CALIFORNIA INSTITUTE OF TECHNOLOGY
Course Syllabus

H/HPS/VC 185 (History, History and Philosophy of Science, Visual Culture)
ANGELS AND MONSTERS: COSMOLOGY, ANTHROPOLOGY AND THE ENDS OF THE WORLD

9 units (3-0-6)
Tuesdays and Thursdays, 1:00-2:25 PM
Location: TBA

Instructor: Professor Nicolas Wey-Gomez
Office: Dabney 307
Phone: x 2560
Email: nwey@caltech.edu
Office Hours: Tu. and Tr. 11:00 AM-12:00 NOON

This course explores late medieval European understandings of the origins, structure, and workings of the cosmos in the realms of theology, physics, astronomy, astrology, magic, and medicine. Attention is given to the position of humans as cultural creatures at the intersection of nature and spirit; as well as to the place of Christian Europeans in relation to non-Christians and other categories of outsiders within and beyond Europe. We will particularly focus on the knowledge system that anticipated race theory, racial discrimination and imperialism in the modern western imagination.

We will ask what conceptual tools – scientific and technical – Christian Europeans had at their disposal for explaining differences in nature and culture during the early phases of imperial expansion we know today as the Age of Exploration. Particular attention will be given to those links between nature and culture that anticipated modern racial ideologies in the West: how did fifteenth-century Europeans come to think that the peoples they were encountering in Atlantic Africa and the Americas were ‘by nature’ inferior to them?

In the course of addressing these questions, we will first read cosmogonic works that explained the origins of humanity within a divinely fashioned cosmos (Book of Genesis, Hesiod’s Works and Days, Plato’s Timaeus). We will then move on to philosophical, medical, geographical and other works that explained differences among humans in terms of the structure and workings of the universe. In so far as nature was believed to account for individual, gender, class, national, and other differences, we will examine varying definitions of nature in the tradition leading from Antiquity to the Age of Exploration. Our discussion of nature will focus on the manner in which soul and body were thought to interact in humans and, thereby, on the manner in which uniquely human behavior was supposed to come about. What did the soul-body compact have to do with “order” and “disorder” in individuals, in society, and in society’s relation to “barbarians”? On the subject of “barbarians,” we will examine ancient and medieval debates concerning the
inhabitability and character of the tropics and the antipodes, debates of special relevance to the early history of European expansion.

Having addressed such questions, we will consider the various connections between nature and culture in a series of late medieval works leading into the Age of Exploration – the Hereford Map (1300), Roger Bacon’s Opus majus (1266-1267), The Travels of Marco Polo (13th c. CE), and the letters of Christopher Columbus (1493-1504). Finally, we will reflect on the survival of such connections in contemporary media. In this vein, our course will end with a discussion of James Cameron’s science fiction film Avatar (2009). Other readings include the Book of Genesis, Hesiod, Hippocrates, Plato, Aristotle, Pliny, St. Augustine, Macrobius, al-Kindi, Averröes, and Cuneo.

AI-FREE ZONE

All use of AI Tools (ChatGPT, Bard, Bing Chat, Claude2, etc.) is STRICTLY FORBIDDEN, except for the purpose of locating information or research on topics related to our class. This course is about your own individual, and irreplaceable, ability to read and interpret written and visual texts closely, as well as about your ability to put your insights about these materials into words. Reading is not just passive data-intake. You are problem-solving as you read. And writing is not just a medium to communicate with readers. It is about giving proper body to your ideas through words. You are problem-solving as you write.

REQUIRED VIEWING:
James Cameron’s Avatar. Twentieth Century-Fox Corp., 2009.

REQUIRED PRIMARY READINGS:
Book of Genesis 1-11, King James translation.

Hippocratic, Sel. Airs, Waters and Places, selection (ca. 400 BCE)
Plato, Sel. from Republic IV, VI, VII, and IX; and Laws X (4th c. BCE)

Aristotle, Sel. from Physics, On the Heavens, On Generation and Corruption, Meteorologica, On the Soul, Nicomachean Ethics, Politics (4th c. BCE)
Pliny the Elder, Sel. from Natural History V and VI (1st c. CE)
Anonymous, Sel. from *Bestiary* (Ms. Bodley 764, 13th c. CE)
St. Augustine, Sel. from *City of God* (413-426 CE)
Macrobius, Sel. from *Commentary on the Dream of Scipio* (5th c. CE)
Averroës, Sel. from *Meteorologica* (12th c. CE)
Al-Kindī, Sel. from *Stellar Rays* (9th c. CE).
Roger Bacon, Sel. *Opus maius* IV (1266-1267)


Columbus, Letter to Santangel (1493)
Michele de Cuneo, Letter to Girolamo Annari (1495)

* YOU ARE RESPONSIBLE FOR PURCHASING READINGS MARKED BY ASTERISKS. You may use only the supplied or indicated editions of these texts. Most required and recommended materials are on our CANVAS website or on reserve at the library. All maps can be found through the MAP GALLERY link on CANVAS (you must log in through Caltech BOX).

IMPORTANT: While you are welcome to download all available digital files to your computer, they are to be used only for this class. You may NOT print or circulate any map images. You may consult me about possible exceptions.

COURSE REQUIREMENTS:
1. Participation (20% of final grade).
2. Short Paper, due Monday, 05 February *(750-1000 words; 30%).*
3. Midterm Take-Home Exam, due Friday, 09 February *(20%).*
4. Long Paper/PROJECT, due Monday, 11 March *(1500-1750 words; 30%).*

Although you may choose your final grade in this class to be "Pass" or "Fail," you will receive grades for individual requirements as part of my feedback on your performance. Each and all requirements – including participation – must be satisfactorily completed to merit a “Pass.”

PAPERS must be well thought-out, neatly printed, double-spaced, and turned in on time in MICROSOFT WORD format ONLY. You must include source and page numbers for your citations, as well as a BIBLIOGRAPHY at the end (Chicago Manual of Style or MLA formats). You are encouraged to meet with me ahead of time to discuss topics and work in progress. **You are expected to turn in a complete draft for your First Paper.** With my feedback on that draft, you must then rewrite that draft into a final draft to be graded. Papers that receive a C (or lower) must be rewritten.

As part of our program to promote and support your writing skills, you should take full advantage of the resources offered by Caltech’s Hixon Writing Center, which include feedback from writing specialists or peer tutors: [http://www.writing.caltech.edu/](http://www.writing.caltech.edu/).
PARTICIPATION entails active involvement in the discussion of the works: you should expect to be asked specific questions about readings and visual materials; you may be also be asked to prepare oral presentations or response papers about assigned readings; and you may be quizzed in class about the reading for that particular day. In order to facilitate class preparation and avoid too much reading in the middle of the week, you should prepare each week’s reading ahead of time. More than one unexcused absence will automatically lower final grade at the rate of one letter grade per absence. If you get an F for participation, you will be in danger of failing the class. Final grades of C (or lower) will ultimately be reported as a "Fail" on your transcript.

IN-PERSON INSTRUCTION and ZOOM PROTOCOLS: Lectures are an integral part of this course; they do not simply summarize assignments nor does web-based material substitute for attendance at lectures.

1. You must complete all assigned READINGS IN ADVANCE OF CLASS SESSIONS. You must have each ASSIGNED READING IN FRONT OF YOU for every class, whether in printed form or on your computer.
2. You must ARRIVE ON TIME to our class sessions, and, if we switch to ZOOM, you are required to KEEP YOUR LIVE VIDEO OPEN AT ALL TIMES. Keep your MIC MUTED unless you are prepared to speak. NO RECORDING is allowed of class sessions.
3. You should expect to TAKE NOTES in class. While checking the web for information relevant to our class is permitted, all other surfing, or checking email and social media are discourteous, detrimental to your learning and will NOT be tolerated. CELLPHONES ARE BANNED from this class.

INSTITUTE POLICY:
As Institute faculty, I am fully committed to promoting Caltech’s core values – diversity, equity, inclusion and accessibility. This course adheres to Institute policy on nondiscrimination, harassment, and accommodations for disabilities. If you require special accommodations, please talk to me as soon as possible. This course also upholds Institute policy regarding the honor code and, more specifically, plagiarism. Written assignments in the humanities should reflect your individual engagement with class materials and discussions, specifying information and views that are not your own. If you have any doubts concerning your use of ideas or sources at any time, please ask me for advice.

By enrolling in this class, you automatically acknowledge that you have read, and abide by, the Hixon Writing Center’s full guidelines and expectations on avoiding plagiarism (http://www.hss.caltech.edu/academics/avoiding-plagiarism). You also acknowledge that you will not use AI Tools, except as specified by instructor.
**SCHEDULE:**

**JANUARY**

**WEEK 1**

<table>
<thead>
<tr>
<th>TR 04</th>
<th>Introduction: Nature, Culture, and the Ends of the World</th>
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<tbody>
<tr>
<td></td>
<td>Hereford Map (1300) (MAP GALLERY: MEDIEVAL MAPPAMUNDI)</td>
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**Recommended Sources on the Hereford Map:**


**WEEK 2**

<table>
<thead>
<tr>
<th>TU 09</th>
<th>CULTURE’S BIG BANG THEORY AND THE CURSE OF HAM</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1. Book of Genesis, chapters 1-4, 6-9, and 11</td>
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<tr>
<td></td>
<td>3. Hereford Map and other medieval maps (MAP GALLERY: MEDIEVAL MAPPAMUNDI)</td>
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**Further Reading:**


**TR 11**

<table>
<thead>
<tr>
<th>FROM GOLD TO IRON: THE AGES OF HUMAN KIND</th>
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</thead>
<tbody>
<tr>
<td>1. Selection from Hesiod, <em>Works and Days</em> (ca. 700 BCE)</td>
</tr>
<tr>
<td>Lines 1-382</td>
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</tbody>
</table>
WEEK 3

THE ELEMENTS AND THE HUMAN BODY
TU 16
1. Hippocratic Airs, Waters and Places I-XXIV (ca. 400 BCE)
3. Hippocrates, Diagram based on The Nature of Man

Further Reading:

NATURE AS SOUL: PLATO'S PHYSICS
TR 18
1. Plato, Phaedrus (245c-250c) and Laws X (896e-899c).
2. Plato, Timaeus, Preface and pp. 3-15

WEEK 4

PLATO'S COSMOGONY
TU 23

NATURE, ART, AND THE SOUL: ARISTOTLE'S PHYSICS AND PSYCHOLOGY
TR 25
1. Aristotle, Sel. from Physics II, 1-3; IV, 1 and 4; On the Heavens IV, 3-4; I, 1-3; and On the Soul II, 1-3.
3. Ailly FIGURE 1 (Online Folder: Pierre d'Ailly YMAGO MUNDI 1483)

Further Reading:

WEEK 5

MON JANUARY 29 — SHORT PAPER - FIRST DRAFT DUE
WEEK 5 (continued)

ORDERLY SELVES, ORDERLY CITIES, AND WORLD ORDER: PLATO AND ARISTOTLE

<table>
<thead>
<tr>
<th>TU 30</th>
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<tbody>
<tr>
<td>1. Plato, Republic IV (427c-445e) and IX (588b-592b)</td>
</tr>
<tr>
<td>2. Aristotle, Sel. from Nicomachean Ethics II, 6 (1106b36-1107a8) and 8 (1108b11-26)</td>
</tr>
<tr>
<td>3. Aristotle, Politics I, especially I, 5-6; and Politics VII, 7</td>
</tr>
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Further Reading:


FEBRUARY

Week 5 (continued)

"TOYS FOR HERSELF AND MARVELS FOR US": 
THE OUTER BOUNDARIES OF NATURE AND CULTURE

<table>
<thead>
<tr>
<th>TR 01</th>
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<tbody>
<tr>
<td>1. Pliny, Sel. from Natural History II, 64-80 (pp. 295-323); V, 8 [pp. 249-253]; VI, 21-24 [pp379-409]; and VII, 1-2 [511-527].</td>
</tr>
<tr>
<td>2. Averröes, Sel. from Meteorologica.</td>
</tr>
</tbody>
</table>
| 3. ERATOSTHENES/PLINY (MAP GALLERY: ANCIENT WORLD MAPS) 
Hereford Map (1300) (MAP GALLERY MEDIEVAL MAPPAEMUNDI) 
Ailly FIGURE 4/Ailly FIGURE 5 (MAP GALLERY: Pierre d'Ailly YMAPGO MUNDI) |

Further Reading:


WEEK 6

MONDAY, FEBRUARY 05 SHORT PAPER - FINAL DRAFT DUE

PTOLEMY'S WORLD: A SCIENTIST MEASURES THE INHABITED WORLD


MAP GALLERY: PTOLEMY'S MAPS:
Ptolemy's first projection (1477 [2nd c. CE])
PTOLEMY'S FIRST PROJECTION (1478 [2nd c. CE])
PTOLEMY'S SECOND PROJECTION (1482 [2nd c. CE])
PTOLEMY'S 1ST PROJECTION (BEGGREN AND JONES)
PTOLEMY'S 2ND PROJECTION (BEGGREN AND JONES)
PTOLEMY'S LYBIA (BEGGREN AND JONES)
PTOLEMY'S INDIA (BEGGREN AND JONES)
PTOLEMY'S SOUTH ASIA (BEGGREN AND JONES)

Further Reading:
READING b: Selection from Introduction to Beggren and Jones 2000, 3-17, 31-41.

THE TORRID ZONE AND THE ANTIPODES:
A DEBATE OVER THE EXTENT OF LAND AND LIFE AROUND THE GLOBE
TR 08
1. Macrobius, Sel. from Commentary on the Dream of Scipio, Bk. II, Chaps. 5 and 9
3. CRATES (MAP GALLERY: ANCIENT WORLD MAPS)
   MACROBIUS/ 8th c. (MAP GALLERY: MEDIEVAL MAPPAEMUNDI)
   Ailly FIGURE 7/Ailly FIGURE 7a (MAP GALLERY: Pierre d'Ailly YMAGO MUNDI)
   PTOLEMY MAPS

Further Reading:

FRI FEBRUARY 09 — MIDTERM TAKE-HOME EXAM DUE

WEEK 7

THE BOOK OF NATURE:
FROM NATURE AS "COPY" TO NATURE AS "EXAMPLE"
TU 13
1. Sel. from Plato, Republic VI and VII (508a-b and 514a-517c, respectively)
2. Macrobius, Sel. from Commentary on the Dream of Scipio, Bk. I, Chaps. 8, 14, and 22

Further Reading:
   a. St. Augustine, City of God against the Pagans XXI. 1-10, pp. 3-69 (1986)
   b. Sel. from the Anonymous Bestiary (The Lion, The Dragon, The Basilisk)
**LIGHT, MAGIC, AND CAUSATION IN THE NATURAL WORLD: A HANDBOOK FOR THE OCCULT SCIENCES**

| TR 15 | 1. Sel. from Al-Kindī, *Stellar Rays* (Chapters 1, 2, 3, 5 and 6) |

**Further Reading:**


**WEEK 8**

**ROGER BACON AND THE ENDS OF THE WORLD**


**Further Reading:**


**TR 22**

**TOURISTS OF THE MIDDLE AGES**

| 1. Marco Polo, Sel. from *Travels of Marco Polo*, 13th c., pp. ix-xvii, 13-30, 209-224, and 230-286 (online) |
| 2. HEREFORD MAP (1300) / EBSTORF MAP (1300) (MAP GALLERY: MEDIEVAL MAPPAEMUNDI) |
Further Reading:

**WEEK 9**

<table>
<thead>
<tr>
<th>TU 27</th>
<th>MARTIN BEHAIM'S GLOBE (1492)</th>
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<tbody>
<tr>
<td>1.</td>
<td>MARTIN BEHAIM'S GLOBE 1492 (MAP GALLERY: MARTIN BEHAIM'S GLOBE)</td>
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**EUROPE'S ENCOUNTER OF THE AMERICAS**

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<tr>
<th>TR 29</th>
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<tbody>
<tr>
<td>1.</td>
<td>Christopher Columbus, Letter to Luis de Santángel (1493)</td>
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<tr>
<td>2.</td>
<td>Capitulations of Santa Fé (1492)</td>
</tr>
<tr>
<td>3.</td>
<td>voyage1_main/voyage1inset (MAP GALLERY: COLUMBUS'S ROUTES)</td>
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Further Reading:
   a. Christopher Columbus, Letter of the Third Voyage (1498)

**MARCH**

**Week 10**

<table>
<thead>
<tr>
<th>TU 05</th>
<th>A TAXONOMY OF AMERINDIAN NATURE AND CULTURE</th>
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<tbody>
<tr>
<td>1.</td>
<td>Michel de Cuneo, Letter to Girolamo Annari (1495)</td>
</tr>
<tr>
<td>2.</td>
<td>voyage2_main/voyage3inset (MAP GALLERY: COLUMBUS'S ROUTES)</td>
</tr>
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<tr>
<th>TR 07</th>
<th>AVATARS IN CONTEMPORARY CULTURE</th>
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<tr>
<td>1.</td>
<td>Cameron’s <em>Avatar</em> (2009)</td>
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Further Reading:

**Study Period and Finals Week**

**MONDAY MARCH 11—— LONG PAPER/PROJECT DUE**