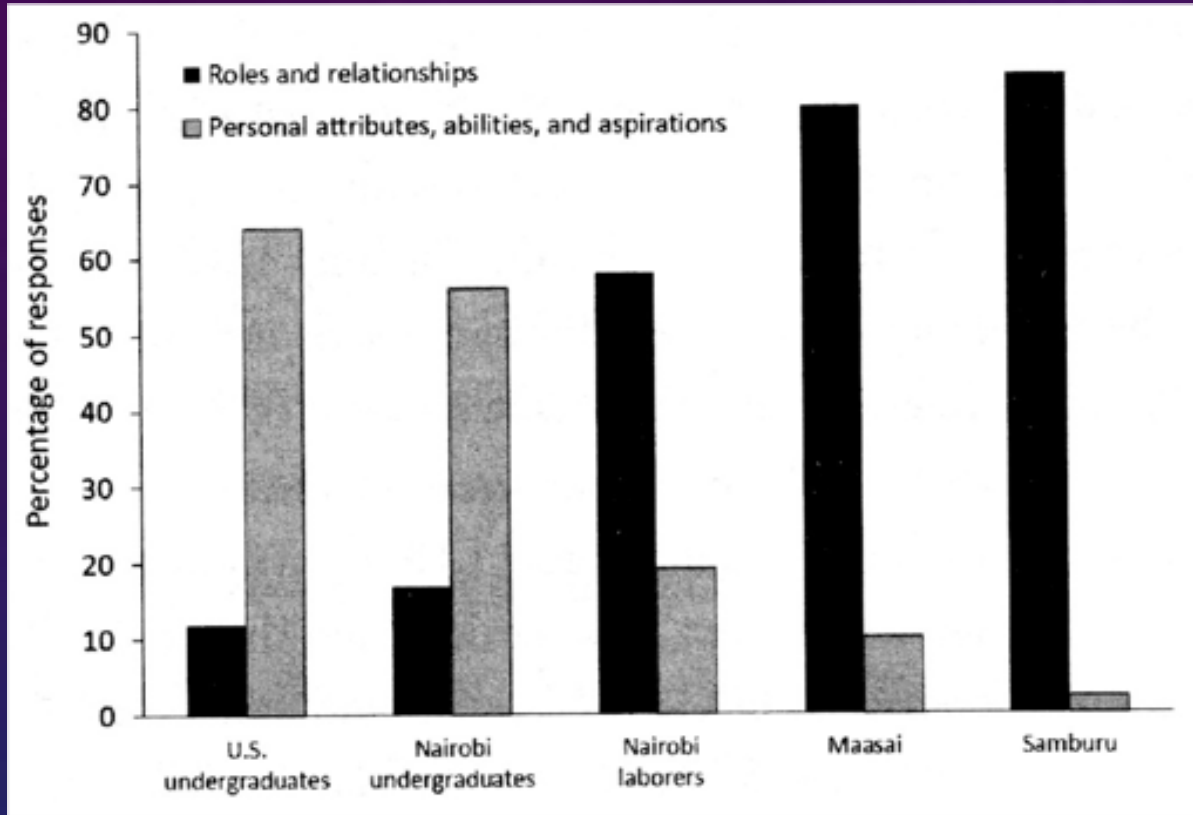
... the mother of Tyrone and Lakeisha”

... Thorgrim son of Asgrim son of Hauskuld”

MOST OF YOU PROBABLY ANSWERED WITH YOUR PERSONAL MEMBERSHIPS, ATTRIBUTES, OR ABSTRACT COMMITMENTS

- Probably it didn't even occur to you to answer with your kin relationships
- But in most societies today (ethnolinguistic groups), and probably throughout most of human history, people would have answered with their kin relationships
- This shows that you are **WEIRD** ...
 - **W**ESTERN
 - **E**DUKATED
 - **I**NDUSTRIALIZED
 - **R**ICH
 - **D**EMOCRATIC

IN MANY SOCIETIES TODAY, PEOPLE ANSWER THE “I AM ...” QUESTION WITH THEIR KIN RELATIONSHIPS



... but not **WEIRD** people

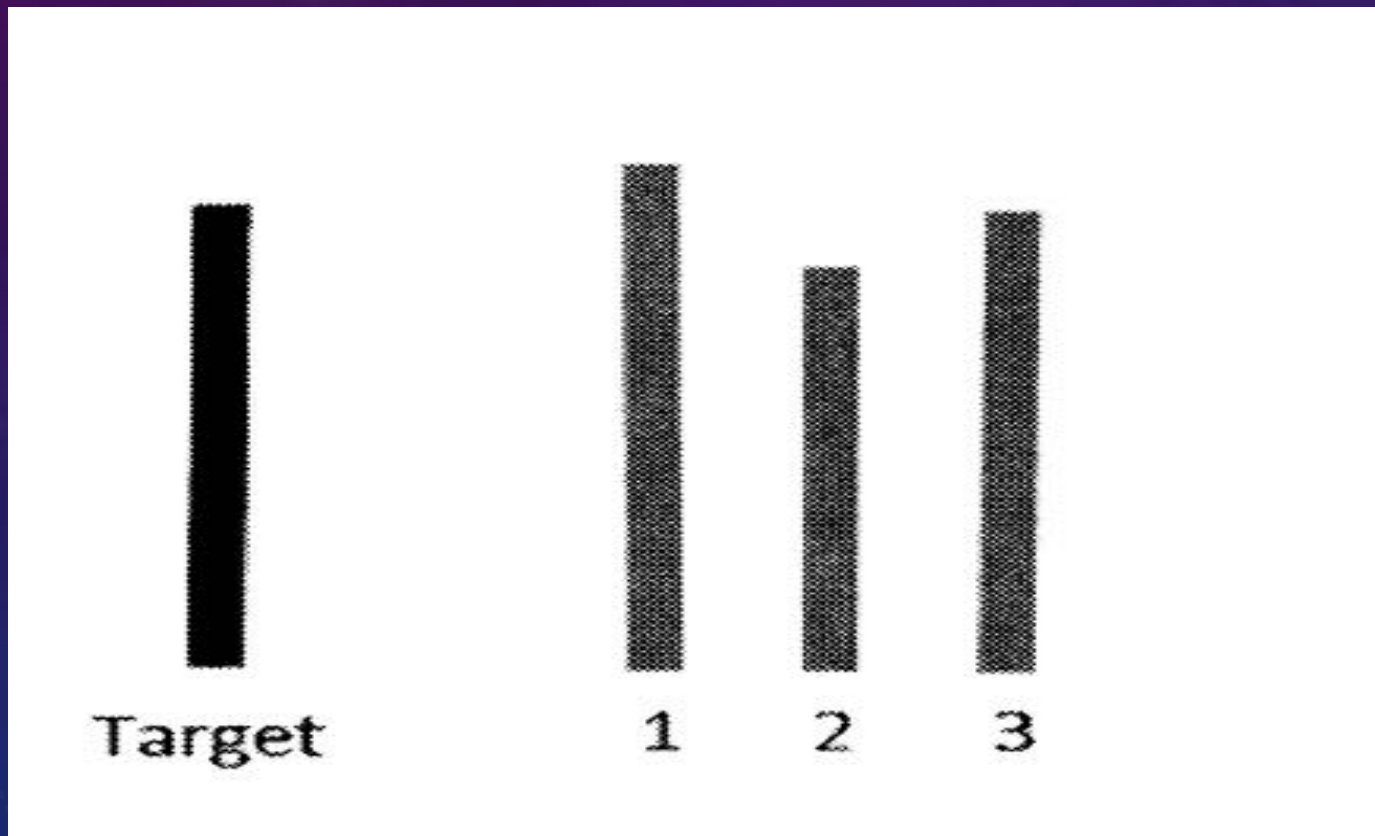
Altrocchi and Altrocchi, *J. Cross-Cultural Psych.* 26(4), 426-40 (1995)

Ma and Schoeneman, *Basic Appl. Social Psych.* 19(2), 261-73 (1997)

Joseph Henrich, *The WEIRD People in the World: How the West Became Psychologically Peculiar and Particularly Prosperous* (Farrar, Straus and Giroux, 2020), p. 25

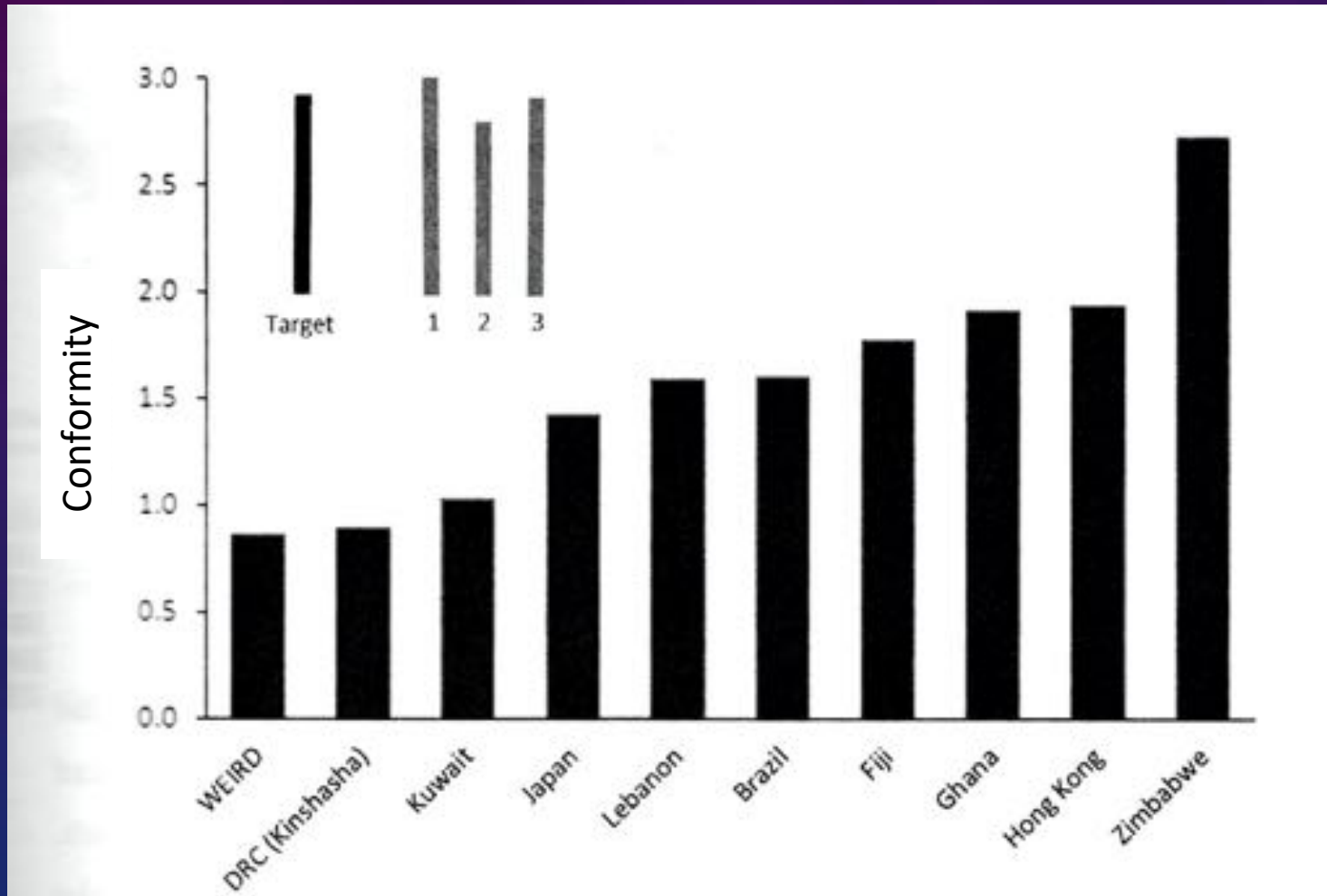
HERE'S ANOTHER PSYCHOLOGICAL TEST

Which line on the right is the same length as the Target?



Would your answer depend on the answers of other people in your testing group?

WEIRD PEOPLE LIKE TO BE RIGHT, EVEN IF IT MEANS NOT CONFORMING



Once again,
WEIRD
people are at
one extreme
end of the
distribution

WEIRD PEOPLE ARE JUST ... DIFFERENT

- **WEIRD** people are
 - Highly individualistic
 - Self-obsessed
 - Control-oriented
 - Nonconformist
 - Guilt-ridden
 - Analytical

To be clear ... this applies to just about everybody in Western society, to some degree

... compared to other human societies

IN 2010, HENRICH AND CO-AUTHORS POINTED OUT THAT *SOMETHING WAS WRONG* WITH A LOT OF PSYCHOLOGY RESEARCH TO DATE

BEHAVIORAL AND BRAIN SCIENCES (2010), Page 1 of 75
doi:10.1017/S0140525X0999152X

The weirdest people in the world?

“Behavioral scientists routinely publish broad claims about human psychology and behavior in the world’s top journals **based on samples drawn entirely from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies.**”

But Henrich *et al.* found that “...members of WEIRD societies, including young children, **are among the least representative populations one could find for generalizing about humans.**”

Joseph Henrich

Department of Psychology and Department of Economics, University of British Columbia, Vancouver V6T 1Z4, Canada
joseph.henrich@gmail.com
<http://www.psych.ubc.ca/~henrich/home.html>

Steven J. Heine

Department of Psychology, University of British Columbia, Vancouver V6T 1Z4, Canada
heine@psych.ubc.ca

Ara Norenzayan

Department of Psychology, University of British Columbia, Vancouver V6T 1Z4, Canada
ara@psych.ubc.ca

SO THE QUESTION IS ...

Were we always this way?

Or was there ever a time when Europeans were more like the rest of humanity?

If so, when was that?

... and how did we get to be the way we are now?

... AND HOW CAN WE EVEN HOPE TO ANSWER SUCH QUESTIONS?

- We can't go back in time to perform psychological tests on Europeans from Long Ago
- But Henrich's method is to assume:
 - Human *psychology* is encoded in human *institutions* (customs, norms)
 - We can learn about past *psychology* by studying past *institutions*
- Henrich assembles a great deal of psychological, anthropological, sociological, and historical scholarship to try to do this

THE ORGANISM AND THE ENVIRONMENT CONSTANTLY INFLUENCE EACH OTHER, OVER GENERATIONS

organism



makes



environment

makes



PSYCHOLOGICAL CHANGES INFLUENCE WHAT KINDS OF NEW NORMS, IDEAS, PRACTICES, AND BELIEFS CAN EMERGE AND SPREAD

organism



makes

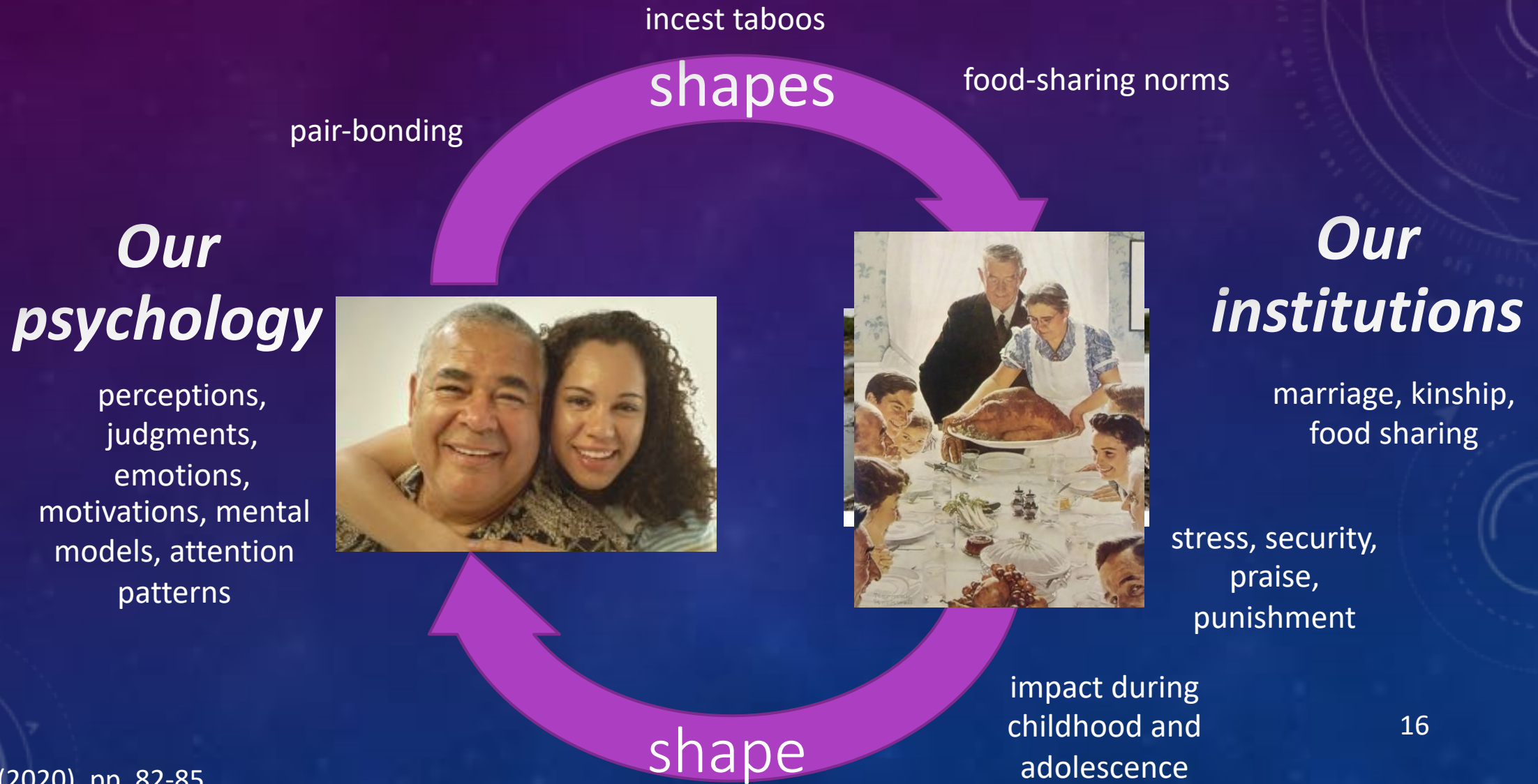


environment

makes



OUR *SOCIAL INSTITUTIONS* INFLUENCE OUR *PSYCHOLOGY*, AND VICE VERSA



BRIEF ASIDE: “MODERN SCIENCE” IS (1) EMPIRICAL AND (2) MATHEMATICAL

- “Modern science” began during the Scientific Revolution, in Europe during the 16th and 17th centuries
- *Empirical*:
 - Francis Bacon's philosophy -- inductive approach to nature
 - “scientific method” centers on experimental research, including artificial experiments to provide additional observations of a phenomenon
- *Mathematical*:
 - “Philosophy [i.e., physics] is written in this grand book—I mean the universe—which stands continually open to our gaze... It is written in the language of mathematics, and its characters are triangles, circles, and other geometrical figures, without which it is humanly impossible to understand a single word of it...”
Galileo, *Il Saggiatore* (1623)

Remember our psychological tests?

WEIRD people like to think in terms of:

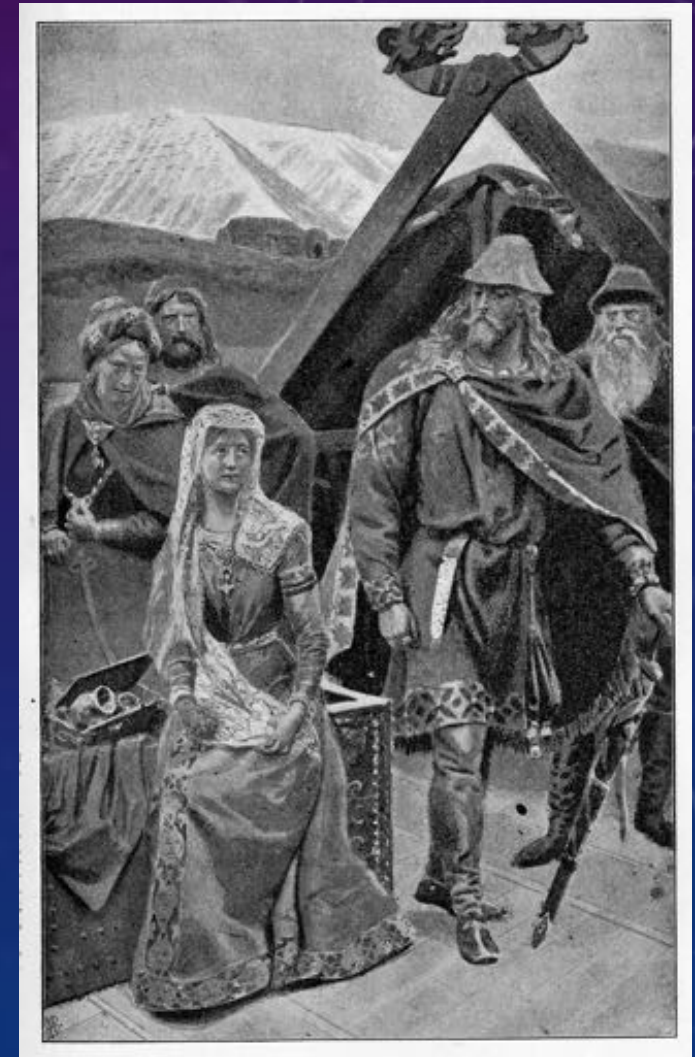
Abstract categories
(not only concrete objects)

Objective validity
(irrespective of peer opinion)

OUR STORY BEGINS IN EUROPE ABOUT 1500 YEARS AGO

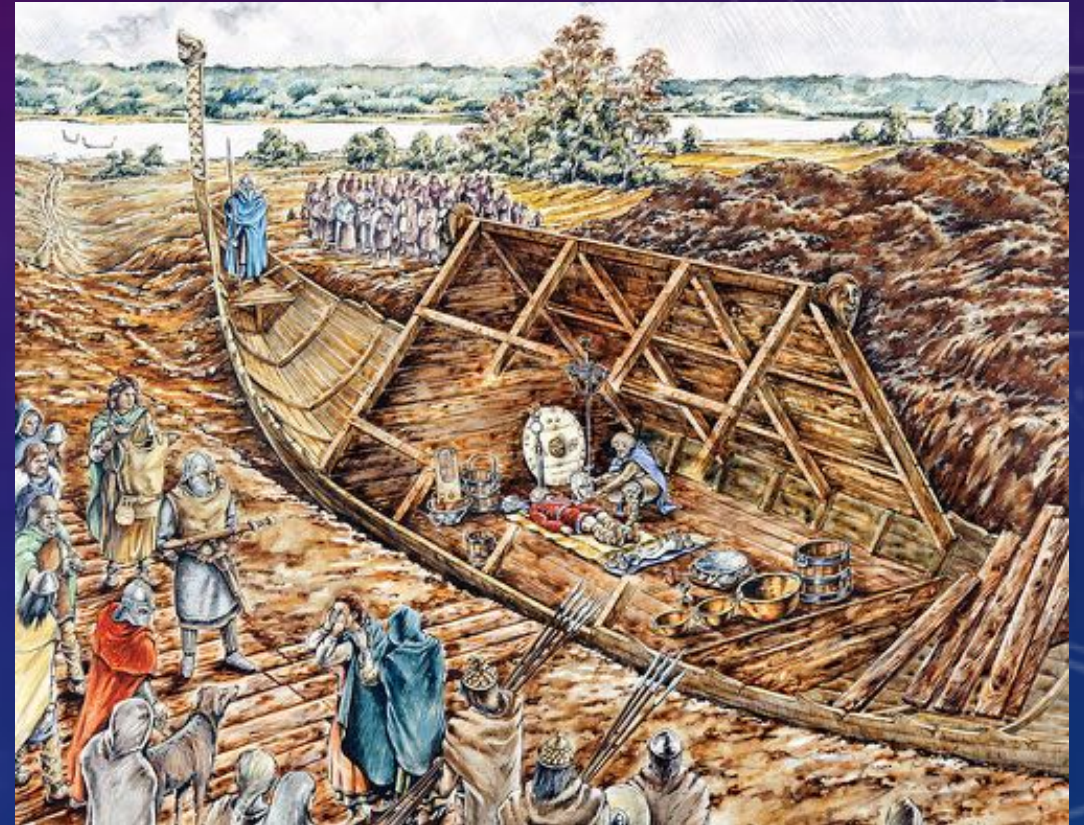
- We have information about the institutions (and therefore psychology) of ancient Europeans from
 - early law codes
 - Church documents and letters
 - travelers' reports
 - saints' biographies
 - Nordic and German sagas
 - analysis of ancient DNA
 - kinship terminologies in ancient writings
- From these sources, it appears that broad kinship patterns in pre-Christian Europe looked much like the rest of the world
 - This is evidence that European psychology resembled that in the rest of the world, at the time

Kjartan and Hrefna,
and the coif
~1000 CE
Laxdaela Saga
(from Iceland)



LIFE WOULD HAVE BEEN DIFFERENT FOR YOU IN A EUROPEAN TRIBE ABOUT 1500 YEARS AGO

- Most European people lived in clans, tribes, or other kin groups
- Marriages were usually arranged
 - Patriarch might tell you who to marry
 - This could be a cousin, in many cases
 - Bride goes to live with husband's family
- Land can't be sold without consent of relatives
- Kin group provides security, settles disputes, avenges wrongs, maintains norms
 - Cares for sick and elderly
 - Accepts corporate responsibility in disputes with other kin groups
 - Conducts rituals, satisfies gods/ancestors
- Polygynous marriages were common for high-status men



7th-century ship burial at Sutton Hoo, Suffolk, probably the tomb of King Raedwald of East Anglia

AS THE ROMAN EMPIRE RECEDED, EUROPE WAS OVERRUN BY POLYTHEISTIC NORTHERNERS AROUND 500 CE

- Clovis, king of the Franks, conquered most of what is now France
 - Clovis was raised a pagan, became Christian, but remained “a thug with an axe”
- Saxons under Hengist moved into Britain
 - Saxons were pagans; displaced Christians in most of Britain except Wales, Cornwall, and Ireland
- Barbaric customs of the Northern Europeans replaced Roman justice, especially under Franks
 - Murder was punished by a fine
 - Judicial duels replaced legal process
 - Slavery was revived and extended
 - General contempt for rule of law



Frankish warriors of 5th century

IN 500 CE, EUROPE WAS POOR, POPULATED BY ILLITERATE TRIBES



“...the Goths ... still adhered to a life of idleness, of poverty, and of rapine.”

Gibbon, *The History of the Decline and Fall of the Roman Empire* (London, 1776 - 1789) Chap. X, Part 2 (writing about the Goth conquest of Ukraine in ~250 CE)

“...it seems limp and slack to get with the sweating of your brow what you can gain with the shedding of your blood.”

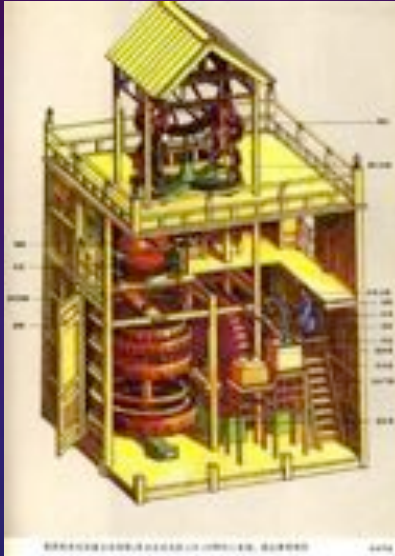
Tacitus, *Germania*, 14 (Rome, ~98 CE)



IN 750 CE, CHINA AND THE ISLAMIC WORLD WERE FAR WEALTHIER AND MORE DYNAMIC THAN EUROPE

Armillary sphere of Yi Xing (683-727), astronomer, mathematician, mechanical engineer, and Buddhist monk

- In China, the emperors of the Tang Dynasty (618 -907 CE) ruled a territory inhabited by 60 to 80 million people
 - The capital Chang 'An was the most populous city on Earth (more than a million inhabitants)
- Many inventions from Tang China
 - Gunpowder
 - Porcelain "china"
 - Gas cylinders
 - Air conditioning
 - Woodblock printing
 - Astronomical armillary sphere



- The Islamic empire had spread across several continents by 750 CE, with great speed
- The “House of Wisdom” (*Bayt al-Hikma*) was established in Baghdad by Caliph Harun al-Rashid (786-809 CE)
 - Center for studies of humanities and science in medieval Islam
 - Mathematics, astronomy, medicine, alchemy and chemistry, zoology, geography, cartography
 - Its scholars translated many Greek, Persian, and Indian texts into Arabic
 - Greatest repository of books in the world by 850 CE
- Emphasis on empiricism, and many experiments with lenses, mirrors, refraction, reflection from Ibn Al-Haytham (Alhazen) (c. 965 – c. 1040)

Jonathan Lyons, *The House of Wisdom: How the Arabs Transformed Western Civilization* (Bloomsbury Press, 2009)

AS THE LAST MILLENNIUM DAWNED, EUROPE DIDN'T AMOUNT TO MUCH

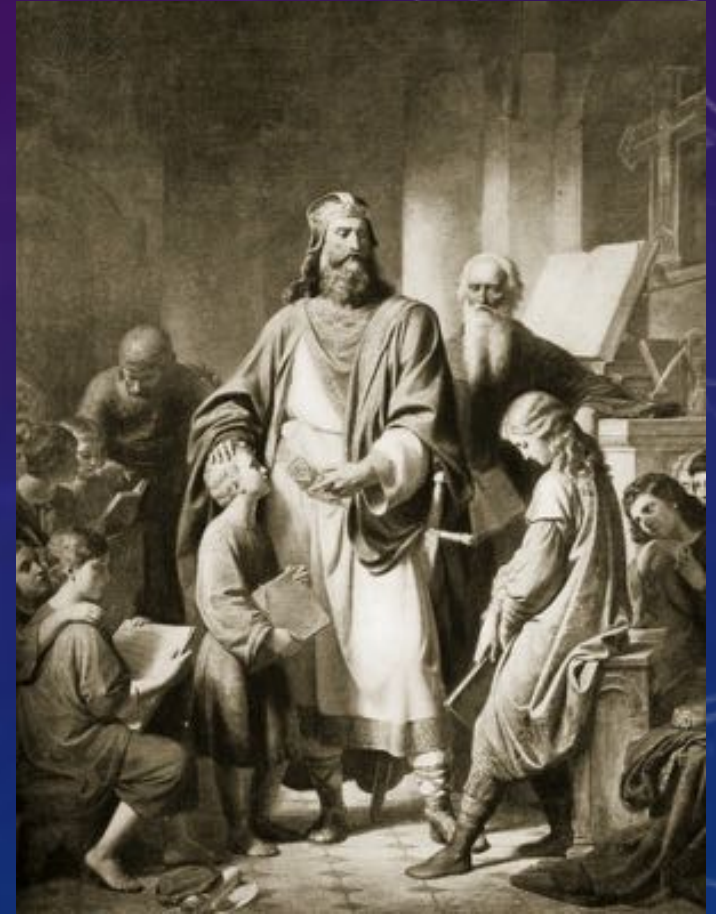
- Europe in the year 1000 CE was one of the world's more stagnant regions
 - Economically undeveloped
 - Intellectually derivative
 - Geopolitically passive
- Illiteracy, starvation, and disease were the norm

Philip Daileader, *The High Middle Ages*, THE GREAT COURSES, Copyright © The Teaching Company, 2001



EARLY ON, CHARLEMAGNE (742-814) DECIDED TO DO SOMETHING ABOUT ILLITERACY

- Charlemagne was King of the Franks (after 768), later “Emperor of the Romans” from 800 to 814
- He unified much of western and central Europe in Carolingian Empire (800-888)
- Lack of Latin literacy caused problems by limiting number of court scribes
- So Charlemagne ordered the creation of “cathedral schools”
- He brought many scholars from all over the Christian world to his court
- One goal: creation of standardized curriculum for new schools
 - *Trivium*: rhetoric, logic, grammar
 - *Quadrivium*: arithmetic, geometry, music, astronomy
- Charlemagne loved books and learning, but it isn’t clear that he himself could read or write



Charlemagne with his children and their scholars

9TH CENTURY IRISH MONKS BEGAN SPREADING OUT OVER EUROPE, TAKING LEARNING AND LITERACY WITH THEM

- European towns founded by, or linked to, Irish monks include:
 - Bobbio, Fiesole, Lucca, Taranto, Lumièges, Auxerre, Laon, Luxeuil, Liège, Trier, Wurzburg, Regensburg, Rheinau, Reichenau, Salzburg, Vienna, St. Gallen...
- Many dioceses in France, Germany, Austria, Switzerland, Holland, Italy have an Irish monk as their patron saint

“Almost all of Ireland, despising the sea, is migrating to our shores with so many philosophers.” Heiric of Auxerre, *Life of St. Germanus* (870)



What, then, is it to treat of philosophy, unless to lay down the rules of the true religion by which we seek rationally and adore humbly God, who is the first and sovereign cause of all things? Hence it follows that the true philosophy is the true religion, and reciprocally that the true religion is the true philosophy.

(Johannes Scotus Eriugena)
c. 815 – c. 877 izquotes.com

CHRISTIANITY AND LEARNING WERE ALMOST SYNONYMOUS DURING MIDDLE AGES

- Literacy arrived with Christianity, in many regions of Europe
- Christianity produced *religious and cultural unity* within Europe, in the midst of *political fragmentation*
 - Latin language allowed natives of different regions to communicate
- Church and State were separate entities
 - One could protect scholars against the other
- Church was patron and founder of schools and universities
 - Church itself was example of a *universitas* -- fictive legal personality, unique to Roman law

Toby Huff, *The Rise of Early Modern Science: Islam, China, and the West*, 2nd ed. (Cambridge University Press, 2003)

Lawrence Principe, *Science and Religion*, THE GREAT COURSES, Copyright © The Teaching Company, 2006

James Hannam, *The Genesis of Science: How the Christian Middle Ages Launched the Scientific Revolution* (Regnery, 2011)

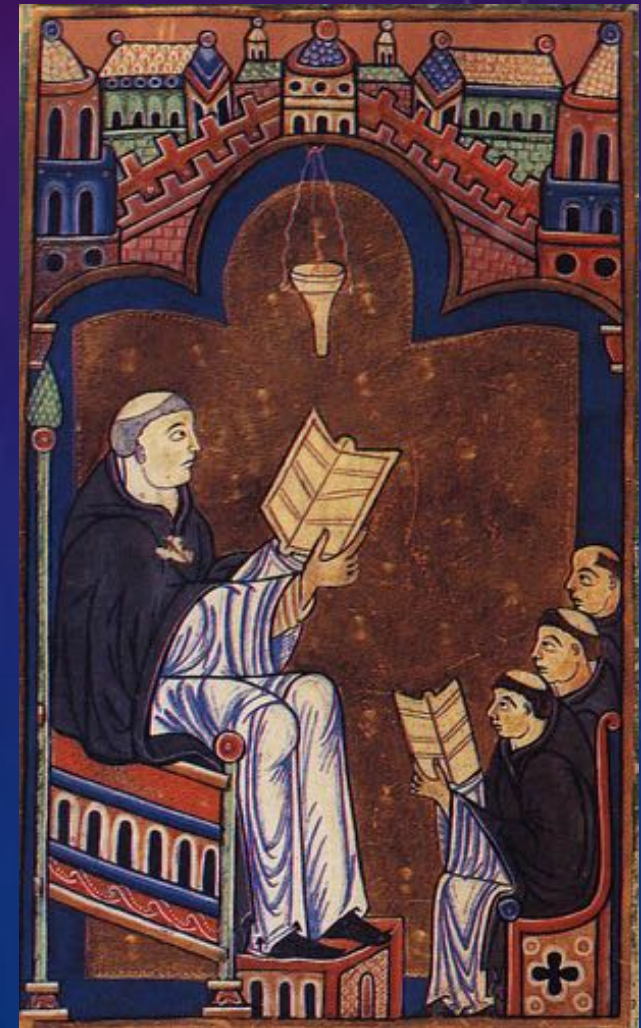
David Wilkinson, "Friends or Foes? The Story of a Complex Relationship", in *Religion and Science: Pathways to Truth*, Walter Shropshire, Jr. and Craig C. Hill (Wesley Ministry Network, 2008)

JUDAEO-CHRISTIAN WRITERS DEVELOPED THE CONCEPT OF *LIBER NATURAE*, THE “BOOK OF NATURE”

Biblical writers long ago asserted that we could know God through Nature:

“The heavens declare the glory of God;
the skies proclaim the work of his hands.
Day after day they pour forth speech;
night after night they reveal knowledge.” (Psalm 19)

- **Augustine** (354-430): “...consider the whole of creation, regarding God as its author, by reading so to speak in the great book of nature (*magnus liber naturae rerum*)” [cf. *Contra Faustum*, 32, 20]
- **Hugh of St. Victor** (1096-1141): “...the whole of this sensible world is like a book, written by the finger of God, being created by His power. And the individual creatures are like symbols or letters that are not invented in an arbitrary way by man, but ordained according to the will of God in order to demonstrate his wisdom” – [Didasc., VII, PL 176, 873].*



http://en.wikipedia.org/wiki/Hugh_of_Saint_Victor

CHRISTIANITY PROVIDED A PHILOSOPHICAL BASIS FOR A SCIENTIFIC WORLDVIEW

Philosophically, Christians (like Jews) believed that

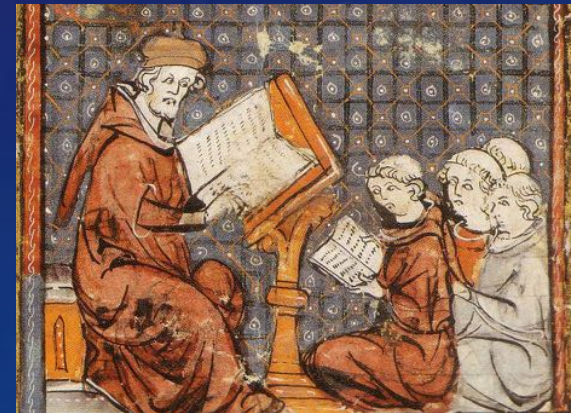
- God is a trustworthy Creator of a lawful cosmos
- The Universe is Creation, and is therefore good
 - Knowledge of the physical world is real knowledge, unlike Plato's view
 - The physical world is not the product of an evil demiurge, as Gnostics thought
- We should expect regularities, patterns, order, and law in creation, because God is faithful and consistent
- Reason is a valid tool for knowing God
- But human logic is limited, so we can't understand creation just by thinking about it, Greek-style – we must observe it
 - Empiricism and the Book of Nature – we must “read” the Book by observing and experimenting
 - Philosophy (science) is a gift from God, to read the Book of Nature
- Since we are created in God's image, we should expect ultimately to be able to understand creation

NEXT WEEK: HOW DID EUROPE EMERGE FROM ITS UNDERDEVELOPED STATE ~1000 CE?

Christianity fostered literature and learning in Europe, prior to 1000 CE

But the Church was having an even more profound effect than that, on the *psychology of all Europeans* --

- Next week, in Part II, we'll look at
 - ... how the culture of Europe started to change, around 1000 CE
 - ... and at the unique role of the Church in fostering these cultural changes
- We'll see why Henrich focuses on the Church's *rules about marriage* (the "Marriage and Family Program", or "MFP"), starting around 500 CE
 - ...and how the MFP destroyed Europe's ancient kinship structures (clans and tribes)
 - ...and that it required centuries for the MFP to take effect
 - ...and when **WEIRD** psychology started to appear
- We'll look at what was necessary for Modern Science to emerge
 - ...and touch on why it didn't arise in China, the Islamic world, or India
- We'll look at the downside:
 - The unhappy legacy of **WEIRD** culture's encounters with other cultures
 - Civilization and its discontents



Please join us next week
for the concluding presentation:

*How Christianity Laid the Foundation for Modern Science
...and many other things, such as human rights and individual freedom
Part II: the Work of the Church*

QUESTIONS FOR DISCUSSION

- Does it make sense that peoples' psychology affects, and is affected by, their social structures (such as families, marriage customs, religious practices, and social learning behavior)? Can you think of examples?
- Is literacy important? When, where, and why? In what kinds of societies is reading and writing important, or not important? What would cause a change in the importance of literacy?

BACKUP SLIDES

MUSLIMS CONSIDERED EUROPEAN CRUSADERS BARBAROUS, IN 12TH CENTURY

Muslim diplomat visiting Jerusalem in 1140 observed that:

- Judicial combat – “Judgment of God” – was repellent
- Medical treatments were crude and ineffective
- Behavior of women was scandalous

Saladin's forces recapture Jerusalem from the crusaders, 1187

(Credit: Leemage/Corbis via Getty Images)

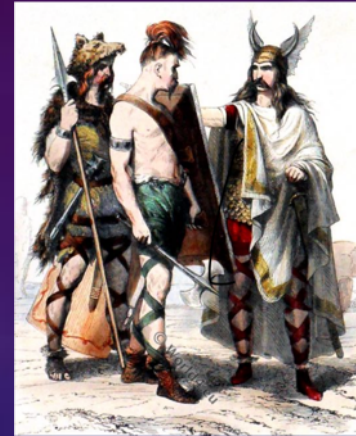


HENRICH'S CAUSAL CHAIN GOES LIKE THIS:

The Church's Marriage and Family Program (MFP) forms



MFP reduces kinship intensity



Reduced kinship intensity shifts psychological patterns in **WEIRD** ways



WEIRD psychological patterns lead to new social institutions

