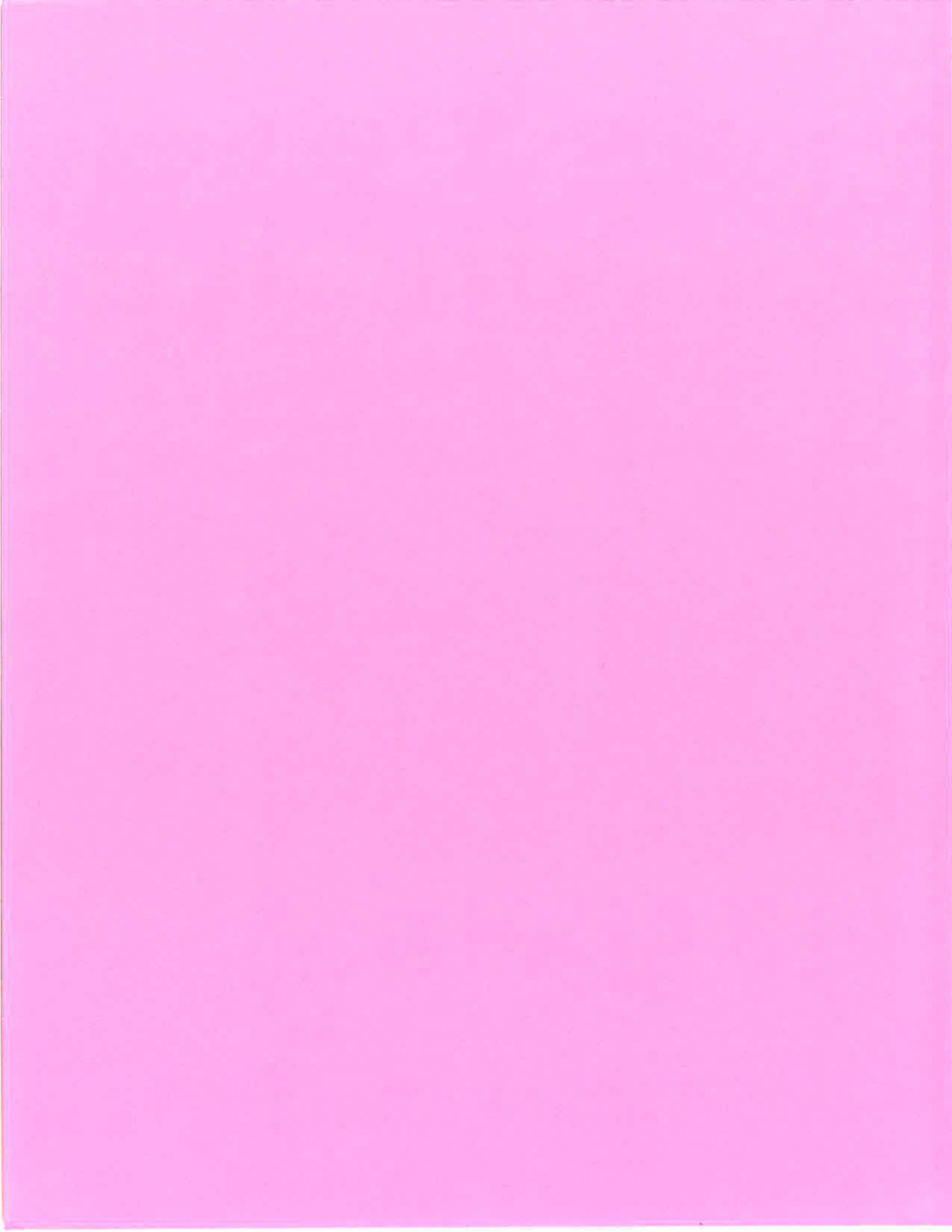


## **Abstract of Sabbatical Leave to be**

### **Submitted to the Board of Trustees**

During my sabbatical year 2015-2016 I completed three films on Jainism, an ancient Indian tradition, and three films on the future of philosophy (viewing time for all films totaled approximately 40 minutes). Two of the six films have over 10,000 views already on YouTube. In addition to producing these films I wrote four separate monographs, one on a brief introduction to the Jain tradition, one on the future of philosophy including virtual reality and A.I., and the last two were annotated guides to accompany these two topics. For my research I read 20 academic books, took copious notes on them and wrote the annotations. All of the sabbatical writings are available to students for free as PDFs and also for free as interactive Apple iBooks. This sabbatical material (monographs and films) will be incorporated into my courses and will be accessible to my colleagues.





# **Sabbatical Report**

*Fall 2015 – Spring 2016*

By Andrea Diem, Ph.D.

Department of Philosophy

Mt. San Antonio College

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**PART ONE:** Sabbatical Project for Fall Term 2015 on Jainism

**PART TWO:** Sabbatical Project for Spring Term 2016 on Future of Philosophy

**PART ONE:**

**Sabbatical Project: Fall Term 2015**

**Web Address to Jain Project:** (films and writings)

<http://sites.google.com/site/thejainpath>

**Jain Films:** (total viewing time 17:33 min)

1. *The Story of Mahavira* (7:28 min)
2. *The Two Minute Warning: Jainism and the Practice of Ahimsa* (3:54 min)
3. *Anekantavada: The Jain Version of Multiple World Views* (5:58 min)

**Jainism Monographs:** (104 pages)

*The Jain Path: An Annotated Guide*

*A Brief Introduction to Jainism*

**Apple Interactive Textbook:** (free download on iTunes)

<https://itunes.apple.com/us/book/jainism/id1145257396?mt=11>

**PART TWO:**

**Sabbatical Project: Spring Term 2016**

**Web Address to Future of Philosophy Project: (films and writings)**

<http://sites.google.com/site/theavatarprojectbookandfilm>

**Future of Philosophy Films: (total viewing time 22:30 min)**

1. *Plato's Camera: Paul Churchland's Neural Theory of Ideal Forms* (5:23 min)
2. *The Big Kahuna's Dilemma: How to Live in a Darwinian Universe* (10:12 min)
3. *The Invasion of Superintelligent A.I.: The Digital Aliens are Among Us* (6:43 min)

**Future of Philosophy Monographs: (125 pages)**

*Einstein's Wastebasket: The Future of Philosophy Annotated Guide*

*Avatar Project: Virtual Reality, A.I., and the Future of Education*

**Apple Interactive Textbook: (free download on iTunes)**

<https://itunes.apple.com/us/book/future-philosophy/id1145153442?mt=11>

## **Abstract of Sabbatical Leave to be**

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During my sabbatical year 2015-2016 I completed three films on Jainism, an ancient Indian tradition, and three films on the future of philosophy (viewing time for all films totaled approximately 40 minutes). Two of the six films have over 10,000 views already on YouTube. In addition to producing these films I wrote four separate monographs, one on a brief introduction to the Jain tradition, one on the future of philosophy including virtual reality and A.I., and the last two were annotated guides to accompany these two topics. For my research I read 20 academic books, took copious notes on them and wrote the annotations. All of the sabbatical writings are available to students for free as PDFs and also for free as interactive Apple iBooks. This sabbatical material (monographs and films) will be incorporated into my courses and will be accessible to my colleagues.

## **Copy of Sabbatical Application Proposal**

### **Sabbatical Project**

**Submitted by Dr. Andrea Diem**

**Project to be completed in the 2015-2016 school year**

### **Abstract:**

In the sabbatical year 2015-2016 I will write two monographs of approximately 100 pages each (one each semester) on the topics of Jainism and the Future of Philosophy.

Each monograph will be available in print form (not for profit) and for free as an interactive online text via Apple iTunes (also available for various tablets as a pdf). In the interactive version there will be embedded three original films (accessible on youtube as well) that I will create using iMovie. In both the print and online versions an annotated bibliography of ten books utilized for the research will be included. All of this material will be incorporated into my courses and it will be made available to my colleagues.

**Objective:**

Having taught for 24 years at Mt. Sac, I have noticed that there is an absence of some important core materials in World Religions (Philosophy 15) and in Introduction to Philosophy (Philosophy 5). Since these two subjects are what I primarily teach I would like to fill these gaps and provide my students (and my colleagues) with free, interactive, online monographs (with hard copy versions also available) that are more or less absent in my field of study. Specifically, there is little material out there on the religion of Jainism. Certainly, one can find reference articles on it but there is virtually no user-friendly, free Jain monograph available. Over fifteen years ago I noticed a similar need for a Sikh monograph and so in 1999 on a sabbatical I wrote a 100 page piece on this tradition. As a free downloadable text on iTunes, my Sikh monograph was the single most popular work on Sikhism in North America for the past two years. My objective for the first semester while on sabbatical is to write a monograph (approximately 100 pages) on Jainism, that like the Sikh monograph, makes a difference in my field and it is available to my students, to my colleagues' students, and to all worldwide. *I do not intend to have a proprietary interest in the monograph; it will be Mt. Sac's property.*

In addition to a monograph on Jainism, I will create 3 five minute films on the tradition using iMovie and these films will be embedded within the interactive monograph and also available on youtube. In preparation for the project I will conduct extensive research, which will include reading ten texts on the subject and producing an annotated bibliography on them to be included at the end of the monograph.

Project one will include the following:

- Paperback monograph on Jainism approximately 100 pages total
- Online, interactive monograph on Jainism
- Three films on Jainism approximately 5 minutes each
- Extensive research including reading ten academic texts on the subject
- Annotated bibliography of the ten texts

For the second semester on sabbatical I would like to follow the same procedure (free, online interactive monograph with print version available, 3 five minute films, an annotated bibliography of ten texts on the subject) but for this one I am focusing on a much needed subject in my Introduction to Philosophy course. The focus for this semester will be on the Future of Philosophy. While I cover this topic in my course there is very little quality literature on it. I would like to change this. This interactive monograph (approximately 100 pages) would explore several topics: the field of neuro-philosophy and how a deep understanding of the brain will impact our understanding of ourselves, of free will, of ethics, etc.; technology and its impact on education and the world; artificial intelligence and its impact on humanity; etc. *I do not intend to have a proprietary interest in the monograph; it will be Mt. Sac's property.*



Project two will include the following:

- Paperback monograph on the Future of Philosophy approximately 100 pages total
- Online, interactive monograph on the Future of Philosophy
- Three films on this topic approximately 5 minutes each
- Extensive research including reading ten academic texts on the subject
- Annotated bibliography of the ten texts

**The Value and Benefit of the Sabbatical Project:**

**Who Will Benefit from this Project?**

**The Students, the Department, the College, and the Applicant:**

The Students: First and foremost, the students in my courses will greatly benefit from this project. Available to them will be free, interactive material that will enhance their understanding of the religion of Jainism and the Future of Philosophy. Three original films will be made for Philosophy 15 and three for Philosophy 5. When students watch a film in class with Mt. San Antonio College mentioned as its sponsor it may give them a sense of pride being a student at such an innovative college. The annotated bibliography is also of value to the students, offering them short summaries of 20 academic books in the field of Philosophy and Religion.

The Department: We are soon to offer an Associate of Arts Degree (AAD/AA-T) in Philosophy at Mt. San Antonio College. Creating original material in this field places

Mt. Sac's Philosophy Department at the forefront of research and innovation. This may add to our department's reputation and ability to attract inspiring minds to this discipline.

Furthermore, the work from this project will be made available to my colleagues to be used in their courses. At our fall 2016 department meeting I will request an opportunity to share with them the sabbatical project and how they can access the material for their own courses. I will also demonstrate the interactive aspect of the monographs and display the films for them. This way they too may appreciate the value of the project for their courses.

The College: When independent research, writing and film making are incorporated into the classroom it can greatly enhance the quality of education the students receive and can add to the reputation of the department and the educational institution. Since these materials will be available worldwide on the Internet, academics from all over the world will connect these projects to Mt. San Antonio College and, hopefully, this will add to the academic reputation of our college.

The Applicant: Full time teaching allows for little time for independent research and writing. To produce an academic project of worth takes a lot of time and energy. This sabbatical year will be of great value to be personally since it will allow me an opportunity to concentrate on two topics I am passionate about and to produce needed material for my students. Since this material will be for free it will help the students financially and this is important to me. Moreover, there is nothing more gratifying to me

as a professor than producing works that my colleagues can also use. And certainly contributing to the academic body of knowledge is a reward in and of itself.

### **Rationale for the Project:**

As indicated in the objective to this proposal there is indeed a need for these two projects.

Let me explain with more depth why:

*Jainism:* Jainism is a 2,500 year religious tradition with great beauty, known for its philosophical position of ahimsa (non-violence). It was this tradition which influenced Gandhi's non-violent approach in his quest to free India from British control. And indirectly this tradition impacted Martin Luther King, as King was a scholar of Gandhi's work. Yet, despite its philosophical and historical significance, Jainism does not have a lot of available material on it, and it certainly has little to no free academic work on it.

The goal is not to write a traditional textbook on this religion but to produce an interactive work that incorporates films (specifically made for the project), embedded images, and even fun review questions at the end of each section which students can answer in the interactive text and receive immediate feedback to see if they got it right.

*Future of Philosophy:* Philosophy has a great deal of material available on philosophers of the past, from ancient, pre-Socratic philosophers to Socratic and Medieval philosophers to philosophers from the Enlightenment and even modern periods. But there

is relatively very little literature available in term of the future of philosophy. My intention is to examine several fascinating areas:

- the emergence of new technology
- artificial intelligence and the implication of what this means for humankind
- how the digital world will transform education
- how to incorporate science into the humanities
- the cutting-edge field of neuroscience which offers us new insights about human consciousness which has far reaching implications in ethics.

Thus, for this project I will not focus on philosophers of the past but investigate where we may be heading and the philosophical implications of it all. Hopefully, students will see philosophy not as an antiquated subject but one which promotes new thinking in modern times.

## **TIMELINE: Week by Week Schedule**

There are two projects to complete in the two semesters.

Each project includes 6 weeks of research and writing annotated bibliographies, 6 weeks of writing the monograph, 3 weeks of film making, and 1- 2 weeks of developing the interactive aspect of the project.

**Aug. 24- 30**

**Research: Reading Jain Biography and Writing**

**Annotated Bibliography**

A Comparative Study of Jainism and Buddhism by Brahmachari Prasad

Jaina Path of Purification by Padmanabh S. Jaini

**Aug. 31 – Sept. 6**

**Research: Reading Jain Biography and Writing**

**Annotated Bibliography**

Jainism: An Introduction (I.B.Tauris Introductions to Religion) by Jeffery D. Long

Jainism and Ecology: Nonviolence in the Web of Life (Religions of the World and Ecology) by Christopher Key Chapple (Editor)

**Sept. 7-13**

**Research: Reading Jain Biography and Writing**

**Annotated Bibliography**

The Jains (The Library of Religious Beliefs and Practices)  
by Paul Dundas

Life Force : The World of Jainism by Michael Tobias

**Sept. 14-20**

**Research: Reading Jain Biography and Writing**

**Annotated Bibliography**

Mahavira: Prince of Peace by Ranchor Prime (Author), B.G. Sharma (Illustrator)

The Scientific Foundations of Jainism (Lala S.L. Jain Research Series) (Lala Sunder Lal Jain Research Series

by K.V. Mardia

**Sept. 21-27**

**Research: Reading Jain Biography and Writing**

**Annotated Bibliography**

Jaina Sutras, Part 1  
(SACRED BOOKS OF THE EAST VOL. 22)  
Translated from the Prakrit by *Hermann Jacobi*, 1884  
TWO JAIN SACRED TEXTS, THE AKARANGA AND KALPA  
SUTRAS.

**Sept. 28-Oct. 4**

**Research: Reading Jain Biography and Writing**

**Annotated Bibliography**

Jaina Sutras, Part 2  
(SACRED BOOKS OF THE EAST VOL. 45)  
Translated from the Prakrit by *Hermann Jacobi*, 1884

TWO JAIN SACRED TEXTS, THE UTTARADHYAYANA SUTRA  
AND SUTRAKRITANGA.

<b>Oct. 5-11</b>	Writing Introduction to Jain Monograph
<b>Oct. 12-18</b>	Writing Jain Monograph Section 1
<b>Oct. 19- 25</b>	Writing Jain Monograph Section 2
<b>Oct. 26-Nov. 1</b>	Writing Jain Monograph Section 3
<b>Nov. 2-8</b>	Writing Jain Monograph Section 4
<b>Nov. 9-15</b>	Writing Jain Monograph Conclusion
<b>Nov. 16-22</b>	Creation of Film 1
<b>Nov. 23-29</b>	Creation of Film 2
<b>Nov. 30-Dec. 6</b>	Creation of Film 3
<b>Dec. 7-13</b>	Creation of Apple iBook as Interactive Monograph
<b>Dec. 14-20</b>	Creation of Apple iBook as Interactive Monograph

**Project One Completed**

**Winter Break**

Feb. 22- 28

**Research: Reading Philosophy Biography and Writing**

**Annotated Bibliography**

Brain Trust by Patricia Churchland

The Cambridge Handbook of Artificial Intelligence by Keith Frankish (Editor), William M. Ramsey (Editor)

Feb. 29-March 6

**Research: Reading Philosophy Biography and Writing**

**Annotated Bibliography**

The Future of the Mind by Michio Kaku

How to Create a Mind by Ray Kurzweil

March 7-13

**Research: Reading Philosophy Biography and Writing**

**Annotated Bibliography**

The Innovators by Walter Issacson

Phi: A Voyage from the Brain to the Soul by Giulio Tononi

March 14-20

**Research: Reading Philosophy Biography and Writing**

**Annotated Bibliography**

Plato's Camera: How the Physical Brain Captures a Landscape of Abstract Universals by Paul M. Churchland



**March 21-27**

**Research: Reading Philosophy Biography and Writing**

**Annotated Bibliography**

Seeing Things as They Are: A Theory of Perception by John Searle

Superintelligence: Paths, Dangers, Strategies by Nick

Bostrom

**March 28-April 3**

**Research: Reading Philosophy Biography and Writing**

**Annotated Bibliography**

The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology, and Philosophy of the Human Future by Max More (Editor), Natasha Vita-More (Editor)

**April 4-10**

Writing Introduction to Future of Philosophy Monograph

**April 11- 17**

Writing Future of Philosophy Monograph Section 1

**April 18-24**

Writing Future of Philosophy Monograph Section 2

**April 25-May 1**

Writing Future of Philosophy Monograph Section 3

**May 2-8**

Writing Future of Philosophy Monograph Section 4

**May 9-15**

Writing Future of Philosophy Monograph Conclusion

**May 16-22**            Creation of Film 1

**May 23-29**            Creation of Film 2

**May 30-June 5**        Creation of Film 3

**June 6-12**            Creation of Apple iBook as Interactive Monograph

**June 13-17**          Creation of Apple iBook as Interactive Monograph

**Project Two Completed**

**Sabbatical Project Accomplished**

**Aug. 2016**            Sabbatical turned into Mt. San Antonio College

## **Bibliography for Monograph on Jainism: Ten Books**

A Comparative Study of Jainism and Buddhism by Brahmachari Prasad

Jaina Path of Purification by Padmanabh S. Jaini

Jaina Sutras, Part 1

(SACRED BOOKS OF THE EAST VOL. 22)

Translated from the Prakrit by *Hermann Jacobi*, 1884

TWO JAIN SACRED TEXTS, THE AKARANGA AND KALPA SUTRAS.

Jaina Sutras, Part 2

(SACRED BOOKS OF THE EAST VOL. 45)

Translated from the Prakrit by *Hermann Jacobi*, 1884

TWO JAIN SACRED TEXTS, THE UTTARADHYAYANA SUTRA AND SUTRAKRITANGA.

Jainism: An Introduction (I.B.Tauris Introductions to Religion) by Jeffery D. Long

Jainism and Ecology: Nonviolence in the Web of Life (Religions of the World and Ecology) by Christopher Key Chapple (Editor)

The Jains (The Library of Religious Beliefs and Practices) by Paul Dundas

Life Force : The World of Jainism by Michael Tobias

Mahavira: Prince of Peace by Ranchor Prime (Author), B.G. Sharma (Illustrator)

The Scientific Foundations of Jainism (Lala S.L. Jain Research Series) (Lala Sunder Lal Jain Research Series) by K.V. Mardia

## **Bibliography for Monograph on Future of Philosophy: Ten Books**

Brain Trust by Patricia Churchland

The Cambridge Handbook of Artificial Intelligence by Keith Frankish (Editor), William M. Ramsey (Editor)

The Future of the Mind by Michio Kaku

How to Create a Mind by Ray Kurzweil

The Innovators by Walter Issacson

Phi: A Voyage from the Brain to the Soul by Giulio Tononi

Plato's Camera: How the Physical Brain Captures a Landscape of Abstract Universals by Paul M. Churchland

Seeing Things as They Are: A Theory of Perception by John Searle

Superintelligence: Paths, Dangers, Strategies by Nick Bostrom

The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology, and Philosophy of the Human Future by Max More (Editor), Natasha Vita-More (Editor)

**Academic Reference List:**

Professor of Philosophy Sam Wolde-Yohannes , ext. 3146

Professor of Sociology and Department Chair Marlene Gallarde, ext. 3054

Professor of Philosophy Linda Rillorta, ext. 3919

Professor of Philosophy David Lane, ext. 4593

Dean of Humanities Jim Jenkins, ext. 4570

Assistant Dean of Humanities Dr. Jeanne-Marie Velickovic, ext. 4570

**Letters of Recommendation:**

1. Dr. Samuel Wolde-Yohannes
2. Dr. Linda Rillorta
3. Dr. David Lane
4. Marlene Gallarde, Dept. Chair
5. Jim Jenkins, Dean of Humanities

**Appendix to Sabbatical Application for Andrea Diem**

**Questions from the Salary and Leaves Committee:**

1. *Closed captioning is required; please include this in your proposal.*
  2. *What makes these monographs different than existing texts?*
  3. *What makes this monograph more "user friendly" than existing material?*
  4. *What makes the films interactive?*
  5. *What experience/training do you have making films?*
  6. *Provide more detail regarding what will be included in the videos.*
  7. *Are there additional courses that can use these materials beyond those mentioned in your proposal?*
-

## **Responses to Salary and Leaves Committee:**

### **1. Closed Caption:**

Yes, the films will have closed caption. All of the films I show in my classes are closed caption. I realize that this is a requirement in education. I will include a statement in the sabbatical proposal indicating that the films will all be closed caption.

### **2. What makes these monographs different than existing texts?**

#### Jain monograph:

While there are some books on Jainism and Jain primary literature available I would not assign these for my students. These Jain texts tend to be massive books that would take a whole semester to go through and are not designed to be used in a World Religion course where we only have 1-3 weeks to cover each religion. The Jain monograph will be approximately 100 pages and so it will be very feasible to read in a short time in Philosophy 15 when covering this fascinating religion. Furthermore, all too often books in religion are not objective, scholarly works but primarily from the believer's view point. This monograph will be an objective, scholarly piece. Finally, most texts available today on Jainism are prohibitive in terms of cost. However, the Jain monograph will be free and available worldwide.

### The Future of Philosophy monograph:

When one checks for books under the subject the future of philosophy on amazon virtually one book (a collection of essays edited by Brian Leiter titled *Future for Philosophy*) comes up and it is nearly 40 dollars and 350 pages. The monograph I plan to write will be free and, as with the Jain monograph, available to all worldwide. Instead of a large tome the monograph will be approximately 100 pages and cover cutting edge subjects in my field of study. Unlike Leiter's text which covers topics such as Linguistics, Hermeneutics, Existentialism, this monograph will address artificial intelligence, neuro ethics, the future of education in the digital world, etc.

### **3. What makes this monograph more "user friendly" than existing material?**

There are several reasons the monographs will be more "user friendly." First of all, both monographs will be free and this alone makes them more "friendly" to the reader. The monographs will not be massive volumes but precise, scholarly works around the 100 page range. Since the material will be available online as an Apple iBook with embedded original films, copyright free images, questions with instant feedback whether the answers were correctly completed, the reader/viewer should appreciate the reading and viewing experience. Most books are one dimensional but these two monographs will be multi-dimensional. With Apple iBooks one can even embed 3D imagery.



#### **4. What makes the films interactive?**

The films will be embedded within the online monographs themselves so in this sense they are interactive. After one reads a chapter in the monograph at the end of it one can instantly click on a film that correlates to it. One can also be asked questions within the monograph about the film and one can immediately receive feedback if one answered these questions accurately.

#### **5. What experience/training do you have making films?**

This November I was asked to be the plenary speaker at the QANSAS (Quantum and Nano Computing Systems and Applications) conference on Consciousness in Agra, India. For this conference, to go along with my presentation, I created four films (approximately 3-4 minute each) on the topic of Consciousness. The film topics were: *Plato's Cave*; *Francis Crick's Cerebral Orchestra*; *the User Interface*; *Near Death Experiences*. For each of the films, I wrote the script, narrated it, selected the copyright free music, embedded the corresponding imagery, designed the transitions, etc. To create all four films it took about 6 months of work using iMovie on my Mac. Though iMovie produces very successful films, before the commencement of the sabbatical year I plan to purchase Final Cut Pro and Pinnacle 17.0 to even further upscale production value.

#### **6. Provide more detail regarding what will be included in the videos.**

For this sabbatical I will produce six films approximately 5 minutes each. Each film will cover topics that relate to the material.

### Jain monograph:

For the Jain monograph I will create three films with closed caption:

- Film one will explain the Jain principle on Ahimsa
- Film two will introduce the Jain teacher, Mahavira, and his teachings
- Film three will investigate the Jain religion itself as it is currently practiced

### Future of Philosophy monograph:

For the Future of Philosophy monograph I will also create three films with closed caption:

- Film one will be on the topic of Nick Bostrom's theory of Superintelligence
- Film two will cover neuro philosophy
- Film three will be on digital philosophy

### **7. Are there additional courses that can use these materials beyond those mentioned in your proposal?**

While the main objective of the sabbatical is to fill a gap in terms of literature available in World Religions (Philosophy 15) and in Introduction to Philosophy (Philosophy 5), several other courses can benefit from these projects.

Jain material:

Besides Philosophy 15 here is a list of courses that can potentially benefit from the Jain material:

- **Philosophy 12:** This monograph and the corresponding films will be very useful not only in World Religions but also in Ethics. Jainism is known worldwide for its admirable ethical position of Ahimsa. In Philosophy 12 I spend a lesson plan on this principle and highlight the Jain position. The Jain material would fit nicely here.
- **Philosophy 5:** In Webcms for Introduction to Philosophy the course outline indicates that this course covers “Ethics: Eastern and Western perspectives.” In addition, the first measurable objective for this course reads: “Analyze the ideas of the major philosophers, primarily in the Western tradition, although including some Eastern philosophers as well.” Thus, this monograph and related films, which discuss the philosophical ideas of the Eastern teacher Mahavira, can easily be incorporated into this course.
- **Sociology 7:** Sociology of Religion (Sociology 7) may also find this monograph very useful for course readings, as I plan to utilize the sociology of religion methodology (explaining the origins of religion in a social context) when covering Jain history and origins.

- **History 10:** History of Pre-modern Asia (History 10) covers the philosophical ideas of South East Asia and Jainism, along with Buddhism, would certainly fit here.
- **History 3:** World History (History 3) also covers Indian philosophy and history and this material would possibly work here as well.

Future of Philosophy material:

Besides Philosophy 5 here is a list of courses that can potentially benefit from this material:

- **Philosophy 8:** Critical Thinking (Philosophy 8) could utilize this monograph in the course readings. The monograph will address topics, such as the scientific method and where we are going in terms of thinking and education, which are important topics to cover in a Critical Thinking course.
- **Humanities 1:** In Humanities, according to Webcms, one should “emphasize creating an awareness of human expression as it occurs in a historical and philosophical context.” Moreover, one examines “human values” and what it means to be human. In this sense this monograph would fit in this course. What

humanity is about and where we are heading in a digital age are of utmost importance and this work hopes to address these topics.

*Note to the Sabbatical Committee:* Hopefully, I have offered some clarification about these projects. If there are any further questions that I need to address please do not hesitate to ask me.

## Statement of Purpose

*Fall Term 2015:*

During the sabbatical for the fall term I accomplished five main tasks:

**Jain Annotated Guide:** For the research on Jainism I read 10 academic books on this tradition and for each text I wrote up an annotated bibliography. The reading of these texts and the articles that I wrote on them occupied a large portion of my fall term. These ten articles added up to over 50 pages of published research and make up *The Jain Path: An Annotated Guide*.

**Jain Films:** Three films were also produced on this tradition. One focused on the life of Mahavira and as of today (August 2016) it has about 11,000 views on YouTube. This is one of the only academic films on the life of Mahavira on the Internet. The second film is on the Jain principle of Anekantavada, one of the main philosophical ideas of Jainism. Today there are about 1,100 views on YouTube. The third film is on the Jain concept of Ahimsa and this film (titled *The Two Minute Warning*) has been the most successful in terms of viewing (one can say in a way it has gone “viral”). It has almost 12,000 views as of today (August 2016). The production time for all three films took over 6 weeks of work and the three films together added up to just over 17 minutes of viewing time. These films are all on a YouTube channel: *Neuralsurfer Vision*.

**Jain Introduction:** In addition to the annotated guide and the Jain films, I also wrote a monograph to introduce my students to this ancient tradition of India. This text will be

part of my course for years to come, and hopefully utilized by my colleagues as well. The title of this text is *Ahimsa: A Brief Guide to Jainism*.

**Apple Books:** The written materials on Jainism are not only available as a free PDF but also as an interactive Apple iBook downloadable for free.

<https://itunes.apple.com/us/book/jainism/id1145257396?mt=11>

**Web Development:** To make the writings and films easily accessible to my students and others for free I developed a Web page on Jainism. Students can access the Web page and from there open up easy to read PDF files on the two Jain books, the interactive Apple iBook on Jainism, and the three Jain films. Here is the Web page address:

<http://sites.google.com/site/thejainpath>.

*Spring Term 2016:*

During the sabbatical for the spring term I accomplished five main tasks:

**Future of Philosophy Annotated Guide:** For the research on the future of philosophy I read 10 academic books and for each I wrote up an annotated bibliography. The reading of these texts and the articles that I wrote on them occupied a large portion of my spring term. Four of the ten books were on Audible.com and it was enjoyable to be given an opportunity to listen to them. The ten articles that I wrote added up to over 80 pages of published research and make up *Einstein's Wastebasket: The Future of Philosophy Annotated Guide*.

**Future of Philosophy Films:** Three films were also created in the spring term. One was on Nick Bostrom's theory of Superintelligence. As of today (August 2016) it has about 500 views on YouTube. The second film is on Paul Churchland's neural philosophy and it has just under 300 views. And the last film for this sabbatical project is on evolution, digital philosophy and where we are heading. This film has approximately 500 views. The production time for all three films took over 6 weeks of work and the three films together added up to over 22 minutes of viewing time. These films are all on the YouTube channel: *Neuralsurfer Vision*.

**Future of Philosophy Introduction:** In addition to creating the films and annotated guide, I wrote an introduction work on this topic. It investigates virtual reality, A.I., and the future of education. The title of this text is the *Avatar Project: Virtual Reality, A.I., and the Future of Education*.



**Apple Books:** The written materials on the future of philosophy are not only available as a free PDF but also as an interactive Apple iBook downloadable for free.

<https://itunes.apple.com/us/book/future-philosophy/id1145153442?mt=11>

**Web Development:** A Web page was also created in the spring term for the future of philosophy project. On the Web page one can access the free PDF files for the two written works, the interactive Apple iBook, and the three films on the topic. Here is the

Web page address: <https://sites.google.com/site/theavatarprojectbookandfilm>.

## Research Design and Methods of Investigation

During the fall term in preparation for writing the Jain monograph I read 10 academic books on the Jain tradition. These books ranged from reading the ancient Jain scriptures to in-depth histories of Jainism to investigating the Jain connection to environmentalist themes. I started my first book the last week of August and it took until early November to complete all ten. The reason it took so long is that I wrote copious notes on each book and then produced an article on each text. Many of these articles I submitted for publication on an academic website, *Integralworld.net*. I decided to merge all of the ten annotations together to form a separate monograph, which is titled *The Jain Path: An Annotated Guide*. This annotated guide can offer the reader a synopsis of all of the major academic sources on this religion and hopefully serve a valuable role in grasping this tradition.

There is no doubt that reading these ten books for my research was essential for the film production. One of the books I read was on the life of Mahavira, the main founder of the Jain tradition. This book inspired me to write the script for the film *The Story of Mahavira* that I produced and the film has been well received on YouTube. Another book I read by author Michael Tobias served as the inspiration for the film *The Two Minute Warning*. As of today (August 2016) this film has nearly 12,000 views. The last Jain film I produced was on the Jain principle of Anekantavada, the idea of multiplicity of views (literally, not one sided); this was such an important theme that came up in all of the readings. This film did not go viral yet on YouTube as the other two did, but I suspect it

is because the title of the film, *Anekantavada*, may be so unfamiliar to many viewers.

This month (August 2016) I put the film up on YouTube under a different title: *The Jain View of Religious Tolerance*, hoping that the viewing numbers will rapidly increase. In just two days under the new title it received about 150 views. Overall, this was one of my favorite of the three films in terms of making it.

*The Brief Introduction to Jainism* monograph was written after the annotated guide material and the creation of the three films. Having completed all of the research on Jainism the writing of this monograph flowed easily. I wanted this text to be a simple yet insightful guide to understanding the Jain tradition.

After the winter break I started the research on the future of philosophy. The books here examined a variety of futuristic topics, including A.I. and superintelligent A.I., the Transhumanist movement, Singularity, advancements in neuro-biology and bio-technology, and, of course, computer technology. Again, the reading and note taking occupied a great portion of my time. I was not skimming the books but reading them very thoroughly and spending time analyzing the material within them. Four of the ten books were purchased on Audible.com and I was able to listen to them; I immensely enjoyed this. After writing up the articles on each book I submitted them to *Integralworld.net* for publication. I also decided to create an annotated guide monograph on the readings, so that others could benefit from the synopsis of the books. This published work is called *Einstein's Wastebasket*.

Reading these texts was invaluable in creating the three films on the future of philosophy. One of the books was on Nick Bostrom's superintelligence idea that paints a possible doom and gloom scenario for the future. The film *The Invasion of Superintelligent A.I.* came out of this reading. After completing Paul Churchland's *Plato's Camera* I wrote the script for a film on it. And the last film, *The Big Kahuna*, which looked at the idea of living in a Darwinian universe and the implications of this for the future, was inspired by several of the works I read.

The last monograph, *The Avatar Project*, has as its cover a Hindu avatar, playfully connecting it to computer avatars. Designing the monograph covers offers an artistic element to the project. This monograph examines a few topics of the future, including virtual reality, A.I., and even the future of education. The future is a topic I cover every term in my Introduction to Philosophy course and I am quite pleased that I now have more material available to the students on this issue.

As a side note, I wanted to add that I also explored a different kind of research for this topic. Instead of simply reading about virtual reality, I decided to purchase a virtual reality headset, the *Oculus Rift*. Though expensive (my computer was not powerful enough to support the system so a new home computer was added to the already pricey purchase of the *Oculus Rift*) it was fully worth it. Donning the virtual reality head set one is completely transported to another world, whether into deep space or into the actual heart muscle observing all that is taking place there. In one amazing application I was given an avatar body and met other avatars from different parts of the world as we sat

around a virtual table discussing in real time with real people life events. It is mind blowing. The reason I mention all of this in this sabbatical report is to affirm that I tried to go the extra mile on this topic, to not just read about virtual reality but to truly experience it. The hands on approach gave me a much greater appreciation of this topic and where the future is heading.

## Personal Journal of Sabbatical Activities

*Fall Term 2015*

### **August 20-25: First Week of Sabbatical**

In mid-late August my first task for the sabbatical was purchasing the ten research books on Jainism. I did not own any of them beforehand. I used Amazon.com for all of the purchases. Some of them had to be shipped from India and took a little bit more time to arrive. Thankfully, the last four readings on my list were the ones that arrived later.

### **Note about the Readings:**

For the reading I followed the schedule in my sabbatical proposal. Although I followed the reading list sequentially I did get a bit off schedule. I did not expect the reading of the books it to take as long as it did per book. Not wanting to skim the readings, I took my time highlighting the main points, writing up detailed notes, and reflecting on the material. I did this for each text.

I enjoyed reading all ten of the books, as they tackled the topic of Jainism from different angles. Two of the readings were the actual religious literature of Jainism, the *Jain Sutras Part One and Part Two*. While I have read the religious literature of most of the world religions, I had not yet read the *Jain Sutras* before this sabbatical year. Some of the readings were very scholarly and some were more phenomenological from the believer's view point. The application of Jainism to today, specifically to ecology and environmentalism, was especially appreciated. Interestingly, I was able to utilize this

material in my online ethics courses already (in winter and summer 2016 online Ethics I incorporated the Jain material, writings and films, into it).

According to my sabbatical proposal schedule I was supposed to finish the Jain readings by Oct. 4, however, it took more time than this. The main reason was that I spent several days per book writing an article on the reading. I did not account for this in the proposal schedule. With the material fresh in my head I felt it best to write the annotated article just after the completion of the book. Taking this into consideration, the last of the ten books was completed about 4-5 weeks off schedule.

**List of Books Read and Dates Completed with Annotations:**

**Aug. 24-30:** A Comparative Study of Jainism and Buddhism by Brahmachari Prasad

**Aug. 31-Sept. 3:** Annotated Article Written

**Sept. 4-10:** Jaina Path of Purification by Padmanabh S. Jaini

**Sept. 11-15:** Annotated Article Written

**Sept. 16-22:** Jainism: An Introduction (I.B.Tauris Introductions to Religion) by Jeffery D. Long

**Sept. 23-26:** Annotated Article Written

**Sept. 26-30:** Jainism and Ecology: Nonviolence in the Web of Life (Religions of the World and Ecology) by Christopher Key Chapple (Editor)

**Oct. 1-2:** Annotated Article Written

**Oct. 3-8:** The Jains (The Library of Religious Beliefs and Practices) by Paul Dundas

**Oct. 8-10:** Annotated Article Written

**Oct. 11-17:** Life Force : The World of Jainism by Michael Tobias

**Oct. 18-20:** Annotated Article Written

**Oct. 21-24:** Mahavira: Prince of Peace by Ranchor Prime (Author),

B.G. Sharma (Illustrator)

**Oct. 24-25:** Annotated Article Written

**Oct. 25-28:** The Scientific Foundations of Jainism (Lala S.L. Jain Research Series) (Lala

Sunder Lal Jain Research Series by K.V. Mardia

**Oct. 28-30:** Annotated Article Written

**Oct. 31-Nov. 8:** Jaina Sutras, Part 1

(SACRED BOOKS OF THE EAST VOL. 22)

Translated from the Prakrit by *Hermann Jacobi*, 1884

TWO JAIN SACRED TEXTS, THE AKARANGA AND KALPA SUTRAS.

Jaina Sutras, Part 2

(SACRED BOOKS OF THE EAST VOL. 45)

Translated from the Prakrit by *Hermann Jacobi*, 1884

TWO JAIN SACRED TEXTS, THE UTTARADHYAYANA SUTRA AND SUTRAKRITANGA.

**Nov. 9:** Last Jain Annotated Article Written

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### **Nov. 10-11: Annotated Guide Published as a PDF**

When all ten articles were annotated the next step for me was to publish this annotated guide as a PDF and to place this on a website so that students could access it for free. I wanted the material to be available to my winter and summer 2016 online world religions students.

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### **Nov. 12-Nov. 30: Making of Three Films**

For about three weeks in November I creating the films. The first task here was to write the 3-4 page script per film. In the sabbatical proposal the exact topics of the films were delineated. One film was set to be on the founder of Jainism, Mahavira, another on applying Jainism to today, and the last one on the Jain principle of Ahimsa. As I read the research books I looked for material that would fit with these three themes. Writing the scripts was time consuming but stimulating. I knew that these would be films I would show in my classes for years to come. As one writes a script one has to image which images fit with the narrative. The artistic aspect of film making was one of the highlights of the sabbatical project for me.

Several “takes” had to occur when reading the script on a microphone at my computer. The slightest off intonation or wrong pronunciation could ruin the film. Once I felt a strong final reading of the script occurred I worked on matching the script with images and proceeded to produce the film with iMovie. Right away, within about a week of

placing it on YouTube, *The Two Minute Warning* film just took off in terms of viewing numbers. That was exciting to witness. The *Mahavira* film success in terms of numbers also surprised me. The reason I think this film was so highly viewed is because there are about 5 million Jains in the world and no film on their leader of any substance on the Internet. (Side Note: in the sabbatical application it says that the films would be produced after the monograph but in actuality I did the film making before the monograph. I was needing a break from all of the reading and writing completed from late August to early November and the film production offered a creative outlet).

**Nov. 12-17:** Film One: Two Minute Warning Film

**Nov. 18-25:** Film Two: Anekantavada Film

**Nov. 25-30:** Film Three: Mahavira Film

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**Dec. 1-21: Writing the Monograph**

The last part for the fall sabbatical project (completed the first three weeks of December) was the writing of the brief introduction to Jainism. I felt well prepared for writing this having researched and written so much already on this tradition. The writing of this monograph felt quite natural to write. By the beginning of the winter holiday (Dec. 21, 2015) the Jain sabbatical project was completed. I then concentrated on teaching my online winter courses before tackling the next part of my sabbatical in February.

**Apple iBook:**

The Apple iBook for this project one was completed at the end of spring term. I worked on the two Apple iBooks at the same time as the final part of the sabbatical.

*Spring Term 2016*

**Feb. 19-21: First Few Days of Sabbatical Spring Term:**

According to the sabbatical schedule I was supposed to start up the project again on Feb. 22. However, I knew that it took time to order the books on Amazon.com and for them to arrive. Thus, I started purchasing the ten books before Feb. 22 so that I would have them ready to go.

**Note about Readings:**

I was able to locate some of the texts on Audible.com. My husband is an avid reader of books on Audible and so I thought I would give it a try. Once you buy the book on Audible.com you have it ready to go in seconds, so there was no lag time waiting for the material to arrive at your front door. Strapping my headphones on with my iPhone I was able to multi-task, listening to a fabulous book while on a walk or folding laundry.

Instantly, I became a fan of Audible.com. The only downside is trying to take notes with no written material in front of you. Yet, I was able to manage, writing down key ideas in a notebook after every hour of listening.

As with the Jain books, I slightly underestimated the time it would take to complete these ten texts. Instead of finishing them all up by April 3 they were all completed by May 4.

Writing up the ten individual articles on them and producing the annotated guide demanded more time than I expected.

**List of Books Read and Dates Completed with Annotations:**

**Feb. 22-March 1:** Brain Trust by Patricia Churchland

**March 1-3:** Annotated Article Written

**March 4-10:** The Cambridge Handbook of Artificial Intelligence by Keith

Frankish (Editor), William M. Ramsey (Editor)

**March 11-12:** Annotated Article Written

**March 13-18:** The Future of the Mind by Michio Kaku

**March 18-20:** Annotated Article Written

**March 20-27:** How to Create a Mind by Ray Kurzweil

**March 27-28:** Annotated Article Written

**March 28-April 3:** The Innovators by Walter Issacson

**April 4-5:** Annotated Article Written

**April 6-12:** Phi: A Voyage from the Brain to the Soul by Giulio Tononi

**April 13-15:** Annotated Article Written

**April 15-20:** Plato's Camera: How the Physical Brain Captures a Landscape of Abstract

Universals by Paul M. Churchland

**April 21-22:** Annotated Article Written

**April 22-25:** Seeing Things as They Are: A Theory of Perception by John Searle

**April 25-26:** Annotated Article Written

**April 26-30:** Superintelligence: Paths, Dangers, Strategies by Nick Bostrom

**April 30:** Annotated Article Written

**May 1-4:** The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology, and Philosophy of the Human Future by Max More (Editor),  
Natasha Vita-More (Editor)

**May 5:** Last Annotated Article Written for Sabbatical

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**May 6-7: Annotated Guide Published as a PDF:**

When all ten articles were annotated the next step for me was to publish this annotated guide as a PDF and to place this on a website so that students could access it for free.

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**May 7-May 27: Making of Three Films**

Once the annotations were complete I worked on the three future of philosophy films.

One film is traditionally academic (specifically, the one that looks at Paul Churchland's neural philosophy from his text *Plato's Camera*), while the other two, though quite academic and pulling from Nick Bostrom's *Superintelligence* text and other readings, offer a little bit of kitsch and playfulness. Perhaps I wanted to show that philosophy can be fun. Some surf images and computer gaming are incorporated into the *Big Kahuna* film and past movie themes that deal with fears of alien invasions are integrated into *The Invasion of Superintelligent A.I.* film. (Side Note: as with project one in fall term I produced the three films before the monograph. I was needing a break from all of the reading and

writing completed from late February to early May and the film production offered a creative outlet).

**May 7-12: Film One: Plato's Camera**

**May 13-20: Film Two: Superintelligence**

**May 21-27: Film Three: Big Kahuna**

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**May 27-June 17: Writing the Monograph**

The last part of the entire sabbatical project, the writing of the monograph *The Avatar Project*, was written in late May and June. If one combines this text with its accompanied annotated guide on it, over 125 pages were written in the spring term. This monograph focusses on the futuristic themes of virtual reality and A.I., and also it includes a brief examination at what education in the future may look like. Around this time I purchased the *Oculus Rift* so that I could really know what virtual reality was all about.

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**June 18-21: Apple iBooks**

My summer online courses were to begin June 22, 2016 and it was so important for me to complete the sabbatical project before then. This I proudly accomplished. The only thing left to complete in middle June was the creation of interactive Apple iBooks with all of the material. The Apple iBooks included placing the monograph, films, annotated guide

all into one interactive package for each sabbatical topic. It took 2 days per iBook to accomplish. When the Apple iBooks were online my sabbatical project was finally complete.

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**Sabbatical Report:**

The final aspect of this sabbatical is the write up of my sabbatical report and this was accomplished in a 3-4 day span. I look forward to being back into the classroom at the end of August, sharing with my students and colleagues the outcome of this sabbatical year.



## Value to the College

For 25 years I have taught at this wonderful college and have been blessed with three separate sabbaticals. In my first sabbatical in 1998-1999 I wrote three monographs on religion (an introduction to Religious Studies, a look at new religions, and an introduction to the Sikh religion). All three of these monographs have been used in my world religions course since then. Students seem to appreciate the free PDF material and that their professor produced scholarly work for the course. Every so often I receive an email from another university requesting the right to use the sabbatical PDF material in their university course. I am honored when asked. On occasion requests come from graduate students from all around the world, including Africa and India, looking to read the material as part of their graduate studies. This strong interest in research materials coming from Mt. San Antonio College may, hopefully, add to this college's reputation as being a premier educational institution.

In my second sabbatical in 2007-2008 I wrote two philosophy monographs which included a section on annotated readings. These monographs were on the evolution of consciousness and on the philosophical implications of quantum physics. Both of these works have been part of my Introduction to Philosophy course since their publication. These monographs have also been well received by my students and many others. The work on quantum physics was even picked up by a very reputable physics writer and quoted by him.

The reason I mention the other two sabbaticals here is to express the value they have served and to suggest that this third sabbatical may also earn such acknowledgments. In fact, all of the six YouTube films have already received numerous viewings, and two of them (the *Mahavira* film and the *Two Minute Warning*) have over 11,000 views (and this is in just a few short months). Furthermore, most of the annotated readings were published on a European site called *Integralworld.net* with thousands of readers and thus have received much attention. In fact, for the annotation I wrote on one of the sabbatical research books, *The Life Force* by Michael Tobias, the author of the book himself located the article I wrote on the Internet and personally wrote me back to express how much he liked the piece, stating that “you really got it.”

In winter 2016 and in summer 2016 I taught online courses and my students were assigned some of the recently completed sabbatical writings and films. The responses I have received have been superb. The sabbatical material for 2015-2016 will continue to be incorporated into my World Religions, Introduction to Philosophy, and Ethics courses for many years to come and indeed are part of my upcoming syllabus.

Moreover, in fall at my department’s faculty meeting I will share with my colleagues the sabbatical works produced and let them know that they are available to them and their students for free. I have created a three-fold brochure to distribute with all web addresses to the sabbatical work. Hence, they too can utilize the monographs and films for their own classes or for some background knowledge of the subject at hand.

With all of this said, the sabbatical project can be of tremendous benefit to my students, to my colleagues, and, hopefully, to the college at large.

## **Final Note**

I would like to thank Mt. San Antonio College and the sabbatical committee for giving me this amazing opportunity to produce these monographs and films. I truly enjoyed reading and researching this rich material and creating academic works on them. Every morning I would wake up with coffee in hand rearing to go and reveling in the sabbatical task at hand. With the completion of an annotated article or film or chapter in the monograph a great sense of accomplishment was felt. Overall, from my perspective the sabbatical project was a great success and the material from it will be part of my curriculum through my long tenure at this college.

# **PART ONE:**

## **The Jain Project**

*Fall Term 2015*

Web Address to the Jain Project: (films and writings)

<http://sites.google.com/site/thejainpath>

## Jain Films

All of the films (with closed caption) are available to the students for free on YouTube.com. Total viewing time 17:30 min.

### Film One:

*The Two Minute Warning: Jainism and the Practice of Ahimsa* (3:54 min)

<https://www.youtube.com/watch?v=IE0X6UjT-0s>

### Film Two:

*The Story of Mahavira* (7:28 min)

[https://www.youtube.com/watch?v=01z7emOxb\\_A](https://www.youtube.com/watch?v=01z7emOxb_A)

### Film Three:

*Anekantavada: The Jain Version of Multiple World Views* (5:58 min)

<https://www.youtube.com/watch?v=bKfB3fepI30>

This film is also published on YouTube with an alternative title:

The Jain View of Religious Tolerance

<https://www.youtube.com/watch?v=eZISGXZ9Nb4>

## PHILOSOPHY FILMS | Jainism

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The Two Minute Warning: Jainism and the Practice of Ahimsa



<https://youtu.be/IE0X6UjT-0s>

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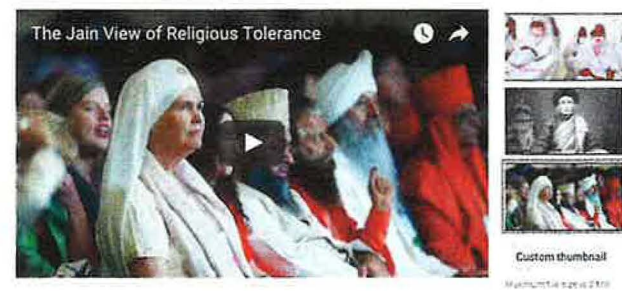
The Story of Mahavira: Jainism and the Practice of Ahimsa (Non-Violence)



[https://youtu.be/01z7em0xb\\_A](https://youtu.be/01z7em0xb_A)

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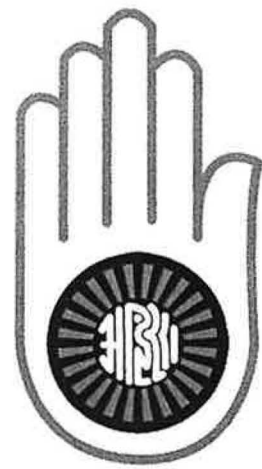
The Jain View of Religious Tolerance



<https://youtu.be/ezISGXZ9Nb4>

# The Jain Path

AN ANNOTATED GUIDE



Professor Andrea Diem-Lane, Ph.D.

MT. SAN ANTONIO COLLEGE  
Walnut, California



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The Mystical

Digital Philosophy

## DEDICATION

I am happy to dedicate this book to my students at Mt. San Antonio College where I have taught for the past twenty-five years.

### *Note to the Reader*

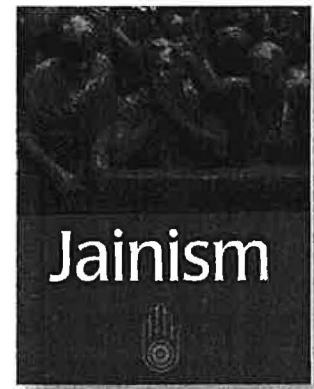
I thought it might be of interest to my students at Mt. San Antonio College and to the larger worldwide community if I wrote analytic summaries of ten widely regarded books on the religion of Jainism. I have had the unique pleasure of spending the last six months immersed in Jain literature and I am singularly impressed by the wisdom and compassion that permeates the Jain way of life. My hope is that this study will serve as a touchstone for a deeper appreciation and understanding of Jainism and its beautiful practice of ahimsa or non-violence.

## The Jains: An Introduction

by Jeffrey D. Long

Jeffery D. Long in his text *Jainism* argues that the ancient tradition of Jainism has much to offer the modern world.

Today we face intense inter-religious conflict as one group challenges the other, often leading to dispute and even full blown war. In addition to this, our world is facing an environmental crisis as resources are being depleted. The Western mentality that we can use the planet's resources as we please has certainly contributed to a threatening ecological footprint.



Interestingly, Jainism, a relatively small religion in India of approximately 4.2 million, offers us two viable approaches to help with these serious global issues.

First of all, in place of religious exclusivism and intolerance Jainism advocates religious pluralism, encompassed by the Jain principle of *anekantavada* (the doctrine of non-one sidedness). In Jainism one of the worst philosophical errors one can make is to assume a position of absolutism, or one sidedness (the Indian term for this is *ekantata*). Since Reality, whatever that may be, is infinite the various expressions and perspectives of it are valid. Of course, the Jain would add the caveat that not all religious positions are true if they fall out of a Jina's view of a normative standard (usually this means compassion).

## THE JAIN PATH

For instance, when a religion advocates extreme violence and killing, a Jain would have a hard time reconciling this with an acceptable viewpoint. However, when compassion plays a central role (which it often does in the world religions) then the religion's approach to the sacred are to be honored and viewed as a different perspective of a many-faced reality.

The author himself confesses his early teen attraction to Hinduism, specifically the philosophy of Ramakrishna, a 19<sup>th</sup> Hindu teacher who professed an eclectic appreciation of the world's religions. Gandhi was another teacher who approached the religious traditions of the world with such openness. Yet, Long's thesis in part is that of all of the world religions Jainism seems to capture this beautiful message of religious universalism most elegantly. And he adds that the modern world has much to gain from this Jain principle of inclusion.

There is a famous Eastern story of an elephant and blind men that demonstrates the essence of *anekantavada*. Though the Theravada Buddhists may have first articulated the story of the elephant and the blind men, the Jain literature also refers to this analogous story whose message of *anekantavada* is one of the main precepts of Jain philosophy. As blind men describe to the local king what an elephant is like, each return with a different description, though all are correct from their perspective. One feels the trunk and describes it as a snake; another feels the leg and proclaims the elephant is a tree; the tail is taken to be a rope and the one who touches its side says the elephant is a wall. Each of the blind men offers a

correct insight but a partial one. Thus, the lesson, it seems, is that each blind man can learn from the other and one's view is immensely expanded. Similarly, while the world religions may seem in conflict with each other, from a wiser viewpoint they touch upon some truth of the Infinite. With this insight one can appreciate the other philosophies and traditions of the world. Interreligious conflict may then hopefully fade. It is important to note that *anekantavada* is not the position that there is no truth but that each tradition taps into an aspect of it. According to Jainism, the Jina, or Jain enlightened one who has practiced *ahimsa*, asceticism, and meditation and who has achieved the state of liberation (*moksha*) from the cycle of rebirth, can see the whole elephant.

The second valuable insight Jainism has to offer the modern mind is the principle of *ahimsa*. Derived from Sanskrit this term simply means non-violence or compassion. Their commitment to *ahimsa* is the cornerstone of Jainism. If the goal is to attain moksha this is only achievable if one pursues a life of *ahimsa*, free of harm to others, including humans, animals, plants, insects and even, if possible, microorganisms. While other religions may advocate compassion in different forms (from helping one's neighbor in times of need, to turning the other cheek and forgiving an injustice, to slaying an animal in the quickest and most painless way possible), the form it takes in this Indian tradition is unlike any other. *Ahimsa* for a Jain monastic is a total commitment not to hurt or kill another creature, however small. Westerners may find the *ahimsa* approach of Jain monastics extreme. For instance, besides practicing a vegetarian diet

#### THE JAIN PATH

(a requirement for both monastics and laypersons) monastics of the *Shvetambra* and *Digamabra* order, the two main Jain divisions, carry brooms as they walk so not to inadvertently step on insects and will not travel by air, car, etc., so not to cause harm to other life forms while in movement. (Note: The spelling of these branches vary in each text.) The *Shvetambra* monastics even wear a mask over their face to prevent the inhaling of insects. Many monastics will strain water so that they do not drink any organisms in it and some will not turn on lights to prevent killing of microorganisms. The most severe form may be the act of *santhara* or fasting to death under a guru's guidance near the end of one's life, so not kill anything else before death arrives (this helps one not to accrue any more bad karma at the time of death). Yet, the average Jain layperson does not live by these challenging standards. Instead the average Jain drives a car, has a profession (certainly one that correlates with *ahimsa* in some way), drinks water without straining it, does not wear a mask or starve to death, etc. But one common element remains for all practicing Jains: vegetarianism. Not eating animals of any kind is essential for a Jain.

Couple this with an overall respect and concern for nature and imposing upon it as little of an environmental impact as possible, Jainism takes on a very relevant role today. Jains see all life forms as possessing *jiva* (immortal essence or soul) and so the divine dwells all around us. "Profound mindfulness" is expected as one interacts with all of the beings of this world. In the text, Long makes the case that we in the West have a lot to learn from the Jain's *ahimsa* approach, going as far as to contend that the



Jain's prescription for ahimsa can serve as a remedy for much of our environmental woes. We do not have to be practicing Jains to reap the value of this principle. In our own lives we can make compassionate choices that benefit other creatures and the planet itself. Perhaps one walks a different path so not to annihilate a group of working ants in the road, or one buys products from a company committed to animal free cruelty or the environment. Maybe one chooses to eat the veggie burger over the hamburger or to enter a profession that contributes to the welfare of others and not their demise. Possibly, now, one can draw from compassion as one makes environmental and moral decisions and does not see the world and its creatures as something to be exploited for human ends. Kant's categorical imperative takes on a new meaning as we universalize our actions beyond the human sphere to all living beings.

Interestingly, Long connects the two principles of *ahimsa* and *anekantavada* together in the text when he refers to *anekantavada* as "intellectual *ahimsa*." By this he suggests that religious pluralism is a compassionate approach to the world's religions. Instead of judging and ridiculing different views, with deep consideration one embraces the "other."

In addition to a passionate plea to garner insights from the Jains, Long does a superb job explaining the origins and history of Jainism. Though subtitled "an introduction," this book really takes on a more extensive look at Jain history and philosophical ideas than a traditional introduction would take. As a scholar of

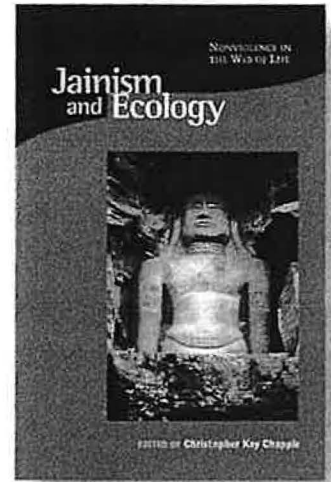
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religion I immensely enjoyed the reading, though I may not recommend it for an introduction text for a freshman world religions college course. The book almost works for an ethics course, however, in that the ethical principles of *ahimsa* and *anekantavada* are clearly delineated and presented as applicable for all.

## Jains and Ecology

Edited by *Key Chapple*

This Harvard three-year series explores world religions and ecology, asserting in the preface that religion and ecology are intimately webbed together. Religion's role in impacting our attitudes, motives and actions toward the earth is a very significant one. While Buddhism, Christianity, Hinduism, Taoism, etc., are explored in different volumes of this series, in this text, *Jainism and Ecology*, Jainism is the focus.



The Western anthropocentric worldview with a creator God offers a challenge concerning divine-human-earth relations and developing a “nature as sacred” posture. The Eastern religions, especially Taoism and Confucianism argue the authors in the book’s forward, seem to fit more a life affirming appreciation of the world. However, despite the rich diversity and complexity of the Eastern and Western traditions, this series hopes to highlight the commonalities and establish some sense of a global ethic among the world religions (even though in one section the writers claim this was not the primary goal). The authors go as far as to suggest that “the fate of the earth as a religious responsibility,” and so

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“a new consciousness of the multiform religious traditions of humankind” needs to be developed. Jainism, it seems, has a lot to offer in this regard.

The collection of essays in *Jainism and Ecology* represents a variety of views on the topic of Jainism and Environmental Studies. Similar to the Jain's doctrine of *anekantavada*, which prescribes one to entertain multiple views of Reality, this study investigates Jainism's contribution to this topic from assorted perspectives, including essays which argue that Jainism fits with the environmental movement to ones that argue its world denying approach does not. Besides a scholarly view, also included in the study are essays written by Jains themselves who argue that Jainism epitomizes a “green” approach, though this argument is given a caveat in a concluding article which clarifies that only the second generation of diaspora Jains truly fit with an ecological ethic.

The environmental crisis our planet faces is briefly addressed in the various essays in the text. Pollution, global warming, species extinction, chemical production, etc., all well documented and perhaps difficult to reverse, are mentioned, yet throughout the volume the laser focal point is on the role religion, specifically Jainism, can play in transforming our attitudes toward nature and in so doing preventing an ecological catastrophe. Jainism offers us a world view that sees all life forms as interconnected and gives us a motive to treat other life forms, including earth itself, with reverence. The creatures of this earth as being part of a global family that deserves help, respect

and service are integrated into the Jain principle of ahimsa. While there is a “hierarchy of beings” idea within its philosophy, with one sense beings such as plants who can experience touch at the bottom and five sense beings such as animals and humans at the top, there is a demand for a biocentric approach wherein all beings are honored as a “communion of subjects and not a collection of objects” and not simply an anthropocentric one with humans dominating the environmental scene. A “circle of moral considerability” applies to the worm as well as the dog as well as the human.

In Jainism, one is responsible for the harm one causes others, even if one is not aware of the consequence of the action. In other words, unlike in Buddhism where intention matters, in Jainism ignorance is no excuse when it comes to causing harm. Even if we do not mean do cause harm to another the harm is still done. If I do not intend to step on the ant hill and wipe out hundreds with one step the act of doing it is what counts. So consequences trump intention and the onus is on us. How can this apply to the modern environmentalist movement? Simply, we must educate ourselves of the world around us, from the impact we have at the microscopic level to the ramifications our actions have at the organic and planetary level. And with these new insights the end result can be environmentally conscious actions that, hopefully, lead to a better world.

Interesting, as expected if we take an *anekantada* approach to the topic, there will be counter views presented, and there are, namely, the position of Paul Dundas, one the

leading experts on Jainism today. In his essay *The Limits of a Jain Environmental Ethic* he delivers an intellectual wrench into the argument that Jainism and the environmentalist movement are quite simpatico. Indeed, Dundas acknowledges the Jain principle of ahimsa as conducive for environmentalism but he then clarifies that the Jain's ontological view as metaphysical dualists who see the world as ensnaring the jiva (soul) in samsara (cycle of birth and death) and so necessary to transcend runs counter to modern environmentalist movement which asks us to actively engage in the world and work to redeem it. The position of the world-denying ascetics may not exactly fit with this "modern, ultimately secular, Western-derived agenda."

While this paradox of the Jain monastic's desire to escape the world and of the environmentalist's one to positively change it is also recognized by the editor of the volume, Christopher Key Chapple, he calls for a 'creative juxtaposition of Jain cosmology with contemporary science.' Though not interconnected monism, Jain philosophy demands us to develop an "empathetic eye" for all and thus lays the foundation for a modern ecological approach. Chapple adds a fascinating section on the "awe and respect for materiality," nurtured by a modern scientific outlook, as matter is re-appreciated for its mystery and beauty. A petition to wake up to the "wow factor" of the material world is implored. Add to this new modern cosmology, one which is embraced by astrophysicist Chet Raymo, cosmologist Neil de Grasse Tyson, and even Steven Hawking and Albert Einstein, a Jain's

view to see earth as a “living reality” and we will make huge strides in advancing a new environmental ethic.

With that said, will there be something we can refer to as a “Green Jainism,” John Cort queries in the first article in section two of the book. Again, in this text it is expressed that a Jain environmental ethic did not historically exist, especially if we consider that the environmental disasters we face today are in large part a modern occurrence due to industrialization, overproduction and overuse of our natural resources, chemical use, etc. Environmentalism as a movement commenced in the 20<sup>th</sup> century and can credit Rachel Carson’s 1962 tome *Silent Spring* in part as a catalyst for the movement. Peter Singer and Tom Regan’s concentration on the ethical treatment of animals has also brought to our consciousness in the West another aspect of ethical concern. Jainism, an ancient tradition from India which did not have to deal with the concept of environmental disasters as we do today, does offer the “all life as sacred” concept and the ahimsa principle as powerful tools that we can embrace today to change our attitudes and actions to help remedy the crises we face.

In the last section of the text, author Anne Vallely makes the case that the new generation of Jains, those who are second generation and living in the diaspora, offer an environmentalist ethics not seen in their orthodox Jain parents, who see the real Jainism as espoused by Indian ascetics. The diaspora second generation Jain has moved away from a traditional liberation center focus (with the goal of moksha) to a socio-centric one (with the aim of social activism and engagement). Instead of trying to

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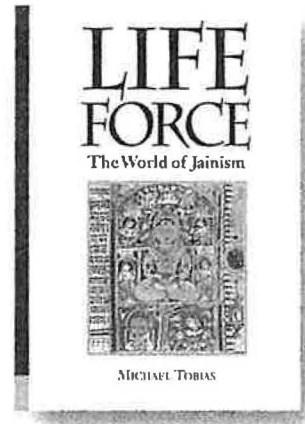
pursue ahimsa as a means for self-realization these Jains seek compassion of the “other” for its own sake. Some have even gone a step beyond their ancestor’s vegetarian diet and live a vegan one not only free of dairy but also the wearing of leather and silk. Green Jainism is alive then in this new generation, who “live lightly” on this planet earth and who serve as an inspiration for us all.



## Life Force: The World of Jainism

By *Michael Tobias*

While teaching World Religions every semester I take a week or two of the 15 week term and cover the tradition of Jainism, always making sure to include in the lesson plan one of my favorite world religions films entitled *Abimsa-Non-Violence*, narrated by Lindsey Wagner and written and directed by Michael Tobias. Over the years I have watched this fabulous movie so many times I have essentially memorized the script. When reading *Life Force: The World of Jainism* by Michael Tobias I was pleasantly surprised that so many of the passages in the book were part of the film's script. As such, the book and the film are a perfect complimentary duo.



The title of the book, *Life Force*, refers to “many wedded souls” that make up all of nature and thus invoke a sense of reverence for life. Though Jains do not worship nature per se, they honor it and see violence towards it as hurting oneself. To “live harmoniously” with love and compassion in a world inherently embedded with pain is one of the main principles of Jainism. Other religions may speak of love and compassion but Jainism stands apart from these. Unlike many world religions which have often engaged in war and various atrocities, this religion does

not deviate from its position of compassion. It embraces the earth and all its constituents as equals and as such makes an “ecological contract” to respect even the smallest insect. This “hylozoistic” view of nature, that all life teems with souls of ontologically equivalent value, whether it is a mosquito, a bird or a human, permeates Jain thinking for millennia and can even breathe fresh air into our modern environmentalist thinking. Tobias goes as far as to suggest that Jainism’s ahimsa approach is “the solution” to the global environmental problems we face.

This prescriptive message is not lost when the author makes his “two minute argument.” For the two minutes that we may enjoy eating the hamburger patty, the hooking a fish on a line or unnecessarily shooting an animal in the wilderness there was so much pain and death that occurs. For such a small moment of two minute pleasure one may garner from such acts, another being had to suffer and die. Jainism repositions the ethical mirror back to ourselves so that we make look ourselves squarely in the eye and ask was that two minutes really worth it.

“Live deliberately” is the motto of Jainism. With each action one must tread lightly and be aware of the consequences of each step, each brush of one’s skin, each bite one takes. One is expected to not just live the ahimsa life but, as the oldest text of Jainism, the *Acaranga Sutra*, attests, “not to let others cause himsa (violence).” This promotes an activist role, as the many Jain animal shelters throughout India confirm. However, if our own actions result in himsa of some kind, such as accidentally

breathing in a gnat or stepping on a seed that is germinating, with an optimistic attitude one can “start fresh” the next day and refocus. Certainly, from Jain philosophy the karma of our actions, like a sticky residue, marks our soul, but the waking up to a new slate and working toward a better world is a theme that regenerates hope.

The author’s enthusiasm for this tradition is obvious in his statement that to all who study Jainism “conversion is unavoidable.” In his passion for this tradition, Tobias even argues that Jainism is the oldest living world religion today, having roots back to the Indus Valley Civilization of India. “The cult of ahimsa” as espoused by Jainism, he asserts, was alive almost 5000 years ago in the Bronze Age, despite many scholars arguing that Jain roots go back historically to the last two Jinas, Mahavira of the 6<sup>th</sup> century BCE and Parshva in the 9<sup>th</sup> century BCE. Its pre-Aryan/pre-Vedic roots are obvious, he explains, in the naked yogi images found in Mohenjo Daro and Harappa. Moreover, he points to the Indus Valley Civilization image of the bull, an animal also connected to the first Jina or Tirthankara, Rishabha, as evidence. Tobias eagerly adds in his appreciation of Jainism that Jains can be credited with recognizing atoms (called *anu*) even long before the Greek thinker Democritus and for offering an in depth Jain biology which recognized thousands of species much earlier than Aristotle.

What is most notable about Tobias’ monograph is the personal encounter he shares with the reader about his trip to India and his research of the Jain community there.

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As he describes the magnificent Jain temples of white marble he introduces to the reader the Digambara monks he encounters and the thoughtful conversations they had. Since there are only 65 Digambara ascetics alive at the time he wrote this book, meeting two of them was a very special event. Quite touching was the blessing the monks conferred to him upon departing, a salutation in Jainism that reads: "I forgive all beings, may all beings forgive me. I have friendship toward all, malice toward none." This announcement captures what Jainism is all about.

## Jaina Sutras

Edited by *Hermann Georg Jacobi*

### Part 1

Hermann Georg Jacobi, a German Indologist from the 19<sup>th</sup> century, argues in his introduction to his translation of the Jain Sutras Part One that though there are indeed similarities between Buddhism and Jainism (Buddha and Mahavira were more or less contemporaries who were referred to honorifically as Jinas or Buddhas and who practiced ahimsa and some sort of asceticism) the differences are note-worthy and thus indicate independent traditions. Here Jacobi is combatting the claim that Jainism is one of the oldest sects of Buddhism. Not only were these spiritual leaders born in different places but in different circumstances and with nuanced philosophies. While Buddha's mother died at his birth and his father was against Buddha's spiritual quest, Mahavira's parents saw him grow up and encouraged his religious pursuits (this is according to the Digambara tradition). Philosophically the differences are even more pronounced. When Buddha rejected asceticism after 6 years of practicing it, Mahavira continued to embrace asceticism throughout his long life and saw it as a



necessary means for enlightenment. In terms of ontology, contends this scholar, Mahavira's view of the atman is much more in line with a Hindu Brahmanical view than with Buddha's an-atta concept. Interestingly, however, both traditions seem to have adopted the ethical five vows from the Brahmanical ascetics of the day. Yet, overall, Jainism and Buddhism reject the Hindu priestly caste and its interpretation, and this is apparent in the fact that both teachers were presented as deeply connected to the Kshatriya class.

In the *Kalpa Sutra*, the second sutra in the text, there is great effort to tell the birth story of Mahavira in such a way that squarely places him with the Kshatriya lineage. The account, embraced by the Shvetambara tradition, is told that he was first conceived by a Brahmin mother named Devanada. The embryo, though, was mystically transferred somehow to the womb of Trisala, a well-known Kshatriya. Arhats, the *Kalpa Sutra* states, are not "born in low families, mean families, poor families, indigent families, beggar's families or brahmanical families" but in "high, royal and noblemen's families." This seems to be a stab at the Brahmin caste. Once in her womb, the hagiographical story continues, Trisala experiences several illustrious dream visions to indicate the specialness of her child. Moreover, to further show the auspiciousness of the occasion, the family's riches, such as gold and silver, significantly multiply. Though the pregnancy and birth were healthy, at one point in the pregnancy Trisala, not experiencing consistent quivering of the baby, feared that the fruit of her womb "has been taken from me, it has died it is fallen, it is lost."

Fortunately, the reading indicates a beautiful and healthy boy was born to her in the first month of the summer on the fourteenth day. To celebrate his birth Mahavira's father order the release of prisoners, forgave debts and remitted fines, and this was followed by a 10 day festival. The life of the teenage Mahavira is not discussed here and the biography jumps to a 30 year old man ready to commence his religious journey after the death of his parents. Upon his spiritual commitment, his first order of business was to distribute his family's wealth to the poverty stricken. Next, he pulled out his hair in five fistfuls and then "without egoism, without property, he had cut out all earthly ties, and was not stained by any worldliness." After 12 years of wandering (one year and one month were wearing clothes and the rest were not) and practicing ahimsa, meditation and strict asceticism, the sutra states Mahavira was now a Gina or Arhat, fully omniscient and liberated. Mahavira's death at 72 in the town of Papa in the early morning hours, while in religious posture articulating a lecture, was described near the end of this sutra. The remaining portion of this sutra was mostly dedicated to a brief biography of Parsva, the 23 Tirthankara, and Rishabha, believed to be the first of the Jain teachers.

The first sutra in this text, *Akaranga Book 1* and *Book 2*, is not really about the Jain teacher, Mahavira, but it instead focusses on all of the meticulous rules a monastic needs to follow to be on the Jina path of enlightenment. Ahimsa is the underlying theme of all of the rules, but it is taken to a level of such intensity the modern mind may have a hard time grasping it. When today one speaks of ahimsa

usually a vegetarian or vegan diet comes to mind. In the *Akaranga Sutra*, however, the smallest details of normal every day actions, from walking to urinating, are addressed and with the thought of causing no harm to the other. One is told to walk one step out a time and to pay attention not to trample on any life forms below. Leaning on posts or tree trunks are to be avoided to prevent the killing of creatures there. Couches must be thoroughly inspected before sitting or sleeping on them so not to crush any life forms, including eggs of insects, within the furniture, and robes, if worn, must be investigated for any life living in its sleeves. Where one urinates and defecates must be chosen with caution so not to harm creatures on the ground. Even how one steps in and out of the water to enter a boat was discussed in depth, suggesting that the mendicant place one foot in the water and one in the air as one observes what is below them. If for some reason one is thrown overboard or asked to leave the boat it is required that one not dive up and down in the water so that water does not enter into an orifice. When wading in the water the monastic is prescribed to go in a straight line so not to disturb life below the water. When wet with moisture one is told not to “wipe or rub or brush or stroke,” with the intention not to disturb any beings that might have settled on the skin from the water. Hugs and scratching another are off limits to prevent the death of little, barely visible entities. The list of “dos and do nots” continue, especially dealing with the problems what arise from the rainy season (creatures are brought to the surface at this time and so limited movement is mandatory), all with the thought of minimizing harm to other living beings.

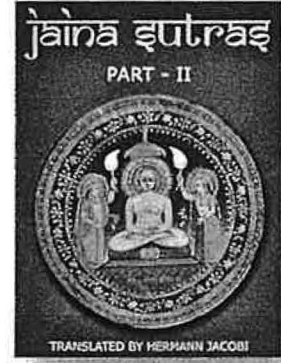


Besides two books of instructions on how to live a life of very little killing, the *Akarnaga Sutra* is sprinkled with words of wisdom on how to assume a stoic position of calmness, being indifferent to life's ups and downs. Emotions need at all times to be in check, without moments of elations or fits of anger. When a "vicious" creature or person approaches the monastic, with serenity at heart, one is told to walk a different path and not to strike in defense. Always aim for restraint, kindness in speech, and moderation. Throughout the numerous pages of decrees what to say, do, eat (compellingly, seeded foods are avoided for the potential life forms they contain), one finds these wonderful kernels of foresight about how to live an enlightened and wise life.

The first sutra finally ends with an introduction to Mahavira, covering a quick sketch of his life and the five vows he taught, setting the reader up for colorful details of Mahavira's life as espoused in the next text, the *Kalpa Sutra*. It is in this second text, while reading about the religious heroism of Mahavira, this ancient and admirable tradition truly inspires the reader.

**Part 2**

When the author completed the translations of the next two sutras, *Uttaradhyayana* and *Sutrakritanga*, it is ten years later and he makes the comment that much has been learned since the *Akaranga* and *Kalpa Sutra* translations. Jacobi seems even more confident that there were Parsva followers at the time of Buddha, indicating that the Jain tradition predates both Mahavira and Buddha. Furthermore, he suggests that while the *Uttaradhyayana* and *Sutrakritanga Sutra*s deal with addressing heretical ideas at the time, some of these very ideas may have surreptitiously made their way into Jain and Buddhist philosophy. Most interestingly, the commentator proposes, primitive animism of antiquity finds its way into Jain thinking (the Jain argument that all life forms have jiva supports this).



The *Sutrakritanga Sutra*, perhaps the older of the two, was written in large part to fortify the monks against heresies of the time. The ideas of agnostics and materialists are challenged here, yet the monastics are advised to not ridicule “heretical opinions” and those who “hold wrong doctrines,” and certainly not to brag about the accuracy of their own. Instead, modesty coupled with a sincere desire to teach others are required. The monastics, it seems, faced a lot of mockery and contempt at that time. In the *Sutrakritanga Sutra* it states that the critics called them many pejorative names, such as “filthy,” “nasty,” “naked,”

“wretched,” etc. To combat this, the sutra suggests that they do not quarrel or be angry but calmly “bear everything,” from horrible verbal and physical insults to the daily challenges of grass poking at them, to the extreme heat and cold they experience, etc.

To capture the righteousness of the Jain view the lotus story is told in the *Sutrakritanga Sutra*. In this account four men each tried to get to the big, tall lotus flower that sat in the middle of a pool of mud surrounded by other white lotuses. As each one failed and was stuck in the mud unable to move, it was the Jain monk who succeeded, not by entering foolishly into the mud but by standing on the banks and commanding the flower to come forth. While the heretics think they know the answers to life’s mysteries they falter, as the story suggests, but triumphantly the Jain monk rises to the occasion.

Furthermore, perhaps as a deterrent to stay focused and on the path, the *Sutrakritanga Sutra* offers a vivid description of the darkness of hell with fire, boiling filth and vermin. While Jains do not argue for a permanent place called hell, the sinner, i.e., one who hurts others, can be condemned to a bleak (though temporary) reality in one’s next life. The beauty of heaven is also sketched here, understanding that this too is a temporary reality where one reaps blissful rewards until one has attained final liberation. Since death comes to all, this sutra reminds us, “as a coconut detaching itself from its stalk,” we are implored to wake up to the transient nature of life and to focus on what really matters: moksha. Through this whole text it is mentioned how rare a human birth is and that one should truly value it.

Though the two sutras share many common themes, the *Uttaradhyayana Sutra* is to a large extent filled with a multitude of instructions for the monk, including not to be talkative, to show respect for one's teacher with folded hands, to be meek and not mean, not to be angry or greedy or egotistical, etc. In fact, there is a section where 14 bad qualities are named follow by a section listing 15 good qualities, such as humility, simplicity, politeness, willingness to listen to friendly advice, etc. Those who work to cultivate the latter are closer to attaining moksha it says.

What was most impressive about the *Uttaradhyayana Sutra* were the many parables sprinkled throughout it. The stories often contain the similar message about a king or prince who sees a meditating, peaceful monk and is so impressed he decides to leave his kingdom in pursuit of spiritual goals. One narrative is about a good looking man recently married who witnessed an execution about to happen. He is so agitated by it and the pain of this world he takes the five Jain vows and seeks enlightenment. Another account occurs on a wedding day. When cages filled with animals come into the groom's location he asks why they are there. Once told that the animals in the cages are to be the food for his wedding guests this character calls off the wedding and enters the monastic life. His finance, heart broken, consequently becomes a nun. The story strangely continues that when she was traveling and forced to enter a cave to escape the rain she is sexually pursued by another monk. She rebuffs his sexual proposal and he repents. In various sections of this sutra, and other Jain literature, women are presented as temptations to be

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shunned. A monk commits a sin even if he stays in a house where women live or if he enjoys the singing and chattering of women. Celibacy, one of the five vows of the monastics, must be strictly followed, and so any connection to the female, argues the sutra, is intensely frowned upon.

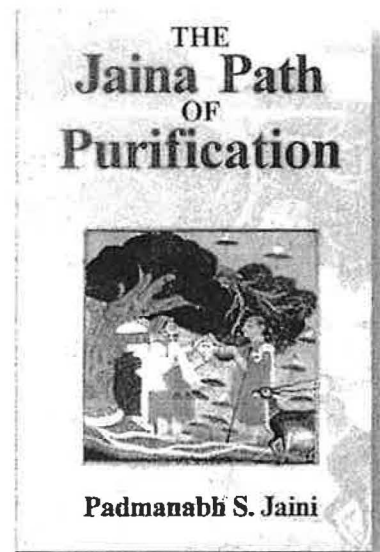
This sutra ends with the message that happiness can be achieved as one becomes enlightened. "The body is the boat, life is the sailor, and the circle of births is the ocean which is crossed by the Great Sages." Once crossed, the soul, it is said, attains indescribable bliss. The Brahmin path of priestly sacrifice cannot not take one to this liberation, the sutra contends, but Jainism can.

## The Jaina Path of Purification

by *Padmanabh S. Jaini*

In *The Jaina Path of Purification* by P.S. Jaini, Jain philosophy is discussed at length (from the idea of karmic matter as the cause of bondage in samsara, to anekantavada and ahimsa, to how to become awakened by removing ignorance and the qualities that transpire when accomplished). Moreover, various practices, rituals and ceremonies of Jainism, along with an exposition of its literature, are highlighted. The fine points the author covers of these topics are indeed impressive. However, two specific areas of interest in this text really caught my attention. One was found at the end the book when the writer explained why Jainism was able to survive in India for the last two and a half millennia without being fully exported to new lands as Buddhism was or without being fully absorbed into Hinduism, despite sharing many commonalities.

Intriguingly, one important factor to account for this heterodox minority's success in India was its ability to adapt to and compromise with Hinduism. Specifically,



heroic characters of Hindu lore, such as Rama and Krishna, were worked into Jain literature. For example, Krishna is seen as the elder cousin on the 22 Jain Tirthankara, Nemi. Another point of inclusion that makes these two traditions simpatico is the acceptance of Jains marrying non-Jains and this usually meant Hindus. Marriage relationships between Hindus and Jains would explain a lot why they relate. Additionally, Jains, though they did not embrace the Hindu caste system believed to have been designed by cosmic order and established at birth, do promote the idea of "Jaina-brahmans," those given special status due to their superior conduct. If one applies meme theory as espoused by Susan Blackmore in her book *Meme Machine*, memetic piggy-backing of already popular ideas can explain why Jains wanted to match their views to some degree to previously accepted societal ones.

Another consideration to account for Jainism's success in India was how it was able to form an alliance with Indian kings. Hundreds of years of royal patronage meant well-endowed temples and local support. In fact, the Ganga dynasty that lasted 700 years in India was quite pro-Jain and one might even refer to this as a Golden Age of Jainism. With monarch approval and abutment, Jainism would undoubtedly prosper.

Jaini also points out that lay involvement with Jain mendicants further contributed to Jainism's advantage. Unlike Buddhist monks who remain removed from laity, Jain laypersons are very involved with monastics, to the point that the Jain monk could not survive without their

alms assistance. A symbiotic relationship (where the lay reaped merit or good karma for offering meals to them and the monks in turn could eat without farming or cooking meals themselves) was an advantage for the Jain community. It meant a tighter bond in the Jain community and as such a greater chance to endure the vicissitudes of life that befall them.

In addition, ahimsa, as championed by Jain teachers throughout history, is notable for why Jainism has been so fruitful on Indian soil. According to the author, ahimsa sets Jainism apart from the other traditions of the land. It defines this religion. Other traditions in India, Jaini suggests, look to the Jain's principle of ahimsa as a morally uplifting concept that they can admire and aspire to.

The second major area of interest for me was the biography of Mahavira. Prior to reading this I was familiar with the basic sketch of this teacher's life. Yet, Jaini added such detail to Mahavira's profile in his opening chapter, filling it with specifics most scholars only slightly gloss over, that one cannot help but be struck with the incredible similarities between the life of Mahavira and Buddha. While perhaps not the intention of the author of this book (in fact, Buddha is only occasionally discussed), the reader, if somewhat knowledgeable of the biography of Buddha, may be astonished with the obvious parallel sagas between these two religious leaders. In fact, one might even wonder, as some scholars have in the past, whether one account was the source for the other. Despite the argument that Mahavira slightly predated



Buddha historically, in the retelling of their personal stories many years later one would not know necessarily which biographical story fed the other.

Let us examine some of these striking resemblances. Both teachers, though born in slightly different areas in South Asia (Buddha from Nepal and Mahavira from what is now Bihar, India), are from the same epoch with miraculous accounts of their conceptions. In the case of Mahavira, according to Svetambara literature, he was first conceived by a Brahmin couple and then transferred to the womb of Trisala, a Kshatriya. She knew her son inside her to be special, having experienced 14 dreams or visions including one with an elephant. These were signs the child to be would be strong and virtuous. Buddha too was born to Kshatriya parents. Most think this was a conscious way for the two traditions to separate themselves from Vedic Brahmins. When Buddha's mother, Maya, conceived him she too had the white elephant dream, indicating an auspicious event took place. These children, it was predicted, would be leaders either in the temporal or spiritual realms.

Throughout their childhood each were raised in quite plush environments. In their 20s it is claimed both married and had one child (the Svetambara Jains argue this while the Digambaras say Mahavira was celibate his whole life). It is in the next stage in their lives, around the age of 29 or 30, that stories are told about how the gods conspired to wake them up to their religious calling. While Buddha's family did not at first embrace his religious quest (going as far as to prevent him from seeing

the hardships of life and hence question its meaning), in the Svetambara version Mahavira's parents passed away before his spiritual journey and in the Digambara account this teacher's parents enthusiastically approved of his religious pursuits. In the beginning of their holy adventure they cut or pulled out their hair and practiced strict asceticism. Mahavira continued on the ascetical path his entire life, yet Buddha eventually rejected it in favor of moderation.

Though the enlightenment experience of Buddha is quite detailed in the Buddhist literature, the specifics of Mahavira's awakening and moment of omniscience are a bit sparse. What is interesting, however, is that there are analogous accounts of Mahavira and Buddha being awakened/enlightened near or under a tree. For Buddha it is the Bodhi tree and for Mahavira it is an Ashoka tree. Although there are other similar events in their lives, including the name of one of their ardent disciples, Ananda, their deaths lack some correlation. Buddha lived 80 years and died of some type of food poisoning (perhaps from poisoned mushrooms) whereas Mahavira lived 72 years and died of self-starvation (in Jainism it is referred to as *sallekhanavrata*, or holy death). Nonetheless, Mahavira and the Buddha are 6<sup>th</sup> century BCE heroes sharing so many remarkable life events. One can certainly speculate if one biography helped fuel some of the particulars of the other.

Overall, Jaini's scholarly work is a necessary text to add to one's library on Jainism. Though somewhat dense for the average reader, one walks away with a much more

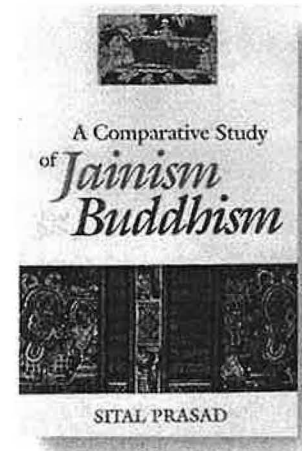
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thorough understanding of this fascinating tradition and its religious leader. Jainism is presented here, as the title of the book indicates, as a “path of purification” and as such one that offers profound hope to its aspirants.

## A Comparative Study of Jainism and Buddhism

by *Sital Prasad*

This 1932 book, though a valuable collection of numerous Jain and Buddhist quotations, is less about comparing and contrasting these two traditions and more about arguing that Jainism and Buddhism are essentially the same tradition in terms of belief and practice. The author confesses that since he does not know the Prakrit language he was not able to translate Svetambara literature, but instead he matches the Buddhist Pali literature with the ancient Digambara literature (written in Savraseni)



and petitions other scholars to compare Svetambara literature with Buddhist literature to verify his thesis. Prasad's thesis is stated throughout the book: there is no difference between Jainism and Buddhist "except in external conduct alone," namely, the Buddhist monks wearing of clothes compared to the Digambara naked monks. Svetambara Jainism, on the other hand, which advocates the wearing of garments, seems to be almost identical to the tradition of the Buddha.

Indeed, one may witness nuanced differences today between these two traditions but the author clarifies that

“old Jainism” and “old Buddhism” (the traditions of the distant past) are essentially the same traditions that drew from each other or from a shared common source. Jainism pre-dates Mahavira by at least 250 years, it seems, (the author actually claimed its presence 2000 years before Mahavira, perhaps going back to the Indus Valley Civilization) and Buddha apparently was deeply influenced by this established ancient tradition. Moreover, the author tries to convincingly argue that this venerable philosophy did not just permeate India but made its way outside of India, fertilizing the ideas of the Greek Pythagoreans (and this accounts for their vegetarianism) and even its way to Jewish and Christian teachers, such as John the Baptist, Jesus and the Essence philosophers. Whether old Jainism actually played such a pivotal role in world history, as Prasad contends, certainly remains unknown; however, the writer does succeed in making a fascinating case that Jainism and Buddhism, historically and philosophically, are bounded.

While the first sermon of the Buddha on the Middle Path may seem to contradict the ascetical principles of the Jains, Prasad examines this from a different take. The Middle Path may simply have been a rejection of the nakedness of the Digambara order, a group Buddha practiced with for years, but not a rejection of the Jain teachings and certainly not a rejection of the Svetambara way of life. Both the Jains and the Buddhist share so many incredible commonalities, from taking alms once a day before noon in a bowl (note: the Svetambaras use the alms bowl but the Digambara monks eat from their

hands) to abstaining from wine and onions, they indeed seem connected.

The subtle rivalry we witness today between the Jains and Buddhist did not exist at the time of the Buddha, claims Prasad, but developed much later, maybe as late as the 1st century C.E. To buttress his point the text is filled with many very respectful quotes the Buddha is credited with saying concerning Jain teachings and teachers. Perhaps we can recognize signs of competition between these two groups even as far back as the second century BCE when the king of Ceylon (named Sri Lanka in 1972) apparently favored Buddhism over Jainism and transformed the local Jain temple into a Buddhist one. Certainly by the time we get the Pali Buddhist cannon at least 400-500 years after the death of the Buddha the differences had already begun to take root. Yet, if we are able to decipher what were truly the original sayings of the Buddha (at least as far as scholarship can support) we can witness and conclude Buddha's sincere affinity for Jainism.

Let us examine some of these shared features, noting on occasion slight variations. For both traditions the concept of Nirvana did not mean annihilation of the soul or nothingness but extinction of cravings and thirst, all of which lead to a life of discontentment (both traditions see ignorance and desire as the cause of pain). Nirvana, the author suggests, is a very positive, blissful condition of self-realization and absorption. It is attainable, according to Theravada Buddhists and Digambara Jains, only for the monastics. While both have the same meaning of Nirvana, Jains add that the liberated go upward and stay at the top

of the universe eternally and Buddhist remain silent on this. In terms of the soul Jains offer a direct description of the soul, counter to Buddhists who instead focus on what it is not.

In his argument that the philosophy of Jains and Buddhists are different "only in name" the 8-fold path of Buddhist is examined. Prasad asserts that the 8-fold path is essentially the same as the three fold path of right belief, right knowledge, and right conduct of Jainism. For instance, the five vows of Jainism are also embraced by Buddhists in the 8 fold path (one can think of the 8 fold path as a path of wisdom, morality and meditation; the morality section matches the five Great Vows of Jainism). And the similarities continue. One is liberated, according to Jains and Buddhists, by one's own efforts and not by the help of a personal god. Neither tradition acknowledges a creator god who creates and destroys the universe; rather, both suggest that the universe has no beginning and ending. Idols in Jainism and Buddhism are very similar (stone statues of one color standing or sitting with hands in similar mudras) and like the Digambara idols the Buddhist ones are not decorated with flowers, etc. (note: the Svetambara idols often do contain ornaments, however). And, finally, in terms of the idea of karmic law, while the same for both lineages, the Buddhist speak little of it with only scattered passages to be found, while Jain literature is replete with details of what karma is, from the idea of karmic molecules described almost in material form to the different colors of the karmic marks on the soul. Despite the scarcity of material on karma in Buddhist writings, Prasad concludes that the Buddhists

had evident knowledge of it and implied that they were in agreement with the Jain philosophers on this subject.

The most interesting chapter of the 6 chapter book was the section on ahimsa. Here the scholar makes a very astute sociological observation. He begins the chapter with a variety of quotes supporting Buddha's endorsement of ahimsa and advocacy of vegetarianism, including not eating seeds to compassion for trees and even grass to not roaming around in the rainy season to not eating at night since night lights attract insects which may fall in the food. While some Pali verses argue Buddha ate meat if served to him in alms, the Sanskrit Buddhist literature denies this and Prasad sides with the latter. Though, at the time of the writing of this book in the 1930s, many Buddhists, especially those living in Ceylon/Sri Lanka, did eat meat. Why the discrepancy, he asks? From a sociological perspective, he concludes that since Ceylon is an island whose residents depends on fish to survive the Pali literature, in an ideological spin, worked this into the philosophical writings (perhaps one can make a similar argument for why Tibetan monks in the Himalayans also condone meat eating). However, if one looks at other Buddhist monastics around the world eating meat is avoided.

When completing this text one is satisfied that Jainism and Buddhism are cut from the same or similar cloth and are no doubt sister traditions. Yet, the exorbitant quotes to support the thesis with dispersed paragraphs in the author's voice in between the quotes makes the reading a bit disjointed. Although the translation work of Prasad is



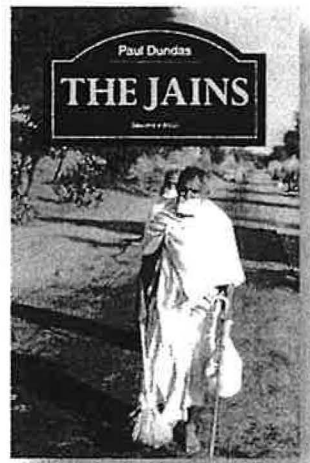
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very impressive, for a more well-rounded scholarly work a separate section or chapter contrasting Buddhism and Jainism with some detail would be important also to include, along with more material written from the author's hand.

## The Jains

By *Paul Dundas*

Paul Dundas' book on Jainism, *The Jains*, is indeed an impressive tome, detailing the differences between the two major sects, the Svetambara and the Digambara, and highlighting key Jain doctrines. Moreover, the author extends great effort clarifying the role of the ascetic and of the layperson, and walking the reader through the rich history of the Jain tradition, from the Formakers to the medieval period to recent times. In the introduction to the text, Dundas asserts his goal to "alert students of world religions to the richness of Jain history and to present it as far as possible in terms of the experience of those Jains, past and present, ascetic and lay, who have participated within it." His phenomenological and social-historical approach gives the reader a sense of a Jain worldview, albeit analyzed from a scholarly perspective.



"Universal History," as Dundas calls it, is the Jain's version of the history of the world, and so all events, historical or religious, are reinterpreted in light of this. For instance, many Jains view the Hindu Vedic writings as

really written by a Bharata, “the first Jain universal emperor of this world era” and Rama and Krishna of Hindu lore as Jain laymen. Even the Hindu goddess of wisdom, Sarasvati, is revered as a Jain. While there is an attempt in Jainism to incorporate Hindu themes and figures, there is also an animosity for Vedic sacrifice and the lack of commitment by numerous Hindus to follow the message of ahimsa.

Ahimsa, states Dundas, is the main distinctive feature that sets Jainism apart from other Indian traditions. While Buddhism, Hinduism, and other religions of South East Asia may embrace notions of benevolence and empathy, Jainism embodies universal compassion at a level greater than perhaps any other world religion. One of my favorite quotes in this book was from a modern Jain trying to raise awareness about ahimsa to the world stage: “If an atom (anu) has in it the monstrous power to destroy the world, amply demonstrated in the unprecedented holocaust at Hiroshima and Nagasaki, I want to tell the world that we have its counterpart in anuvrata—a small or atomic vow (i.e., ahimsa)—which alone has the power to ward off and counter the threat of an atomic bomb.”

Even though Jains today are undoubtedly devoted to ahimsa and to a vegetarian diet, the author investigates the rare exceptions when Jains have deviated from this. A prevalent example occurs today in East Africa, where some Jains have been known to eat meat in this cultural setting and a few even to work in the meat industry. Diaspora Jains (which includes at least 45,000 in North America, 30,000 in Europe and England, 20,000 in Arica,

and 5,000 in Asia) are certainly challenged as they have to confront their new social environments. Though most Jains remain quite faithful to ahimsa, it seems not all are.

Intriguingly, there is even evidence found in the Jain scriptures themselves of meat eating in ancient times. Jain religious literature, surely, is filled with rules of the most minute detail how not to cause any harm to other living creatures, great or small, going as far as not eating at night since insects can fly into your food in the dark hours without your knowledge or not wading in the water so not to cause harm to creatures within it. However, in the case of famine or to cure a sickness meat on such very rare occasions may have been allowed. When recently reading the *Jaina Sutras*, specifically the *Akaranga Book 2*, Lecture 1, Lesson 10, I was taken aback when I came across the following passage that seems to endorse non-vegetarian food: "A monk or nun on a begging-tour should not accept meat or fish containing many bones, so that only a part of it can be eaten and the greater part must be rejected...if you want to give me a portion of whatever size, give it me; but not the bones!" One is reminded here of Buddhist monks who can eat meat as long as it was not killed by them or for them. Yet, throughout the rest of the Jain writings, the requirements to follow ahimsa are so strict one is told where to urinate so not to harm beings on the earth and how not to hug another or scratch one's skin so not to injure any creatures on the skin. There is no doubt that Jainism advocates ahimsa and vegetarianism. But those rare cases where meat eating was allowed (whether in ancient times or in modern East Africa) one witnesses how complex the topic can be.

Another fascinating subject in Dundas' book is the Jain's relationship with war. I just completed the production of a 4 minute Youtube film on Jainism and ahimsa, which concluded with the statement that Jainism is one of the only major world religions which has not engaged in war. This line in the film sparked some controversy, as a few viewers commented that this is not the case. To clarify, drawing from Dundas' text, Jain laypersons are allowed to use martial skills defensively but not offensively. Be that as it may, the true warrior, according to Jainism, is the ascetic, who bravely battles and conquers his inner passions. As for Jain kings waging war, Dundas delineates that there is a Jain manuscript, the "Lorebook of the Beginning," which details how a Jain king would behave, often focusing on becoming a "righteous Jain monarch" overcoming one's own inner passions and keeping the kingdom free from heretical doctrines. However, the writer does state that kings of ancient times in India were obliged to "plunder and increase boundaries of their realms through military means at the expense of their neighbors" and this "would have carried more weight than any duty to observe the Jain principle of non-violence." And so Jain kings may have been compelled to follow this directive. Thus, perhaps the caveat should be added to the film that Jain kings might have engaged in war, but did so to follow their obligations as a monarch and not as a Jain. The religion itself does not promote warfare.

Whether Jains themselves have been victims of war is something to consider. There appears to be Hindu art

which portrays a Jain massacre but references to such an event are lacking in the Jain writings. When Islam entered India, a sort of war was declared on idol worship and this directly impacted the Jain community. Many statues throughout India were destroyed, including Jain shrines. The Jains relationship with Muslim rulers was at times friendly and at other times not. Akbar in the 16<sup>th</sup> century seemed to work with the Jains, even housing Jain manuscripts in his library and befriending the Jain teacher, Hiravijaya. When asked “what is the true religion,” the monk told Akbar it was compassion for all life forms. So moved by the response, it is said that the emperor ordered the release of caged birds, the prohibition of animal slaughter on Svetambara festivals, and the protection of Jain temples from Muslim assault. Akbar’s son, Jahangir, was not as benign toward the Jains but still worked with them, declaring an edict for Jains to freely worship.

Furthermore, Dundas briefly mentions that the 15<sup>th</sup> century Jain teacher, Lonka, may have rejected idols after his contact with the Islamic religion. Perhaps he was inspired by the iconoclastic message or perhaps he witnessed the destruction of Jain idols by Muslims and thought it best for prosperity sake to redirect one’s focus away from religious images. Whatever his reasons, this Jain thinker seemed to enkindle the Svetambara sub-sects, the Terapanthis and the Sthanakvasis, who both reject icons of the Jinas. Altogether, it can be argued, Islam has played a somewhat significant role in Jain history.

As we can see, many valuable insights about Jainism are covered in this masterful work. One of the more

fascinating sections for me was when Dundas discusses the Jain's connection to the Sant tradition of India, especially since my graduate studies focused on the sants. While not a great deal is covered connecting these traditions, he does state that "Jains participated in the culture of the sants, the poet-saints of medieval India, and like them produced devotional poetry." The author continues to claim that "the imagery and language of (Jain) poets such as Banarsidas and his imitator Dyanatray is often very close in style to that of a figure such as Kabir." Hence, the Jain mystical poets imitated the poetry of the sants. In this same section of the book he asserts that Jainism is an atheist religion rejecting the idea of a creator god but embracing the idea of God (paramatman), a divine principle, living within all beings. This latter view too matches Sant ideology.

Yet, unlike the sants who concentrate on meditation as their religious requirement for moksha, Jains do not practice meditation in same structured way. Jain instructions on meditation are vague and abstract, claims Dundas, having lost the scriptures that deal with this topic. Despite meditation not receiving full attention as fasting and other devotional rituals have, the Terapanthi sub sect seems to have developed a new interest in meditation, as they borrow from Theravada Buddhist techniques.

The future of Jainism, proclaims this scholar, may be somewhat bright, despite the drop in numbers as many Jains blend into Vaisnava Hinduism. The reason for his optimism lies in the fact that the environmental approach

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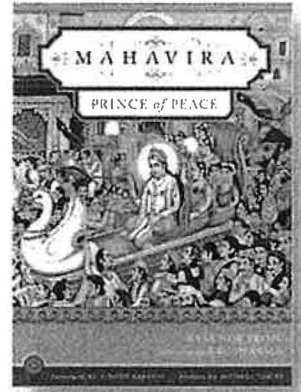
of Jainism (an eco-religion of sorts) makes this tradition very relevant today. Hopefully, the message of compassion for all creatures is heard around the world. As for the Jain's perspective on their own future, Jainism, they say, is an eternal religion with a new set of 24 Fordmakers to appear in the next world era. Mahapadma will be the first of this lineage. Dundas does state that the list of 24 past Jinas was probably made in the "2<sup>nd</sup> and 1<sup>st</sup> centuries BCE, in partial imitation of the lists of Vedic seers found in the Upanishads...extending the origins of the pro-pounders of the doctrine back into the past." Whether there were 24 past historical Jinas, with a future 24 on their way, one cannot say, since it falls out of the realm of scientific verification. Nevertheless, one thing is clear after reading this informative text: Jainism is a remarkable and inspiring tradition with a great deal to teach us all.



## Mahavira: Prince of Peace

By *Ranchor Prime*

The text *Mahavira: The Prince of Peace* written by the global environmentalist Ranchor Prime and beautifully illustrated by B.G. Sharma is a magnificent pictorial biography of this Jain Tirthankara. Though not academic in the traditional sense it is such a delight to read. Through both poetic words and enchanting images of the life stages and teachings of this great saint, the reader is transported into a mythical world, where the gods descend to intervene on his behalf and negative forces try to test his forbearance. Mahavira time and time again rises to the occasion and shows us what a noble character is all about.



The writer's intention may not have been to historically document the life of Mahavira but it seems he was trying to invoke a sense of awe for what Mahavira represents. This wealthy prince who turned ascetic and gave everything away exemplifies grace, compassion, tolerance and a gentle disposition. Unlike most texts which catalog the history and hagiography of Mahavira, this one taps more into the childlike imagination of the reader where anything is possible. The book reads like a fairytale about a hero on a journey to enlightenment. On the adventure, the hero encounters false heroes (such as Gosalaka),

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magical helpers (such as Indra), and villains (such as a charlatan astrologer and various demons). One can witness the classic structure of the hero myth delineated by the mythologist Joseph Campbell. The story ends, says Campbell, with the hero transformed and that is what we see with Mahavira.

Though his path to enlightenment seemed predestined with a remarkable birth account (his embryo was transported with the help of Indra from a Brahmin woman, Devananda, to a Kshatriya woman, Trisala), Mahavira's personal struggles through-out his long life demonstrate that the hero's odyssey is an arduous one. On his quest for higher truth he engaged in very challenging practices, such as strict fasts with no food or water. In the reading stories are told about how Mahavira fasted once for 6 months straight and at another time for 5 months and 25 days. To break one of his fasts and accept an offering he set up some unusual requirements. The one offering the food must offer boiled beans in a simple wicker basket, be a former princesses being held captive whose hair was cut short, who had been chained, and who had not herself eating in 3 days. Upon the offering she must be standing in a threshold with tears in her eyes. And very strangely, while on a long fast for many months, he found such a situation where all of the conditions were met.

Mahavira's laborious expedition even entailed torture by onlookers who did not understand what he was doing as he meditated on the side of the road. There is one story of a sadistic farmer who pounded sharpened stick-like roots

into Mahavira's ears and others who mocked him or tried to beat him. Various accounts of demons or evil spirits tormenting this teacher are also mentioned. One of the demonic beings was actually an ex-wife from his previous life as a nobleman named Triprustha. She for some reason was angry at her past husband, and so appeared to him as the evil spirit Kataputana who sent down a torrent of freezing rain upon him. When seeing his patience, resolve, and compassion her heart was softened and she begged for forgiveness. Many accounts follow this same structure of confrontation and then remorse and resolution.

However, in the reading there is a narrative where forgiveness was not sought. When Mahavira lived as Triprustha in his previous life, he had killed a lion with arrows that had wandered in from the jungle into his village. In seeking revenge the spirit of this lion caused a great storm as Mahavira crossed the Ganges River on a ship with fellow passengers. While the Jain leader remained very calm and fearless, guarding spirits intervened to prevent a disaster. This lion spirit later took the form of a man and when he encountered Mahavira he turned and immediately fled the scene. When Mahavira's student asked why the man left so abruptly the Jain teacher explained the story of the lion and how our past lives and actions create such an impression on the soul. He added that the way to overcome these feelings is through cultivating love and compassion.

Though the fanciful stories seem to be religiously enhanced and unacceptable for the modern mind to embrace at face value, as one reads this book one is

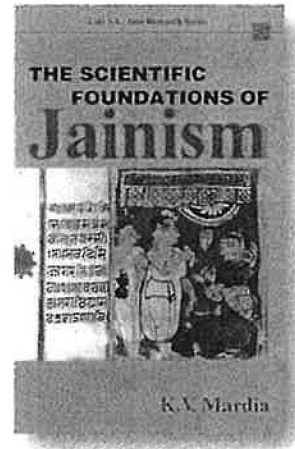
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inspired to live a better life. It is not about the historicity of these accounts that seem to matter here but about the nobility of character that shines forth. Mahvira radiated compassion for all beings, large or small, and harbored no resentment for those trying to do harm to him. Expanding "the circle of compassion" is truly a prescription for happiness, he taught. Moreover, Mahavira seemed unmoved by the vicissitudes of daily life and took everything in stride. This teacher's patience and kindness is a model for all to follow. The hero story of the prince of peace touches the heart and enlivens the imagination. When Michael Tobias in his preface to the book writes that "I am trying to be a Jain, just as I am trying to be a human being" he touches upon the whole theme of Mahavira's life--the call to do better.

## The Scientific Foundations of Jainism

By *K.V. Mardia*

For decades I have been a great admirer of Jainism, with its compassion or non-violence position (ahimsa) and its intellectual openness to alternative perspectives (*anekantavada*). Most of classic academic books I have read on Jainism approach this religion from a historical viewpoint, detailing the life of Mahavira, the philosophy of the tradition and the nuances of its branches within it. Today, there are even a variety of new texts that try to fit this ancient tradition with modernity, focusing on Jainism as a “green movement” before its time and highlighting what the environmentalist movement can learn from it.



K.V. Mardia’s text, however, offers a new take on Jainism, introducing what he calls Jain Science. There is no doubt that this book is a fascinating read, as it attempts to go beyond the theological claims of the Jain world view of karma and moksha and instead ground Jainism in a modern scientific approach. The author covers four deductive axioms (the soul is contaminated with karmic matter; all beings differ due to their karmic matter; karmic matter determines the stage or cycle the soul is at; austerity releases one from karmic bondage--this last axiom has three parts but this is the main point of it).

Karma is not understood from a Hindu view as action and reaction but more like material gunk that clouds the soul. Mardia refers to this karmic material as a particle-like substance called *karmons*. He clarifies that karmons are subatomic particles that float in space with little gravitational force and get absorbed or fused by the soul depending upon the action and the state of the living being in question. Several pictorial images are included representing karmic influx and fusion. Additionally, the writer incorporates graphs throughout the text, such as of the hierarchy of life forms and the purification of consciousness through 14 distinct stages, and even some mathematical formulas to verify the principle of *anekantavada*.

In the last chapter of the book, Mardia briefly investigates quantum physics, evolution, Einstein's  $E=MC^2$  equation, the four known forces of the universe, the idea of Heisenberg's uncertainty principle and Stephen Hawking's beginningless and endless universe, all to connect the Jain view with modern science. He concludes this section with a few Einstein quotes, including the famous statement, "Science without religion is lame; religion without science is blind."

Certainly, the writer is enthusiastic in drawing a tight analogy between Jainism and modern science. One cannot help but admire his sincerity in this project. When making analogous references between Jain ideas and scientific ones no harm is really done. Comparing karmons to particle physics offers an interesting way to grasp Jain teachings. Though, when moving beyond analogy and

equating modern scientific discoveries with specific Jain views, or when suggesting Jain concepts are scientific fact not to be questioned, this seems to step beyond the comfort zone of the modern scientific mind and to misrepresent the scientific endeavor.

The problem is that most, if not all, of the claims within the text do not fall within the parameters of science, as they are non-falsifiable and out of the realm of objective verification. Statements that one can reduce karmic density by ahimsa, that onions have more life-units than apples and hence should be avoided, or that there are a set number of stages on the way to purification or omniscience, start from a deductive position and do not allow new inductive information to alter the claims.

This erroneous attempt to develop Jain Science reminds me of a conference I attended in Agra, India in November, 2014, sponsored by a religious educational organization, Dayalbagh Educational Institute (DEI). Some papers presented 18 levels of various states of consciousness, culminating in the highest state of enlightenment, Sach Khand. It all looked so “scientific” with numerous graphs and specific terms detailing each state. The underlying theme at the forum was that this was a scientific investigation into consciousness. Yet, to the scientifically observant, it was indeed not science by any stretch of the imagination. There was no “Einstein waste paper basket” where one was willing to throw out one’s own claim in light of the latest research. The position of “truth” was assumed, as it was in Mardia’s four deductive axioms, and then evidence was sought to

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bolster it. This is not how the scientific method works. In science, no position of "truth" takes the stage. Rather, one must be willing to examine all of the evidence, even contrary data. And the claim itself must be falsifiable, meaning that there can be evidence that proves it false. Making non-testable claims is ultimately meaningless in the scientific discipline.

Despite the criticism that Jain science is in truth an oxymoron, I did enjoy reading the book, as it offered the reader an insider's view of Jain thinking. Furthermore, while science may not be presented accurately, the admiration the author demonstrated for modern science is apparent. Perhaps, though, instead of focusing on Jainism as a science, it works best to view Jainism as model of moral genius. There is so much today we can learn from the values of the Jains in terms of how to treat other life beings that this should be the target of our attention.



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Andrea Diem-Lane is a Professor of Philosophy at Mt. San Antonio College. She received her Ph.D. and M.A. in Religious Studies from the University of California, Santa Barbara, where she did her doctoral studies under Professor Ninian Smart. Professor Diem-Lane received a B.A. in Psychology with an emphasis on Brain Research from the University of California, San Diego, where she did pioneering visual cortex research under the tutelage of Dr. V.S. Ramachandran. Dr. Diem-Lane is the author of several books including an interactive textbook on consciousness entitled *The Cerebral Mirage* and an interactive book on the famous Einstein-Bohr debate over the implications of quantum theory entitled *Spooky Physics*. Her most recent book is *Darwin's DNA: An Introduction to Evolutionary Philosophy*.



# AHIMSA

A Brief Guide to Jainism



Andrea Diem-Lane

Mt. San Antonio College

*Walnut, California*

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## PROLOGUE

### *The Two Minute Warning*

Much of the violence that we as humans inflict on others happens in less than two minutes, whether it is rage against a driver who abruptly turns into our freeway lane or anger from a surfer who takes off a wave we believed was ours alone. Michael Tobias in his book *Life Force* writes at length about the ancient Jain practice of ahimsa, or non-violence, and how becoming acutely aware of the suffering of others can be mitigated if we just stopped and deeply thought about how much unnecessary pain and suffering we cause to a variety of life forms surrounding us.

As Tobias explains,

“To temper that killer in man, and the subsequent killing fields, is to grope with those few moments where conflict begins. Two minutes of unthinking, unfeeling behavior: Whether in the eating of a hamburger, the casting of a fishing line, or, more subtly, the habit of taking one’s children to a circus to view animals who in fact have been reduced to insanity and pain. Two minutes of our own insanity, in the breeding of captive animals who were meant to be free, or worse—the abandoning of those pets to certain death; in the reining, or worse, the racing of horses; the killing of bugs in a frenzy of vindictiveness, as opposed to more patiently removing them without injury. The litany of transgressions cascades with numbing ubiquity. And it all comes down to the collaborations—mindful of not—with atrocity carried out by, or on behalf

of humans, and committed against other living creatures—whether around the dinner table, on the job, on the farm, the ranch, in the street, at the grocery store?”

Jainism arose as a systematic response to human and animal violence by positing a radical alternative—the path of ahimsa or non-violence.

Their argument is a simple but profound one. If we can lessen the pain and suffering of those around us why not choose that option instead of needlessly perpetuating the never-ending cycle of violent retribution. Jainism raises a most pregnant question for all of us: how big is our circle of compassion? Can we extend its circumference beyond our selves and kin to include other human beings not of our tribe and even further to include animals and other living beings?

In those brief moments where we almost instinctively lash out at others, can we instead pause and change our responses? The Jains believe that we can and have demonstrated over hundreds of years how it can be ecologically and ethically successful. It is a very telling fact, indeed, that Jainism is the only major world religion that has never engaged in war.

This book is a brief introduction to the Jain religion, including a close look at its inception and how it evolved over time to its present day status. Special attention will be given to how Jain ideals such as ahimsa and *anekantavada* (the doctrine of non one-sidedness) can serve as a much needed and welcome panacea to the world's strife and misery. Although Jainism is perhaps the smallest

of the world's religions, what it has to offer humankind is  
of inestimable value.





## INTRODUCTION

When I was watching the first installment of the *Hunger Games* movie series I was horrified to imagine what it would be like to be a player in such a death match, where participants must kill or be killed. But then as I left the movie theater I realized that this very earth was actually *Hunger Games* on steroids. Just think, we have arrived on a planet where the only way to survive is that something living must be killed, whether it be a plant, a fish, or an animal. Each of us has to take a life out in order to maintain our own life. We live in an omnivorous universe, where pain and suffering are the common lot of its inhabitants.

The history of civilization is in many ways a record of how humans have responded to this Darwinian nightmare where “nature is red in tooth and claw” (to cite Darwin’s famous citation of Tennyson). Religion can be viewed as our primitive attempt to make sense out of a particular space and time that appears to have no ultimate purpose save keeping one’s skin in tact long enough to sire progeny.

So many moral codes and so many ethical guidelines have been given across cultures about how we should respond to our existential predicament. Most, however, have been parochial and tribal in developing their lifestyle strictures, such that they merely serve to benefit those in power who developed the rules in the first place. Rarely do we find a wider more encompassing purview that looks beyond its own self-preservation.

I would imagine that almost all of us Homo sapiens would be mortified if we had to eat other human beings in order to survive. The very idea is abhorrent. But what about the killing of other species? Do we extend our circle of empathy to them as well?

Sam Harris, the well-known neuroscientist-atheist turned author, in a recent podcast speculated about what future generations will see in our own time as monstrous but which we ourselves turn a blind eye. Harris and his friend, Paul Bloom, the distinguished psychologist from Yale University, both agreed that it would be the fact that a majority of humans persist in eating meat, despite what we know now about animal pain and suffering.

We look back at slavery and cannot fathom how it could be condoned and yet it persisted. The same holds true with how we have treated women and homosexuals in the past only to wake up (mostly too late) to our misguided abuses.

Is it indeed possible to develop a worldview that encompasses not only all of humanity (not herded and protected by nation state only interests) but all of life? In other words, how big is our circle of compassion?

If we compare the world's religions and their respective moral compasses, even though many contain the golden rule of "do unto others as you would want others to do to you", they tend to focus almost entirely on how to treat other human beings. In contrast, Jainism extends that credo to all of life and stands out as perhaps the one religion that argues for an infinite circle of empathy.

Often when I lecture on the world's religions, some of my students snicker to what lengths Jain monks will go not to harm any creature. For example, one well-known Jain leader refused to be filmed since he felt that the severe lighting would cause harm to microscopic creatures. Other Jains have even built hospices for dying rodents and other neglected animals. But then I ask my students a very simple, but ultimately revealing question, "Who would you rather see down a dark alley in the middle of the night: a group of Christians from the Spanish Inquisition, or radical Muslims from ISIS, or ten sky-clad Jain monks sweeping the street?" The inevitable answer from my students, almost in unison, is that they would prefer the Jain monks to the others. This is an instructive point, and not merely a silly thought experiment. I think we can learn much about how we wish the world to be and how we wish to conduct our own lives by learning about Jainism and its evolution. The following is but a brief glimpse into this most ancient and non-violent way of living.



## MAHAVIRA AND EARLY JAINISM

There is some controversy over when and how Jainism was founded. Some scholars argue that it may be the oldest religion in India dating back to Harrapan times, though this is disputed by other researchers who date Jainism back to the 6<sup>th</sup> century B.C.E. According to Jain tradition, there have been twenty-four Tirthankaras, known as all-knowing teachers who have built a pathway from the cycle of suffering (samsara) to an eternal realm of liberation (moksha). The last Tirthankara is the most famous and is regarded by some as the founder of the Jain religion. His name was Mahavira, meaning "great hero" and he lived from 599 to 527 B.C.E., though Western scholars place his birth and death within the 5<sup>th</sup> century proper.

There is much uncertainty surrounding his life and work and it is difficult to know for certain which details are historically accurate and which are merely the result of hagiography accredited over time. His story, nevertheless, is a fascinating one and says much about his influence. According to Jain literature Mahavira (known at birth as Vardhamana) was born in Kundagrama, a district in Bihar, India, and was like his near contemporary, the Buddha, brought up in great wealth in a Kshatriya family of King Siddhartha and Queen Trishala. Apparently his parents were devout followers of the twenty-third Tirthankara, Parshvanatha, and this undoubtedly must have influenced the young Vardhamana's spiritual outlook.

Interestingly, the young boy was surrounded by wealth and luxury. There is some debate about whether he was married or not. The major sects within Jainism—Svetambara and Digambara—have differing views on whether Mahavira married. The Digambaras argue that he refrained from marrying Yashoda, whereas the Svetemaras hold that he did indeed marry her and that they had one daughter named Priyadarshana.

Both groups agree, however, that at the young age of thirty Mahavira decided to renounce his home and family and embarked on a strict path of asceticism. It should be acknowledged here that Mahavira's life trajectory is quite similar to that of Siddhartha Gautama (the Buddha); in fact, they share so much in common that it gives one pause to reflect about why this is the case. Some scholars suggest that the stories intermingled because each shared or borrowed from a common source. Others suggest that it is merely coincidental and may be part and parcel of the zeitgeist of the time.

A number of legendary myths surround Mahavira's renunciation and it is nearly impossible to separate historical fact from legend. For instance, in the beautifully illustrated book, *Mahavira: Prince of Peace*, Ranchor Prime describes a series of amazing tales regarding Mahavira's birth, childhood, and subsequent enlightenment. They are strikingly beautiful in their detail, even though they are of doubtful origin. Nevertheless, they are instructive in documenting the severe trials Mahavira must have undergone in his spiritual quest. We learn from one such mythological rendition the following: "Finally, in full view

of the watchful crowd he removed the remainder of his clothing until he stood before them clothed only by the air. A glow seemed to radiate from him as he stood before them quite at peace and unselfconscious, full of purposeful intent. As the sun touched the horizon he grasped the locks of his hair, and in four handfuls pull it all out by the roots. Finally he grasped his beard and mustache in a single bunch, and in one wrench pulled it out. All these bundles of hair were collected by those around and placed in the waters of the river. Standing exposed before everyone, he called out loudly. "I will look upon all creatures as equals. I will speak only the truth. I will possess nothing. I will take nothing from others. I will observe lifelong celibacy."

Such was the momentous beginning of Mahavira's sojourn. A number of trials and tribulations confronted the young man; most of them now have become well-repeated moral lessons for devout Jains. These include how Mahavira responded to an angry farmer who accused the ascetic of neglecting care of his two bullocks to how he enlightened a venomous cobra to how he overcame the taunts and temptations of evil spirits bent on betraying his vows. Throughout all of this, Mahavira remained steadfast in his asceticism, practicing severe austerities for twelve years.

The *Kalpa Sutra* (18) explains it thus: "Henceforth the Venerable Ascetic Mahavira was houseless, circumspect in his walking, circumspect in his speaking, circumspect in his begging, circumspect in his accepting (anything), in the carrying of his outfit and drinking vessel; circumspect in

evacuating excrements, urine, saliva, mucus, and uncleanness of the body; circumspect in his thoughts, circumspect in his words, circumspect in his acts; guarding his thoughts, guarding his words, guarding his acts, guarding his senses, guarding his chastity; without wrath, without pride, without deceit, without greed; calm, tranquil, composed, liberated, free from temptations, without egoism, without property; he had cut off all earthly ties, and was not stained by any worldliness: as water does not adhere to a copper vessel, or collyrium to mother of pearl (so sins found no place in him); his course was unobstructed like that of Life; like the firmament he wanted no support; like the wind he knew no obstacles; his heart was pure like the water (of rivers or tanks) in autumn; nothing could soil him like the leaf of a lotus; his senses were well protected like those of a tortoise; he was single and alone like the horn of a rhinoceros; he was free like a bird; he was always waking like the fabulous bird Bharunda, valorous like an elephant, strong like a bull, difficult to attack like a lion, steady and firm like Mount Mandara, deep like the ocean, mild like the moon, refulgent like the sun, pure like excellent gold; like the earth he patiently bore everything; like a well-kindled fire he shone in his splendour.”

Mahavira achieved enlightenment or Kevala Jnana (supreme knowing) “under a Sala-tree on the banks of the river Rjupalika (today Barakar) near a place called Jrbhikagrama.” That Mahavira and Buddha both received their deep insights under a tree (for Siddhartha it was a Banyan) is revealing and says much about their respective narratives.



Mahavira is alleged to have explained his enlightenment as, "I am all-knowing and all-seeing, and possessed of an infinite knowledge. Whether I am walking or standing still, whether I sleep or remain awake, the supreme Knowledge and Intuition are present with me — constantly and continuously."

After this remarkable awakening, Mahavira gave his first sermon at Vipulachala where he discoursed not only to humans but to animals and other sentient beings, explaining the way of ahimsa or non-injury to all.

As the *Jainworld website* elucidates, "In his philosophical discourses he showed that jiva, i.e. life and ajiva i.e. non-life, are the basic constituents of the universe and that their mutual contact creates problems of life. In this connection he propounded the six Dravyas, i. e. six substances, and seven Tattvas, i.e. seven principles and on their basis explained the nature of all the objects and their activities. In view of these fundamental things, he revealed the Karma theory and pointed out the way of getting the Atman, i.e. the soul, freed from the bondage of Karma. Along with philosophical dispositions, Mahavira laid much emphasis on ethical aspects involving actual practices of behaviour. He gave detailed exposition of *Grihastha-Dharma* and *Muni-Dharma*, i.e. rules of behaviour to be observed by householders and by ascetics. In his ethical discussions Mahavira invariably laid utmost stress on the observance of non-violence in actual life and on the strict avoidance of violent practice like performance of animal sacrifices, eating flesh, killing animal for sports and other purposes, etc."

Mahavira eventually gathered a significant following and his influence spread quicker than one might at first suspect, given the limitation of communicative systems at the time. He taught that the jiva or soul was entrapped with a universe of karmic atoms that bind its own illumination and liberation. The key is to realize the truth of our samsaric condition by meditation and right living. Mahavira didn't postulate a faith-based system, nor did he enjoin the worship of any supreme god or gods. Like Buddhism, Jainism is non-theistic. According to the Jain federation of North America, "Mahavira preached that right faith (*samyak darshana*), right knowledge (*samyak jnana*), and right conduct (*samyak charitra*) together is the real path to attain the liberation from karmic matter of one's self."

#### **Five Vows of Jainism:**

To achieve this aim, Mahavira and Jainism point to five fundamental vows that should guide the jiva's way of life:

1. Nonviolence (*Ahimsa*): not to cause harm to any living beings.
2. Truthfulness (*Satya*): to speak the harmless truth only.
3. Non-stealing (*Asetya*): not to take anything not properly given.
4. Chastity (*Brahmacharya*): not to indulge in sensual pleasure.

5. Non-possession/Non-attachment (*Aparigraha*): complete detachment from people, places, and material things.

Coupled with these five admonitions are *Anekantvada*, the acceptance of multiple viewpoints or perspectives, and *Syadvada*, the view that all judgments or appraisements are temporary and conditional.

Mahavira taught the way of ahimsa for the next thirty years of his life finally achieving his final liberation from this world at the age of seventy-two. While Buddha is reported to have died because of poison mushrooms, Mahavira died of self-starvation, known in Jainism as *sallekhanavrata* or holy death.



## FILM SCRIPT OF MAHAVIRA'S LIFE

*In the Fall of 2015, I made a short film about the life of Mahavira based on a beautiful and fully illustrated book by Ranchor Prime and B.G. Sharma. It can be viewed on the Neuralsurfer Vision YouTube channel. The following is a transcription of the narrative script.*

According to Jain tradition, there have been twenty-four Tirthankaras, known as all-knowing teachers who have built a pathway from the cycle of suffering (samsara) to an eternal realm of liberation (moksha). The last Tirthankara is the most famous and is regarded by some as the founder of the Jain religion. His name was Mahavira, meaning “great hero” and he lived from 599 to 527 B.C.E., though Western scholars place his birth and death within the 5<sup>th</sup> century proper.

There is much uncertainty surrounding his life and work and it is difficult to know for certain which details are historically accurate and which are merely the result of hagiography accredited over time. His story, nevertheless, is a fascinating one and says much about his influence.

[Here are 30 interesting details on the life of Mahavira:]

According to Jain legend, Mahavira first occupied the womb of a pious Brahmin named Devananda. Because she had wondrous dreams she and her husband knew that this was a special child. However, in a strange twist of fate orchestrated by the god Indra, Mahavira was switched over to another woman named Trisala who was a queen of the Krisyhata caste. Interestingly, her original child, a baby girl, was switched over to Devananda.

So sweet was this baby Mahavira in the womb that he didn't move so as not to cause injury or pain to his birth mother but this caused some fear in her because he was so still.

When Mahavira was born the universe rejoiced and he was honored by gods, goddess, and angelic beings. Indra strikes a divine bell, Sughosha, so all can worship this radiant child.

Indra is so pleased by the appearance of Mahavira that he lifts the child upwards to heaven so he could righteously honored. While in heaven there is a festival where he is bathed and adorned.

When Mahavira returns back to the earthly kingdom of his father, everyone rejoices because everyone experiences great wealth and fortune. Because of this they name him Vardhamana.

As a young boy Mahavira plays a game of tag with his childhood companions when a large cobra tries to attack, but Mahavira flings the hissing snake away from the boys and away from harm.

Another demon disguised as a little boy tried to deceive Mahavira while playing leap frog--growing super tall in order to attack him, but Mahavira made him shrink down by his blows until the demon begged for mercy. This is how Vardhamna became known as the Great Hero, Mahavira.

When Mahavira was a young boy 8 years old studying at school, Indra took on the teacher's form to show everyone that Mahavira was the great Rishi.

Mahavira grows up a young handsome man but he refuses to participate in hunting, since he believed that "we should treat all others as we wished to be treated ourself."

Mahavira, honoring his parents' wishes, gets married to Yashoda and has one daughter named Priyadarshana

After his parents died, at 28 years old Mahavira wants to renounce the world and seek enlightenment. To do such he asks permission from his brother Nandivardhanana who delays him for two years.

Mahavira explains to his family and Kingdom that he must follow a higher destiny than merely storing worldly riches.

As Mahavira gets ready to renounce his kingdom and prepare for renunciation he opens up the palace doors and gives everything away.

After his sacred bath, Mahavira is carried out on a beautiful carriage in a parade through the town. In front of the asoka tree, Mahavira takes off all his jewels and pulls out all his hair in five fistfuls. Indra then appears and provides him with a beautiful white shawl to cover his naked body.

Mahavira in his radiance is attractive to both males and females, as he gives off an enchanting aroma of sandalwood paste.

In the beginning of Mahavira's journey a poor Brahmin asks for a gift from him. And Mahavira offers him a part of his beautiful white cloth that was bestowed on him by Indra, but the other part ripped on a thorny branch and this too was taken by the Brahmin. Mahavira now is completely naked.

When Mahavira is asked to watch a farmer's bulls, Mahavira is deep in meditation and unaware of the request only to be beaten by the disgruntled man. The cows return peacefully and Indra appears to protect Mahavira and the farmer repents.

As he meditates in a temple, evil spirits try to torture him but eventually realize their wrong ways and leave him undisturbed.

Mahavira comes upon a cobra that bites his foot, but Mahavira reminded him of his past life that he used to ascetic and thus he liberates him from his bad karma.

On a ferry crossing rough seas created by an evil spirit, while everyone panics Mahavira remains calm. Other demons also try to assail him, including his wife from a previous life who was envious of him.

When Mahavira was on a five month fast, he had very strict restrictions about how he would break it, and a young woman met the conditions and offered him a basket of beans.

Mahavira meets his severest test when a deranged farmer puts sharpened pampas grass and shoves into each ear



hole. The next day a physician saw Mahavira in this miserable condition and the pampas grass was removed.

For 12 and a half years Mahavira practiced severe austerities and because of this practice he eradicated all of his past karmas and a brilliant white aura surrounded him from then on.

With complete knowledge Mahavira became a jinna, one who has conquered the onslaught of samsara.

In celebration of his jinna status, the gods planted an asoka which grew in full size immediately and this is where Mahavira taught the community his message of non-violence.

Eleven philosophers renowned for their erudition tried to challenge Mahavira but were unsuccessful and the leader of the group, Gotama, became one of his greatest disciples.

After 24 years of teaching, Mahavira was confronted by an old disciple Gosalaka who had gained supernatural powers and who tried to use evil curses against him but it backfired and he died instead.

At 72 years old Mahavira gave his last sermon for two days and two nights and reaffirmed the five principles of Jainism: nonviolence, truth, non-theft, self-control, and detachment from worldly possessions.

As Mahavira was on his deathbed, he reminded them that his spirit was immortal and there was no reason to be sad. He died in the year 527 BCE.

Gotama cried at the death of master, Mahavira, but remembered that he should be attached to the body of his beloved teacher and immediately became enlightened himself and continued the teachings of Mahavira.

## THE EVOLUTION OF JAINISM

After Mahavira's death at the reputed age of 72, his teachings spread throughout India. Accordingly, his teachings were codified by his disciple Gautamaswami (also referred to as Gotama) and became regarded as the most holy of the Jain scriptures. The two main sects of Jainism, Digambara and Svetambara, have differing views on the evolution of Jain teachings. As the *Jain Encyclopedia* explains, "Most religions have sets of holy writings that lay out key principles and offer guidance and examples to believers, and Jainism is no exception. For the Śvetāmbara sect, as for all Jains, the Jinas are the ultimate source of teaching. This is especially true of the 24th Jina, Mahāvīra. All Jains believe that this teaching was first transmitted orally. All sects also agree that this teaching was partly lost and partly changed over time. However, they disagree on which parts have vanished and which have been amended. This explains why the Śvetāmbaras and Digambaras consider different texts to be authoritative scriptures. Śvetāmbara Jains have their own history about the transmission of scriptures and their own body of scriptures. The Śvetāmbara subsects disagree about what exactly these authoritative texts are. The number of accepted scriptures corresponds to a sectarian division which took shape from the 15th century onwards. Mūrti-pūjaks consider there are 45 scriptures while Sthānaka-vāsins and Terāpanthins state there are 32. Within the scriptures, some groups of texts are unchanging while others show fluidity and divergences."

Decades after the death of Mahavira, a dispute arose over the teachings of Jainism and this led to a schism between two schools of thought known as the sky clad and white clad (“literally, the monks of the Digambaras are naked while those of the Svetambaras wear white clothes.”). The Digambaras are much lesser in number but arguably are closer to the original tenets of early Jainism, whereas the Svetambaras have the largest following and are more widespread throughout India and elsewhere. It is roughly estimated that there are anywhere between 4 to 7 million Jains worldwide.

### **The differences between Digambaras and Svetambaras**

*Adapted from Jainworld*

#### *Practice of Nudity*

Digambaras stress the practice of nudity for the monastics as an absolute pre-requisite to the mendicant's path and to the attainment of liberation. But the Svetambaras assert that the practice of complete nudity is not essential to attain liberation.

#### *Liberation of Woman*

Digambaras believe that a woman lacks the adamantine body and rigid will necessary to attain moksa, i.e., liberation: hence she must be reborn as a man before such an attainment is possible. But the Svetambaras hold the contrary view and maintain that women are capable in the present lifetime of the same spiritual accomplishments as men.

*Food for Omniscient*

According to the Digambaras, once a saint becomes a kevali or Kevala-jnani, that is, omniscient, he needs no morsel of food. But this view is not acceptable to the Svetambaras.

*Minor points of Differences*

Leaving aside the trivial differences in rituals, customs and manners, the following are some of the minor points on which the two sects of Digambaras and Svetambaras do not agree:

*Embryo of Mahavira*

The Svetambaras believe that Mahavira was born of a Ksatriya woman, Trisala, though conception took place in the womb of a Brahman lady, Devananda. The change of embryo is believed to have been effected by God Indra on the eighty-third day after conception. The Digambaras, however, dismiss the whole episode as unreliable and absurd.

*Marriage of Mahavira*

The Svetambaras believe that Mahavira married Princess Yasoda at a fairly young age and had a daughter from her by the name Priyadarsana and that Mahavira led a full-fledged householder's life until he was thirty, when he became an ascetic. But the Digambaras deny this assertion altogether.

*Tirthankara Mallinatha*

The Svetambaras consider Mallinatha the 19th Tirthankar as a female by the name Mall; but the Digambaras state that Mallinatha was a male.

*Idols of Tirthankars*

The Svetambara tradition depicts the idols of Tirthankars as wearing a loin-cloth, bedecked with jewels and with glass eyes inserted in the marble. But the Digambara tradition represents the idols of Tirthankars as nude, unadorned and with downcast eyes in the contemplative mood.

*Canonical Literature*

The Svetambaras believe in the validity and sacredness of canonical literature, that is, the twelve angas and sutras, as they exist now, while the Digambaras hold that the original and genuine texts were lost long ago. The Digambaras also refuse to accept the achievements of the first council which met under the leadership of Acharya Sthulabhadra and consequently the recasting of the angas.

*Food of Ascetics*

The Svetambara monks collect their food from different houses while the Digambara monks take food standing and with the help of knotted upturned palms and in one house only.

*Dress of Ascetics*

The Svetambara monks wear white clothes, but the Digambara monks are naked.

*Possessions of Ascetics*

The Svetambara ascetic is allowed to have fourteen possessions including loin-cloth, shoulder-cloth, etc. But the Digambara ascetic is allowed only two possessions: a peacock-feather whisk-broom (the pichhi) and a wooden water-pot (a kamandalu).





## JAIN TEACHINGS

### Anekantavada

*Anekantavada* (literally “not one sided”) is one of the most profound and insightful concepts ever developed in the history of ideas and traces its origin back some 2600 years ago to the ancient religion of Jainism in India. *Anekantavada*, though sometimes postulated as an intellectual extension of the Jain concept of ahimsa, or non-violence, is perhaps best understood as a process of seeing any person or event from multiple angles and not closing one’s self off from contrarian perspectives. Some have even argued that *anekantavada* is a philosophical talisman to ward off dogmatic thinking or myopic fundamentalism. A beautiful illustration of the concept is captured in Jain literature by the story of six blind men and an elephant. By accessing different parts of the elephant’s body, each blind man tries to deduce what he is touching.

The blind man who feels a leg says the elephant is like a pillar; the one who feels the tail says the elephant is like a rope; the one who feels the trunk says the elephant is like a tree branch; the one who feels the ear says the elephant is like a hand fan; the one who feels the belly says the elephant is like a wall; and the one who feels the tusk says the elephant is like a solid pipe. A king explains to them: All of you are right. The reason every one of you is telling it differently is because each one of you touched the different part of the elephant. So, actually the elephant has all the features you mentioned.

Interestingly, *anekantavada* is not a concept exclusive to Jainism since it has appeared in various ways throughout human history. We find the idea sprinkled throughout literature, and it is the central theme in Tolstoy's famous short story, *The Coffee House of Surat*. Set in India, various individuals from different religious and cultural background debate the existence of God and his nature. There is a Persian, an African slave, a Brahmin, a Jew, an Italian, a Protestant minister, a Turk, and finally a whole host of others from differing faiths. As Tolstoy recounts, "but by this time a great dispute had arisen among all the strangers of different faiths and creeds present. There were Abyssinian Christians, Llamas from Tibet, Ismailites and Fire-worshippers. They all argued about the nature of God and how He should be worshipped. Each of them asserted that in his country alone was the true God known and rightly worshipped. Every one argued and shouted."

Tolstoy resolves the story with a Chinaman who argues for an acceptance of a multiplicity of views, arguing that the God they seek transcends human pettiness and political nation-states. Concludes Tolstoy, "So spoke the Chinaman, the student of Confucius; and all who were present in the coffeehouse were silent, and they disputed no more as to whose faith was the best."

The implications of *Anekantavada* are also present in celebrated international films, such as the Japanese classic *Rashomon*. The plot involves the death of a samurai and each character in the movie recounts a different version of what transpired, although each of their perspectives is tainted by being self-serving. There is the wife's story, the

bandit's story, the samurai's story, and the woodcutter's story. Multiple perspectives but none contain the full story or the whole truth.

One of the best examples of *anekantavada* is found in science, which is predicated upon the acceptance of multiple viewpoints with the desired aim of allowing each to compete with each other to discover which one best explains the given phenomenon. But even when one viewpoint holds sway, the scientist must continually be open to being wrong. This very modus operandi (of allowing contrasting models) is precisely why science has been so successful and why it has been incredibly progressive in developing new and powerful technologies.

Edward O. Wilson underlines this spirit of multiple worldviews and its apparent unity in his controversial book, *Consilience: The Unity of Knowledge*, where he contends that each academic discipline should be considered and reconciled when examining complex issues. Ken Wilber postulates something similar to consilience, but discarding more of its radical reductionisms, by championing an Integral Paradigm that incorporates an AQAL (all quadrants, all levels) inclusivity which is sometimes explained more simply as "everyone is right."

What makes the Jain doctrine so powerful is not that it relativizes all religious claims, but rather that listening deeply to other perspectives is considered an important pathway for discovering a more encompassing truth. Ironically, by allowing uncertainty as a core virtue it allows

for a more certain pathway to understand the world and its varied manifestations.

### **Ahimsa**

Ahimsa, translated as “non-violence,” is perhaps the one concept that defines Jainism best and one that has had a tremendous impact on the history of ethics worldwide.

From a purely Darwinian perspective, we live in a world that is predicated upon eating living things in order to survive and as such resembles a massive killing game where pain and pleasure serve as elemental motivators.

There are to be sure a variety of ways to respond to this horror show we call daily living. While the vast majority have engaged in the evolutionary proceedings, doing his or her best to be part of those who live long enough to pass on their genetic code, certain individuals and groups have chosen an alternative pathway, one which seems completely contrarian to nature’s methods.

Jains have chosen en masse to lessen killing and adopt a pathway of non-violence whenever possible. This remarkable ethic is generally termed *ahimsa* (literally, “not to injure”) and has a long history in India dating back to the Vedic period. However, it has reached its most refined expression in the Jain religion, which has elevated the principle and made it an essential part of its worldview and practice.

What is perhaps most revealing in the Jain practice of ahimsa is how far it extends to all living beings, even including insects and certain plant life.

In the essay, *The Way of Non-Violence*, on the famous Jain leader, Acharya Sushil Kumar, the author explains why humans have developed aggressive behavior:

“Wherever there is an ‘other,’ fear arises. It is the emergence of the separate self--the ‘I’-ness, the egoic structure--which is at the heart of man's cruelty,” Sushil Kumar stated. With the advent of self-awareness there also comes the presumption of what is ‘not self,’ and all of that (the environment, the world, ‘them’) generates fear. This fear drives human beings to protect the self from all that threatens its separate existence. But such a strategy can only end in failure and a life-long narcissism, a denial of the universe and what it offers. Paradoxically, the more one tries to retain the self, the more one eventually loses it in the fight against the ‘not self’ (the world). A tragic double bind indeed! What is the solution? There's only one, Sushil Kumar postulates. Give up the false idea of an independent self and begin to see the creation as one indivisible whole. Unless the individual surrenders its infantile posture towards life--one which is reflected in the obsessive fear of death--then the end of wars, nuclear or conventional, will never be secured. As Sushil Kumar elaborated, it is easy to wage battle with ‘others’ who have ‘not seen the light or true path’ but it is very difficult to conduct the real war, which must take place within ourselves. Sushil Kumar's whole message was based upon the principle of ahimsa, non-injury and respect toward all living things. Indeed, it is this ideal which has served as the guiding light to his spiritual practice and political ideology. To show loving kindness in all directions, without recoil, to every creature, great or small, ugly or

beautiful--this, Sushil Kumar stressed, was the ultimate message of Jainism. However, he emphasized that ahimsa was not the property of any particular faith but is the spiritual inheritance of all men and women. Throughout history there have been various degrees of non-violence which has been practiced, ranging from simple non-injury to human beings alone to the extreme of not hurting insects or vegetation whenever possible. Jainism's uniqueness has been in its rigorous adherence to the doctrine of ahimsa in all forms. Followers of Jainism are strict vegetarians, abstaining from meat, fish and eggs. They also do not drink alcohol or take mind altering drugs. Though there is no 'God,' as such, in Jainism, devotees do hold that the true reality of the universe is spiritual in nature. It is the goal of all devout Jains to extricate their souls from the realm of matter in order to achieve absolute freedom or liberation. To achieve this enlightened state, the disciple must work very hard on herself, circumventing the tendency of the mind to focus outward on the world and its pleasures. Instead of allowing more karmas to accumulate, which only keeps the soul imprisoned, the devotee must give up evil tendencies and transcend the realm of prakrita (maya or illusion)."

## **Ahimsa Basics:** Refraining From Violence

Adapted from *BBC on Jainism*

One should refrain from violence to any living creature. Violence includes: physical violence | mental violence | verbal violence.

Violence can be committed in several ways, all of which should be avoided: committing it yourself | asking others to commit violence | encouraging others to commit violence | assenting to or condoning violence.

Violence involves violent intention as well as physical harm.

This is controversial among Jains and both the points below are disputed. Accidental physical harm may not count as violence if there was no violent intention, but lack of compassion or care may be a sufficiently violent intention.

Ahimsa touches every area of life, so Jains: are vegetarian | don't use cloth whose production hurts animals or humans | take care to preserve life in everything they do.

Jains are also not allowed to do jobs that cause harm, for example: those involving furnaces or fires | those in which trees are cut | those involving fermentation | trading in meat products, honey or eggs | trading in silk, leather etc. | selling pesticides | selling weapons | digging | circus work involving animals | zoo work.

JAINISM AND THE PATH OF AHIMSA

Ahimsa is positive--so it's good to: forgive | promote tolerance | be compassionate | give to charity | work for peace | protect the environment | work for kindness to animals | do one's daily work in a just and honest way.



## JAINISM TODAY AND ITS IMPACT

Perhaps the biggest (and undoubtedly the most surprising) influence Jainism has had on the world at large is in how we eat. Today vegetarianism has become a viable option for millions worldwide and much of the reason behind this is due to Jainism and its high ideal of not eating animals. Of course, most Europeans and Americans are almost completely unaware of Jainism and its doctrine of ahimsa, but it has had a profound impact on the ever growing vegetarian movement. Coupled with Buddhism and Hinduism (which also advocate, to some degree, abstaining from eating animals), Jain philosophy has touched many people who are interested in alternative lifestyles, even if they may be unaware of Indian ethical systems per se.

Mohandas K. Gandhi, for example, though born a Hindu, was highly influenced by Jainism and in turn he himself by imbibing many Jain ideas has influenced the world with his political views on truth seeking and non-violent protests.

As the *Somason* website explains:

“Mohandas K. Gandhi, whom many revere as the Father of India, was not a Jain by birth. His parents were Vaishnavas and he was born into that Hindu sect in the city of Porbandar, Gujarat on October 2nd, 1869. Jainism has a strong influence in Gujarat because many Jains live there. Growing up in that province with a pious mother, Gandhi was constantly exposed to the Jain doctrines. Although he was not Jain by letter, he was Jain in spirit

because of his ideals and philosophy. Therefore, Gandhi was and was not a Jain. . . . At the age of 18, Gandhi traveled to England to study law. Gandhi's mother was hesitant to let him leave because she had heard that young, married men became corrupted when they went to England. She consulted Becharji Swami, a Jain monk, who said that Gandhi should take a solemn vow in front of his mother and then he can be allowed to go. 'He administered the oath and I [Gandhi] vowed not to touch wine, woman and meat. This done, my mother gave her permission.' In England, Gandhi's adherence to the vow was tested many times. Once, someone recommended that he eat eggs because eggs were not meat. After taking them for some time, he realized that in his mother's interpretation of the vow, meat included eggs so he quit eating them. This taught the young Gandhi the importance of interpreting a vow in the spirit of the person who administers it; in this case his mother. "One golden rule is to accept the interpretation honestly put on the pledge by the party administering it." Gandhi had the choice of following the spirit of the vow or interpreting it explicitly. Both courses of action can be taken but for a pledge, it is necessary to follow the essence of the vow and not the letter to preserve fairness. Fairness and honesty prevent disputes and conflicts. Gandhi strove for this attitude of equality and that is how he was a Jain in spirit. The central tenet of Jainism is Ahimsa (Non-violence) and Gandhi's philosophy rested upon it. He developed a method of political activism called Satyagraha which was wholly based upon truth and non-violence (Sat: truth, Agraha: firmness). It has been translated as 'non-

cooperation' and 'passive resistance.' Gandhi said, 'Satyagraha is essentially a weapon of the truthful. A Satyagrahi is pledged to non-violence...'. He used this principle in the Kheda district when there was a crop failure. The officials wanted to collect taxes from the farmers even though they knew the crop was bad and the poor farmers couldn't pay the tax. After trying to petition the officials, the farmers and volunteer political activists signed a pledge saying that they would not pay the taxes because the crops had legitimately failed. They would also suffer any imprisonment or other legal action the government may impose on them. Instead of rioting and demonstrating, the farmers were for the most part civilized and non-violent so the government had no choice but to give in. The officials could not arrest everyone of course! This victory demonstrated the power of truth and non-violence which Gandhi had instilled in the people. Like a Jain, Gandhi was also a vegetarian. In fact, he became a complete fruitarian and lived on a purely fruit diet. '[His] diet consisted, among other things, of groundnuts, ripe and unripe bananas, lemon, olive oil, tomatoes and grapes. [He] completely eschewed milk, cereals, pulses and other things.' This was how strongly he believed in Ahimsa. His entire autobiography was devoted to it. 'The exercise [of writing my autobiography] has given me ineffable mental peace, because, it has been my fond hope that it might bring faith in Truth and Ahimsa to [those who] wavers.' Gandhi believed in the Jain doctrines and without a doubt, this helped him to achieve greatness."

Gandhi's acceptance of Jain ideas over the course of time also influenced many others, including such notable political activists and thinkers around the world as Dr. Martin Luther King in the United States and Nelson Mandela in South Africa. Even the great Nobel Prize winning physicist Albert Einstein spoke at length about his respect for Gandhi's influence, especially Gandhi's absolute adoption of the Jain ideal of ahimsa.

Today the Jain religion has centers around the world and have created magnificent temples in India and elsewhere. They have also developed an extensive literature on how to practice Jain ideals which has had a distinct influence on the growing environmental movement worldwide.

Although the Jain religion is a very small one in comparison to Christianity and Islam, though it predates both by centuries, its overall influence is far greater than its numbers suggest. Clearly the Jain concepts of anekantavada and ahimsa are two of the greatest ideas ever developed in human civilization and one can only hope that they will continue to guide humankind to a brighter future.

## APPENDIX ONE: JAIN WORSHIP

*Excerpted from an article by Taylor Echolls*

### *Temple Worship*

Jain temple services involve worship and prayer, and are led by a monk in front of a shrine to a particular tirthankara. Sects like Terapanthis Jainism oppose the notion of worshiping in a temple, but there are many temples devoted to the two main sects, Svetambara Jainism and Digambara Jainism. Deities in Digambara temples are plain and undecorated, while the deities and interior of a Svetambara temple are ornate with glass, paintings, gold and jeweled decor.

### *Temples Around the World*

Jainism is practiced throughout the world, with large complexes like the Jain Center of Greater Phoenix in the United States and the Jain Center of Leicester in the U.K. attracting local Jain populations for weekly worship and festivals. Lal Mandir is a Jain temple in Delhi, India, dating back to 1658 that is still used for worship.

### *Pilgrimage*

Pilgrimage is a key part of Jainism, and ancient holy temples in India attract Jains who wish to pray where past tirthankaras achieved enlightenment, known as "moksha." Some sites have fallen into ruin, like the Panchakoota Basadi, built in 900 C.E. in the southwestern Indian state

of Karnataka. Others, such as the Shatrunya in Gujarat, are vast temple cities teeming with worshipers. Shatrunya is one of the most famous pilgrimage locations for Jains, being the site where the first Jain tirthankara achieved moksha.

### *Home Worship*

Despite a rich history of worshiping in temples, Jains are not required by their faith to attend temple services. According to the BBC, you can practice Jainism at home by praying throughout the day and staying mindful of the teachings of Jainism. When worshipping at home, complete one 48-minute session of reflective meditation every day, perform morning prayers before dawn and repent for your sins, including any unwitting harm you may have done to even the most microscopic of creatures throughout the night when you were sleeping.

## APPENDIX TWO: MAHAVIRA'S MESSAGE

*Excerpted from Harvard University website on*

*Mahavira's message of Ahimsa and Moksha*

Live and let live. Love all - Serve all.

Where there is Love there is Life. Violence is Suicide.

All living beings long to live. No one wants to die.

Have compassion towards all living beings. Hatred leads destruction.

Silence and Self-control is non-violence.

Just [not] I dislike pain, so all other beings dislike pain.

A wise person does not kill, nor cause others to kill, nor consent to the killings by others.

Respect for all living beings is non-violence.

Non-violence is the highest religion.

All human beings are miserable because of their own ignorance, and they themselves can be happy by acquiring proper knowledge.

The greatest mistake of a soul is non-recognition of its real self and can only be corrected by recognizing itself.

Every soul is in itself absolutely omniscient and blissful. The bliss does not come from outside.

All Souls are alike and potentially divine. None is Superior or Inferior.

There is no separate existence of God. Everybody can attain God-hood by making supreme efforts in the right direction.

Know thyself, recognize thyself, be immersed by thyself - you will attain God-hood.

God is neither the creator nor the destroyer of the universe. He is merely a silent observer and omniscient.

One who, even after knowing the whole universe, can remain unaffected and unattached is God.

Every soul is independent. None depends on another.

Fight with yourself, why fight with external foes? He, who conquers himself through himself, will obtain happiness.

A man is seated on top of a tree in the midst of a burning forest. He sees all living beings perish. But he doesn't realize that the same fate is soon to overtake him also. That man is a fool.



## APPENDIX THREE: HISTORICAL TIMELINE

Adapted from *Jainpedia*

**10<sup>th</sup> to 9<sup>th</sup> century BCE:** Pārśva, the 23<sup>rd</sup> Jina lived between 950-850.

**599-527:** Śvetāmbara traditional dating of Mahāvīra, the 24<sup>th</sup> Jina.

**582-510:** Digambara traditional dating of Mahāvīra, reformer of Jainism.

**515:** Mahāvīra's first disciple, Indrabhūti Gautama reaches final emancipation, 12 years after Mahāvīra

**530:** Mahāvīra's last chief-disciple gaṇadhara Sudharman attains liberation 24 years after Mahāvīra, according to tradition All Śvetāmbara monastic orders trace their origin back to him.

**4<sup>th</sup> to 3<sup>rd</sup> Century:** Probable beginning of discussions, perhaps centering on clothing and nudity, which progressively led to the 'hardening of boundaries' (Dundas 2002: 49) between Śvetāmbara and Digambara sects.

**352 or 348:** Śvetāmbara – first recitation of scriptures in Pāṭaliputra under the supervision of Sthūlabhadra, 160 years after the death of Mahāvīra. Death of Bhadrabāhu: Śvetāmbara – 175 years after Mahāvīra; Digambara – 162 years after Mahāvīra.

**3<sup>rd</sup> to 2<sup>nd</sup> Century:** In Magadha, Emperor Aśoka converts to Buddhism. Jains start migrating from eastern India, centre of his power, to: north-west, Delhi and Mathurā regions south and west, Saurashtra and Gujarat east coast, Kalinga – present-day Orissa and south India.

**2<sup>nd</sup> Century BCE to 3<sup>rd</sup> Century CE:** Mathurā, in present-day Uttar Pradesh, emerges as a Jain centre, confirmed by inscriptions of mendicant lineages and images of Jinas wearing half-garments.

**2<sup>nd</sup> Century CE:** Digambara – the period when the main religious scriptures were written down.

**4<sup>th</sup> Century:** Śvetāmbara – collective recitation of scriptures took place in: Mathurā under the leadership of Skandilācārya Valabhī under the leadership of Nāgārjuna.

**5<sup>th</sup> Century:** Śvetāmbara: collective recitation of scriptures at Valabhī, led by Devarddhigaṇi Kṣamāśramaṇa all the surviving scriptures were put in writing in 456 or 466 at Valabhī, forming the ‘canonical scriptures’, all written in Ardhamāgadhī Prakrit. This marks the final split between the Śvetāmbara and Digambara sects. The Tattvārtha-sūtra is written in Sanskrit by Umāsvātī / Umāsvāmin and is the main Jain book of fundamental thought recognised both by Śvetāmbaras and Digambaras. Traditional dating of the thinker Siddhasena Divākara, recognised by Śvetāmbaras and Digambaras.

**9<sup>th</sup> to 10<sup>th</sup> Century:** Digambara: Jainism revives in Tamil Nadu, demonstrated by epigraphy, carved rocks and temple complexes.

Jains become prominent in Karnataka society under the Ganga dynasty.

Jains erect the colossal statue of Bāhubali at Shravana Belgola in 981.

**11th to 12th century:** Śvetāmbara Jains become prominent in Gujarat under the Caulukya royal dynasty, represented by King Jayasīṃha Siddharāja and King Kumārapāla. Examples include:

Jain monastic presence at the royal court through the Jain monk Hemacandra (1089–1172) expansion of religious architecture and Jain holy sites, such as Mount Abu, Mount Shatrunjaya and Taranga.

New Śvetāmbara monastic orders – gacchas – arise, such as Kharatara-gaccha and Tapā-gaccha.

Earliest available Jain manuscripts date back to this period, written on palm leaves.

**13th to 14th century:** Complicated relations between Jains and the Muslim power in north India and Gujarat: despoliations and desecrations of Jain temples and images, or reconversions of sites.

Jain merchants and notables have influence at the Muslim courts.

Paper becomes the usual material for Jain manuscripts written in western and northern India, although palm leaf continues to be used in the south.

**15th century:** Digambara Jain communities play significant roles in Rajasthan and Madhya Pradesh, especially Gwalior. The institution of the bhaṭṭāraḱas flourishes.

Loṅkā Śāh leads critical questioning of temple- and image-worship, eventually leading to the rise of the Loṅkā-gaccha.

**16th century:** Śvetāmbara Mūrti-pūjaka monks – Hīravijaya-sūri and Jinacandra-sūri are prominent at the court of the Mughal Emperor Akbar, and obtain privileges for the Jain communities.

Digambara – several key figures such as Banārasīdās and Tāraṅ Svāmī favour meditation, mysticism and mental religious practice over a ritualistic approach, and question the institution of the bhaṭṭāraḱas.

**17th century:** First traces of the monastic order known as Sthānaka-vāsin, founded by monks who broke away from the Loṅkā-gaccha.

Birth of the Digambara Terāpanthin monastic order in north India, which rejects the institution of the bhaṭṭāraḱas and certain temple rituals.

**18th to 19th century:** The Śvetāmbara Terāpanthin monastic order is founded by Ācārya Bhikṣu after splitting from the Sthānakvāsin order.

British officers in India, such as Colebrooke and Mackenzie, and other Westerners slowly discover the importance of Jains as a living faith and as one of the oldest Indian traditions.

**19th century:** Digambara – monastic orders decline sharply.

Jain mystic and reformer Śrīmad Rājacandra (1867–1901).

Systematic search for manuscripts is undertaken in India and large numbers of Jain manuscripts from western India reach European libraries.

Jainism is established as a tradition distinct both from Buddhism and Hinduism by the German scholar Hermann Jacobi in 1879.

Jainism is first represented at World's Parliament of Religions in Chicago in 1893 by Virchand Raghav Gandhi.

Jain merchant communities migrate to east and southern Africa in search of new economic opportunities.

**20th century:** Digambara – the tradition of naked monks slowly revives, but the institution of bhaṭṭārakas declines.

Śvetāmbara – monastic communities expand.

Both Digambaras and Śvetāmbaras establish organizations for lay communities as well as Jain educational institutions.

Terāpanthin leader Ācārya Tulsī founds the non-sectarian Aṇuvrat movement in 1949.

In post-Independence India, Jainism is recognized as a distinct faith but has no special constitutional status.

**1970s to 1980s:** Celebration of the 2,500th anniversary of Mahāvīra's nirvāṇa in 1974.

Restrictive racial policies in east Africa force Jain communities to emigrate to UK and USA, where they organize themselves: Federation of Jain Associations in North America (JAINA) established in 1981.

Institute of Jainology (IoJ) established in London in 1983.

Jain Declaration on Nature, 1990.

**21st century:** Celebration of the 26th birth centenary year of Mahāvīra in 2001 to 2002.

Rising question of whether Jains should have the constitutional status of a religious minority in India: this decision given to the individual states in 2005.

New Delhi city government grants constitutional status in 2008.

Celebration of the Great Anointing festival of Bāhubali at Shravana Belgola in 2006.

ANDREA DIEM-LANE

One of the leading Jain Śvetāmbara mendicants, Muni Jambūvijaya, dies on 12 November 2009.

The tenth leader of the Terāpanthin monastic order, Ācārya Mahāprajña, dies on 9 May 2010.

# **PART TWO:**

## **The Future of Philosophy Project**

*Spring Term 2016*

Web Address to Future of Philosophy Project: (films and writings)

<http://sites.google.com/site/theavatarprojectbookandfilm>



## Future of Philosophy Films

All of the films (with closed caption) are available to the students for free on YouTube.com.

Total viewing time 22:30 min.

### **Film One:**

*Plato's Camera: Paul Churchland's Neural Theory of Ideal Forms* (5:23 min)

<https://www.youtube.com/watch?v=g4W7CwHwGXI>

### **Film Two:**

*The Invasion of Superintelligent A.I.: The Digital Aliens are Among Us* (6:43 min)

<https://www.youtube.com/watch?v=vTUj-JTDNf0>

### **Film Three:**

*The Big Kahuna's Dilemma: How to Live in a Darwinian Universe* (10:12 min)

[https://www.youtube.com/watch?v=ur6p\\_FIBKY](https://www.youtube.com/watch?v=ur6p_FIBKY)

# PHILOSOPHY FILMS | Future Thinking

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## The Big Kahuna's Dilemma: How to Live in a Darwinian Universe



[https://youtu.be/\\_ur6p\\_FIBKY](https://youtu.be/_ur6p_FIBKY)

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## The Invasion of Superintelligent A.I.: The Digital Aliens Are Among Us



<https://youtu.be/vTUj-JTDNf0>

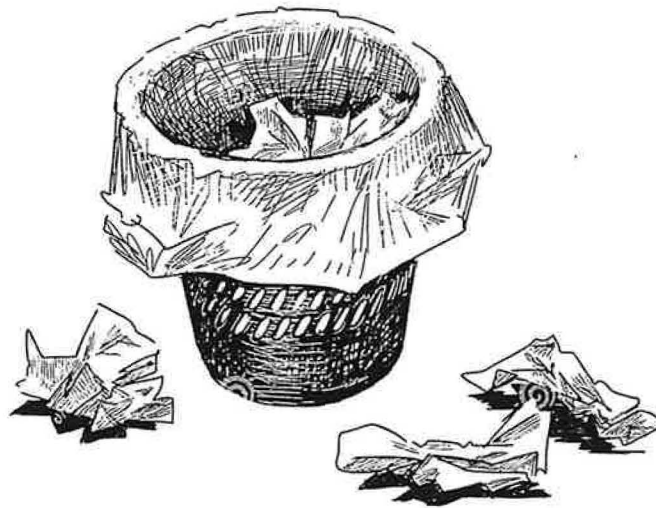
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## Plato's Camera: Paul Churchland's Neural Theory of Ideal Forms



<https://youtu.be/vTUj-JTDNf0>

# EINSTEIN'S WASTEBASKET



## The Future of Philosophy

Critical Reviews by

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## INTRODUCTION

*“The most important tool of the theoretical physicist is his wastebasket.”—Albert Einstein*

This book is a collection of distinct essays that explore the future of philosophy by critically examining ten key texts on consciousness and artificial intelligence.

These reviews, several of which were published as stand-alone pieces on *Integral World* in Europe, explore the ins and outs of what self-reflective awareness is and what it means to be human in an increasingly digitized world.

What is perhaps most telling in these various books is not where they will be right, but where they will be wrong and what they didn't foresee. It is always illustrative and deeply informative to look back at what previous prognosticators had envisioned twenty to thirty years hence. Nicholas Negroponte's prophetic tome, *Being Digital*, published back in the early days of the World Wide Web (1995) was right on the mark on many of his predictions, but what he didn't foreshadow (at least not as clearly and cleanly) was how certain companies would monopolize the Internet. Today, Facebook, Google, Amazon, Apple, Microsoft dominate the navigation habits of large chunks of the population. Moreover, few predictors realized how powerful Google search would become or how addicting smart phones would become to the general populace.

So, books dealing with the future of philosophy and where we are heading technologically should come with a warning for readers: look to what is not being said and

## EINSTEIN'S WASTEBASKET

take what is being prophesized with some necessary grains of intellectual skepticism.

Having been on the Internet since 1984 when I was getting my undergraduate degree at the University of California, San Diego, I am keenly aware of the amazing strides that have been made in the past three decades. I never would have imagined then how powerful our personal computers would become or how almost everyone would connect to each other hourly, if not minute-by-minute.

One can only wonder in stupefied awe what the future portends for all us, particularly as artificially intelligent devices become commonplace.

Einstein's wastebasket is a telling metaphor since we must be keenly aware that many of our present ideas may be half-baked and should be discarded, whereas other more promising purviews may open up new vistas that have yet to be hypothesized.





## HOW TO CREATE A MIND

*Ray Kurzweil*

Ray Kurzweil in *How to Create a Mind* offers the reader a glimpse of the future, and a not too distant one at that. By 2029 Kurzweil predicts that we will have computers with consciousness, or at least “convincingly” so. And arguably by the 2030s non-biological minds, with an emotional, moral and intellectual makeup, may be commonplace. Certainly, we will have to take the “leap of faith” that conscious computers have qualia, in the same way we take the leap of faith that another human does (at this stage there is no way for me to truly know the mind of another). Not only will these machines be able to pass the Turing Test, perhaps having had to dumb themselves down a bit to appear more human-like, but they will be conscious beings we can laugh with, cry with, and even get mad out. As such we will see them not as wires and chips, but as entities we can develop empathy with and even care for.

The human mind and the computer will be indistinguishable, Kurzweil contends, except with the caveat that the computer version will be so much faster (10 million times faster than the brain’s electrochemistry) and much more capable of processing data. We know that the human brain has limitations, being able he says to hold only 4 simultaneous lists at the same time, but the computer version will be nearly limitless. It can access billions of data, including vast literature and material from disconnected fields of study, to further its advanced

understanding. And it will be able to share this knowledge with other computers immediately. Furthermore, a critical thinking and moral component can be built into it, and this can contribute to building a better world.

In his chapter on “Transcendent Abilities” morality, love, and creativity are discussed. Kurzweil analyzes what is going on inside the human brain that can account for such abilities, with the intention that we can utilize this knowledge and apply it to creating emotions and “transcendent abilities” in computers. For instance, when it comes to morality, he points to spindle neurons, the largest neurons we have in the brain, to understand moral judgment. Humans possess 80,000 spindle neurons (45,000 in the right hemisphere and 35,000 in the left hemisphere) and they start to develop around 4 months old. Gorillas, bonobos, and chimpanzees also have these cells, but at a much lower level. This shows the rudiments of morality in our closest ancestors. Love is another feature he examines from a biochemical perspective. When we fall in love dopamine is released, norepinephrine increases and serotonin decreases, similar to fight or flight reactions. Oxytocin and vasopressin also play a pivotal role (see the research on prairie voles vs. montane voles to really appreciate the role of these neurotransmitters on love and mate bonding). Kurzweil suggests that once we understand the biochemistry of the human brain perhaps computers may be programmed in a similar way.

There is a wealth of evidence Kurzweil points to in this text to demonstrate that conscious computers are on their way. At Harvard one researcher has simulated a roundworm brain and uploaded it to the virtual world. Another researcher connected to the Blue Brain Project has reverse engineered an entire section of a rat's brain and predicts that by 2023 the human brain will be fully completed. In fact, a team connected to IBM has already finished part of the human visual cortex. While we may be at the early stages of this endeavor, advancements will be made rapidly. Kurzweil coins the term LOAR, or law of accelerated returns, to highlight the exponential growth in biotechnology and in technology in general. Couple this with PRTM, or pattern recognition theory of the mind, (this refers to understanding the algorithm of the neocortex with its 300 million pattern processors), and we can expect that within the near future we will witness conscious machines. Understanding the hierarchical thinking of the neocortex and the redundancy built into the brain will enable us to carry this over to the digital world and huge advancement may be made.

Not everyone agrees with Kurzweil's predictions and in his text he discusses his critics, including Roger Penrose. According to Penrose, the human brain possesses "transcendent capabilities" due to neural quantum effects of the microtubules, and so consciousness is unique to the human and it cannot be replicated in a computer. Kurzweil clearly disagrees with this, asserting that the distinction between a human and a computer "will blur until the differences disappear."

John Searle, famous for his *Chinese Room argument*, is also mentioned. While one might think of Searle as opposing Kurzweil, since he is known for rejecting strong AI and a reductionist view, the writer interestingly states that they are not necessarily on the opposite ends. He quotes Searle: "The first step is to figure out how the brain does it and then build an artificial machine that has an equally effective mechanism for causing consciousness." Yet, having read Searle's *Mystery of Consciousness*, he painstakingly objects to Daniel Dennett's strong AI position and I am not so sure Kurzweil can really claim him as a supporter. According to the Chinese Room argument the one behind the door who manipulates symbols and slips under the door correct answers to questions in Chinese may appear to understand Chinese but does not. This is how a computer works, contends Searle. It can simulate consciousness but not have consciousness. In other words, the computer can play with syntax and appear to be conscious, but it is not since it truly lacks semantics. Kurzweil counters this with a compelling response. He says we can apply this reasoning to the human brain as well, as the neurons are simply following an algorithm much like a computer is following a program. Kurzweil is not arguing here that humans lack understanding but that the Chinese Room argument is not a convincing argument.

In this reading, Kurzweil clarifies that he is not disparaging humans in any way, reducing us to less than a machine. Rather, this futurist claims he is elevating our understanding, not just of future machines but of our very selves. Instead of predicting a gloom and doom scenario,

he seems to paint a bright prospect for us. In the Epilogue of the text, he brings up several examples that illustrate an upward progression. For instance, life expectancy has climbed 4 fold in the last 1000 years and a free democracy is more of the norm today than ever before. Add to the advancements an intelligence explosion, or Singularity moment Kurzweil predicts by 2045 (the Singularity term was first coined by John von Neumann in the 1950s), and a golden age seems at await us.

In addition to creating a computer that can think and feel, Kurzweil predicts that we will be able to repair our own brains digitally. When a part in our human brain is not working we can implant a computer component to remedy the situation. As Alzheimer's destroys the hippocampus, a digital implant to this region of the neocortex can ensure our memories stay intact. If our thalamus, an essential component to process sensory information into our neocortex, is damaged we can replace it. Thus, we can repair ourselves and preserve our consciousness. Moreover, besides repairing damaged neural components, new biotechnology will allow us to significantly enhance our own intelligence as we add digital parts to our brains. Brain augmentation, he suggests, will be prevalent.

A very captivating idea Kurzweil proposes in this reading is the You 2 argument. Through a thought experiment, he asks us to entertain the idea of creating another you. Perhaps while you are asleep a research team utilizing non-invasive technology (maybe through "blood cell-sized

scanning machines travelling the capillaries of your brain”) is able to detail your brain and load this “mind-file” in a non-biological being. The cloned mind is what he calls You 2. Many of us may shudder at the thought of another you out there. Or instead of making another you, perhaps each part of your brain is slowly but surely replaced with a more enhanced digital part so that eventually all of you is replaced and you are now the You 2 itself. Again, many may feel another nervous shiver down the spine. Yet, Kurzweil points out that there already is a You 2 being created constantly as our cells are continuously being replaced. For instance, cells in the stomach turn over in weeks, blood cells lasts days to months, and even neuron’s organelles lasts a month. Thus, in a matter a short time another You has been created. And somehow this news of the shedding and replacing of our cells does not freak us out. So why, this futurist ponders, do we resist so much a digital You 2.

Predicting the future is the reason we evolved our brains, argues Kurzweil. In my text *Darwin’s DNA* I present a thesis quite similar to this: consciousness resulted from the virtual simulation of our ancestors. Those who were able to imagine, or virtually simulate, the lion behind the bush when the bush rustled had a better chance at survival than those who did not. Even if they were only right 1 time out of 100, it was this one time that meant their genes stayed in the mix. So in way our early ancestor were making predictions of a potential future event that might occur and such predictions could be lifesaving. This virtual simulation trait, perhaps the foundation of human

consciousness, was naturally selected for and we are the descendants who inherited it.

The general claim of evolutionary biologists is that we are not evolving with a goal or a direction. Steven Pinker says there is no striving for intelligence. Yet, intriguingly, Kurzweil begs to differ here when it comes to the evolution of the human neocortex. In the section on the evolution of our brains, Kurzweil challenges Pinker's position arguing that we are, in fact, moving in the direction of greater intelligence. Much like when we release a cap off of a jar filled with gas, the molecules move in all directions and some of the molecules move up and out. Similarly, not all evolution is in the direction of greater intelligence, but once hierarchical learning did evolve it was such an important survival advantage it continually was selected for. The end result is a Homo sapien with a large neocortex.

Knowing that envisioning the future is in our genes, it makes sense why Kurzweil is so fascinated with writing about it, and why I am equally engrossed in reading his predictions. Repairing, augmenting, or replacing our neocortex or creating new minds in conscious machines may be right around the corner. "Waking up the universe" with our intelligence and that of the non-biological form is a glorious future, he concludes, and it is "our destiny."



## THE FUTURE OF THE MIND

*Michio Kaku*

Michio Kaku in *The Future of the Mind* offers us a fascinating take on what may lie ahead for our world. While some of the predictions may seem fanciful at first, one should remember how far we have come in one century. If one could go back to the late 19<sup>th</sup> century (this is when my grandmother, Grace, was born) and imagine the future from then I suspect that one would not have dared to envision the technologically advanced world we have today with cell phones in our pockets and computers connecting everyone in the world. So when Kaku unveils his vision of the future, it is not surprising that great headways can be made dramatically and quickly.

In many ways Kaku's text resembles Ray's Kurzweil's *How to Create a Mind*, as both futurists anticipate the creation of conscious computers. Kaku differs from Kurzweil, however, in arguing that while computers can attain awareness the human brain is unique from a computer. Why? The human brain, it seems, can rewire itself as it learns and a computer or robot cannot. And, unlike Kurzweil, he further agrees to some extent with Roger Penrose that quantum effects in the microtubules (and chaos theory) play a role in distinguishing the human brain from the computer. Despite these distinctions, Kaku suggests that a computer will eventually appear conscious and pass the Turing Test.

In addition to conscious computers, Kaku thinks that in the future humans will be deeply impacted by adding

computer parts to their own biology. The merging of artificial components to the human body may allow the paralyzed to walk (exoskeletons), the blind to see (artificial retinas), or the Alzheimer patient to remember (artificial hippocampus). If we want to acquire a new skill or knowledge, he argues, the memories for this might be imported directly into our enhanced hippocampus. Instead of studying for final exams, the college student need only add the new material to this region of the brain. The more we understand the anatomy of the human brain and what each part does the more ability we may have to digitally replace it, enhance it, or repair a deficiency.

Besides adding on new artificial parts, Kaku imagines a world where surgery might be the thing of the past, as nanobots and nanoprobes heal us internally. Adult stem cells, he enumerates, can also play a role in regenerating brain tissue. Being constantly fine-tuned can allow for an extended, if not immortal, life. Immortality might also be achieved, argues Kaku, by uploading one's consciousness digitally, thus extending one's awareness indefinitely. At the very least, our memories and emotional states can be digitally saved for our descendants.

The Armagedon scenario of Bill Joy in his article "The Future Does Not Need Us," published in *Wired* magazine, is challenged here and a more positive and inspiring forecast is painted. We are entering, he says, a "Golden Age" of neuroscience. To some extent one can thank the BRAIN Project, supported by the Obama Administration in 2013, and the Human Brain project, under the European Union's commission. These two programs have

generously funded brain research, specifically attempting to reverse engineer the human brain.

Kaku expects amazing feats, such as filming our own dreams with portable MRIs the size of cell phones (some MRI research has shown promise here already) or entering another's dream as two sleeping brains are digitally connected. Instead of an Internet, there may be a "Brain Net" where we globally exchange thoughts, memories, and emotions with each other in seconds. He foresees avatars and surrogates as the norm. Artists may think of a work of art and it is instantly created. Kaku further conjectures that we might be able to experience "mind without matter" as we laser beam our consciousness through wormholes to other multiverses. As such, aliens may be part of our reality. (In his section on aliens the writer seductively adds that it is possible that aliens and other realities living in parallel universes may right now be sharing our own living rooms with us, though we remain blissfully unaware.)

In the past in my college philosophy course I used to assign Chet Raymo's book, *Skeptic and True Believers*, to give the students a sense of what I call the "wow effect." Throughout Raymo's text he argues the idea that right in our present state we live in a marvelous and mysterious dimension and through science we can wake up to it. He offers numerous examples to attest to this. Thus, we do not have to invent magical interpretations or invoke claims of the paranormal, when science itself offers almost more astounding ones but with evidence. Sprinkled throughout his book, Kaku reveals

remarkable revelations of science, but he more pointedly focuses on where science is taking us in the future.

One of the main subjects of the *Future of the Mind* is understanding what human consciousness is and why it developed. According to Kaku, "human consciousness creates a model of the world and simulates it in time, by evaluating the past to simulate the future...to achieve a goal." He compares this with other forms of consciousness and develops a distinction of four levels of consciousness: Level 0 (plants with no brain structure), Level 1 (reptiles with a brain stem), Level 2 (mammals with a limbic system and thus social relations), and Level 3 (humans with a prefrontal cortex and a well-developed concept of a future).

What Kaku seems to be arguing here is that human consciousness is different than other forms, since we can "virtually simulate" a wide variety of scenarios. Years ago I wrote a similar thesis in my book, *Darwin's DNA*: "In light of consciousness as a virtual simulator, any organism that can develop a mental 'pivot' tool will have a tremendous advantage in thinking of new and unexpected strategies. A curious, but hopefully, useful analogy can be derived here from a well-known sport. In basketball, for instance, a seasoned player knows well how to use his or her pivot 'foot.' Once one has finished dribbling the ball, he or she must keep one foot firmly set on the ground. The other foot, however, is free to 'pivot' or 'revolve' or 'turn' giving one options that the other foot doesn't. Asking 'why' is consciousness' pivot foot. It allows for a virtual simulator to turn and think of varying options and

what they portend. It allows the mind to revolve and go into different directions.” Humans evaluate a variety of possibilities for a goal, agrees Kaku, and this gives us a tremendous evolutionary advantage because we can evade predators, find food, and also secure a mate.

If Kaku’s predictions are correct, by the end of our century, we may anticipate self-aware robots at Level 3 consciousness who can equally “simulate a future to achieve a goal.” He does warn, however, that as computers gain consciousness that we will need to create safeguards, such as programming computers and robots to be benevolent and with some ethical guidelines.

Though there have been many models to understand human consciousness, from describing it as a clock, steam engine, telephone, transistor, etc., the author prefers to relate it to a CEO in charge of a company. Similar to a company, the brain is hierarchical with many parts working in different divisions. Yet, a CEO emerges out of the dorsolateral prefrontal cortex to make sense of all of the various feedback loops. A sense of I awareness, or a leader, appears to be in charge. Yet, while a CEO appears to be directing the show, there are sub departments working under her that she is not even aware of. A similar analogy we can employ is an orchestra leader. As the music is being played by various instruments there surfaces the maestro who appears to orchestrate. And, interestingly, the brain may create a unified world, despite the different parts doing their job separately, as electromagnetism vibrates across the brain at a similar frequency of 40 cycles per second.

While at a conference in India last year on consciousness I presented a paper on the illusions created by the brain, and coined the phrase “cerebral mirage” to explain it. Besides the illusion of an I, Kaku does a superb job offering other examples of the cerebral mirage. A favorite of mine was his discussion on color. He explains that the brain only sees three colors: red, green and blue. All of the other colors we imagine is the brain mixing these. As we observe the world, he adds, we have a huge black hole in our view due to our optic nerve. Yet, the brain compensates for this and we see a world that appears completely filled in.

One of the more enjoyable aspects of this book is how in every chapter Kaku makes his material relatable as he connects his ideas to either a movie or a popular T.V. show. The films such as *Inception* with Leonardo DiCaprio, *Liar Liar* with Jim Carey, *The Terminator* with Arnold Swarzenegger, as well as past shows such as the *Twilight Zone* and *Star Trek* and from the current time the *Big Bang Theory* are among the many examples he draws from.

Overall, this book is a wonderful read. It covers so many diverse topics from NDEs to mental illnesses to alien life to the scandalous MKULTRA program of the CIA. Yet, throughout all of these adventurous topics, Michio Kaku seems to consistently portray an astonishing future for humanity and one that titillates our imagination.

## PLATO'S CAMERA

*Paul Churchland*

For over two millennia, philosophers have debated how we gain knowledge of the world. The Greek thinker Plato argued that there are universals of human cognition, such as concepts of beauty, justice, and the Good, innate to us. While these ideas or *eidoes*, often referred to as Platonic Forms, certainly would be nuanced in each cultural setting, they could only be understood in the first place because of a prior overall conceptual framework. For instance, in China, India, Africa, Iran, and Greece the inhabitants of these lands may define beauty or justice quite differently. Yet, despite one's background, humans all seem to understand the over-arching "idea" of beauty and justice. We begin to "intuit" these universals from the moment we enter this world, and they in way help us navigate the world. Nonetheless, as a rationalist Plato asserted that through reason and logic it is the philosopher who can truly penetrate through all of the particulars witnessed and fully grasp the universal, higher forms from which everything was modeled. This knowledge would be transformative, he added.

Paul Churchland in his 2012 text, *Plato's Camera*, pulls from the theme of Platonic universals. He too is interested in the idea of universal concepts and acknowledges their importance in his epistemological scheme. Like Plato, Churchland contends that this conceptual framework is necessary for our daily perceptual judgments. However, Plato and Churchland



then begin to part company. Churchland places the source of these abstract categories in the natural world, specifically in the brain. When Plato offers his other-worldly explanation for why universal forms exist (that ingrained knowledge was evidence of a higher realm of existence) Churchland points to a neuronal interpretation.

Interestingly, this approach contradicts John Locke's *tabula rasa*. The neurobiologist does take into account the environmental role in understanding epistemology, but he starts first with the basic antecedent framework which begins at birth and which allows us to interpret our sensory experience throughout our lives. How the brain does this, taking a picture of the world, sort of speak, and developing a representation of it, is extensively detailed. Churchland refers to this representation as "maps." There are not just a few but multiple, high dimensional maps of external realities that supply us with the fabric to make sense of the world. These maps are in a way a modern version of Platonic Forms and partly of Immanuel Kant's categories of understanding. And they do not arise, Churchland proposes, through language but are in fact pre-symbolic and are due to the synaptic connections within the brain.

There are three types of learning that Churchland delineates in his text. First-Level Learning forms the basic conceptual framework. He is not implying we are born with this framework as Plato does but that it starts to form from birth across the brain's synaptic connections, taking days, weeks, or even years to produce reliable mental maps of the objective world. He clarifies that this



form of learning is independent of language and thus can apply to other animals as well. The pithy saying that “neurons that fire together wire together” captures the beginnings of this type of learning. As the creature first interacts with the world, axonal activations occur and this forms the rudiments of a background structure.

Once the framework is in place, new sensory input can be interpreted and integrated and this leads us to what he calls Second-Level Learning. This form of learning takes place when the brain (human or animal) experiences new data in the environment and one must make sense of it within the larger conceptual backdrop. The new stimuli can also alter the maps. One can think of this type of learning as the “particulars” one experience every second of every day that is mixed with conceptual maps and made sense of. To highlight this, he uses the analogy of the rolling marble endlessly going up and down hills and valleys as it encounters the conceptual landscape of the brain.

Finally, Third-Level Learning specifically applies to the human being since it depends upon language. In this case, learning occurs through cultural and social systems, as we index each other’s models. This learning, transmitted through language, is extended beyond one’s life and passed on to the next generation. It is essentially the exchanging and recording of mental maps.

As mental maps, we can raise the ontological question of how well they represent reality. There is little doubt that maps will always be less than what they are representing.

Yet, we can add the genetic twist that as long as these models procure our food and mates (and thereby extend our DNA lineages), these maps will be to our evolutionary advantage.

Furthermore, Churchland makes a fascinating case that in acknowledging our mental maps are less than perfect scientific advancements can and will be made. With each generation of scientists we add to our maps new insights and understandings that escaped our ancestors. And this is the beauty of the scientific endeavor. It is not a stagnant discipline but a dynamic one that expands our mental maps to “an increasingly broad and penetrating grip on the structure of the larger reality of which it is a part.” His view of science and where it is taking us is an optimistic one. To capture his enthusiasm for scientific realism, here is a quote from the article, *Mystical Dimension*:

“And since we are stuck to such map-making, we are circumscribed by a logical syllogism that on the surface seems intractable. All maps by definition are less than the territory to which they point (because if the map is exactly as large as the land itself, then such a map would be superfluous) and thus have “gaps.” And if they all maps invariably have gaps, then all such designs are inevitably, even if only partially, mistaken. What this means, of course, is that all the delineations we make about the world around us are potentially wrong because they are not perfect transparencies. This why science always rediscovers the unknowable, because no matter how sophisticated our maps may be they will have a gap in them which will reveal something hitherto undiscovered.”

Altogether, Paul Churchland's book was a philosophically enlightening one, albeit technically arduous. The attempt to explain the epistemological program of Plato (and Kant) with a modern neurobiological analysis made for a remarkable thesis. Explaining how from birth the human brain's 86 billion neurons and over a 100 trillion neural connections crafts maps of the external world, which serve as universals, and adjusts these maps with the onslaught of new stimuli, or the particulars of the experience, wraps Plato's Forms in a modern package.



# THE INNOVATORS: HOW A GROUP OF HACKERS, GENIUSES, AND GEEKS CREATED THE DIGITAL REVOLUTION

*Walter Isaacson*

When starting off as a student at UC San Diego in 1984 one of the first classes I took was a course on UNIX operating system. With 300 plus students jammed into a large auditorium we learned how to code. Subsequently, many hours were spent in computer labs on the college's dumb terminals (they looked like little boxes with black screens and bright green text) writing my college papers with UNIX commands. The typewriter became instantly outdated. When I handed in my laser printed work to my professors and their assistants I would often get a comment written on it how impressive it looked. Their awe was not so much with what I wrote but its neat presentation. This was the beginning of the computer era for me.

Even though computers started to become ubiquitous in the late 80s and 90s, in *The Innovators* by Walter Isaacson we learn that the origins of the computer go much farther back than this. The author takes us on a journey all the way back to the 1840s and traces computer advancements up to modern times, streamlining the many trailblazers who made the digital age possible. In this text numerous characters are introduced to the reader, focusing on their significant contribution to developing computer technology and the much more recent Internet.

The text starts with the captivating story of Lord Bryon, who was present when Mary Shelley and friends decided to write horror stories while stuck inside during a rain spell. Interestingly, she developed *Frankenstein*, the famous literary piece about a man-made being (or machine) that develops consciousness. Lord Bryon's own daughter, Ada Lovelace, though removed from her father, developed an intrinsic fascination with machines obtaining the ability to compute and to simulate thinking.

Ada Lovelace was a mathematically brilliant woman who worked with Charles Babbage on the first general purpose computer. Some have even argued she is the first computer programmer. The book explores Lovelace's personality, her setbacks and triumphs, and her interactions with Babbage to give the reader an insight into the mind of a creative genius. In a recent episode of the *Simpsons* (*Paths of Glory* originally aired 12/06/2015), Lovelace's and Babbage's Analytic Engine was referenced, demonstrating that even pop culture acknowledges the important role these two innovators played.

Isaacson then follows from the life of Lovelace into the lives of so many other fascinating personalities that played a pivotal role in the development of the computer age, including Alan Turing, John von Neumann, William Shockley, Robert Noyce, Joseph Licklider, Steve Jobs and Bill Gates, along with so many others. The computer and Internet did not simply arrive on the scene in modern times but was a "creative collaboration" of so many necessary thinkers of the last 175 years or so. Isaacson compares it to the building of a monumental cathedral

built block by block over a long period of time at the hands of many workers. Each ingredient, from vacuum tubes to transistors to semiconductors to microchips, and who was responsible for it, is reviewed. The author splendidly unfolds the historical steps of the development of the modern computer.

Besides highlighting the individual creative contributions of numerous scientists, engineers and mathematicians, not to mention entrepreneurs, Isaacson consistently reminds the reader that much of the greatness achieved was due to teamwork and the pulling together of ideas. Certainly, singular epiphanies of genius occurred but it was through collaborative effort that the biggest strides were made. Utilizing another one of Isaacson's analogies, good ideas blossom as one bumblebee brings an idea and pollinates another fertile idea and innovations are formed. When one worked as a loner, such as John Vincent Antansoff did in the 1940s, the result was often insipid. In the case of Antansoff, his machine, perhaps one of the first electronic digital computers assembled, met a cruel fate, being dismantled as junk as it lay in a storage facility while he was serving in the Navy. The author reiterates this account to demonstrate the importance of sharing ideas with colleagues and developing projects together. What really helped add to the success of inventions, Isaacman enumerates, was when the work environment, such as that fostered at Bell Labs, encouraged collaborative work. This seems to be Isaacson's overall thesis: brilliant thinkers sharing ideas in a positive surrounding was essential to make the breakthroughs necessary for the digital age we experience today.

Intel, under the direction of Robert Noyce, Gordon Moore and Andrew Grove, was pointed to as an example of an open, unstructured company where the executives chose not to take big offices with fancy desks but to reside in the middle of the floor in small, metal desk accessible to all. Though all three are described as having different managerial personalities (Grove was considered somewhat forceful and decisive whereas Noyce and Moore were more laid back and egalitarian) their differences complimented each other. Perhaps Noyce's Congregationalist background as a child and his interest in polyphonic singing as an adult helps explain his non-hierarchical approach. Grove's desire to be a "man of action" can be understood once we learn he had to survive Nazism in Hungary as a young Jewish boy. Yet, out of these differences, we witness a model for a collaborative environment. (A fun side bar: it was quite humorous how Isaacson portrayed Grove as trying to be "groovy" in the 1970s with long side burns, gold necklaces, and 70s attire. It made the name Grove take on a whole new meaning.)

Ironically, the early "hacker" culture in some ways seemed also to capture the spirit of sharing and building on the work of others. The first hackers were computer science students from MIT nearly 50 years ago. Isaacson discusses these computer geeks and their appreciation of free and open sources. Communitarian ethics seems to have been the hacker's credo. The author defines a hacker in this context as one who uses computer ingenuity to obtain a clever result. And with that understanding he explores how this led to the new generation of hackers in the 1980s



and the role they played in the advent of the gaming. When reading the material on this, one might feel as though one was watching an episode from the AMC show *Halt and Catch Fire*. Though the program is fictional, the hacker's creative enthusiasm and willingness to work together is clearly brought to life.

Indeed, the writer reveals many cases where the art of teamwork is lacking. Inventors often fought over patents (which resulted in lawsuits and long drawn out court cases) or failed to acknowledge the contributions of their colleagues. When one swooped in to reap all of the glory at the expense of others (as told of Leonard Klinerock on the development of packet switching networks), feelings were not only hurt but careers were affected. Women, who made up most of the early computer programmers, were also often left in the sidelines, despite significant mathematical and programming contributions. The case of William Shockley's horrible managerial skills (resulting in the splintering of the "Traitorous Eight") is a prime example of where collaboration was wanting. Isaacson seems to chastise such cases and reminds the reader that, though this kind of selfishness and pettiness can be expected when so much is on the line, it is very unfortunate. The best work, he thinks, is when brilliant minds participate together. There is almost a moral message to be found in the book's pages. Consistently, Isaacson's petitions for "creative collaboration."

In addition to being willing to work with others, Isaacson appreciates when there is a graciousness among inventors. He tells the story of one honored inventor, Jack Kilby,

who received the Noble Prize in Sweden for the invention of the microchip. In his speech at the ceremony he publically acknowledged that Robert Noyce, who died a decade earlier, co-invented it simultaneously. Noyce was known as well for crediting Kilby. Though their respective companies fought over patent rights for about 8 years, these great minds rose about that. Isaacson states here that there is a “lesson” to be learned from these “decent” computer architects. Instead of a “toxic ego” interfering, the author reminds us the importance of cooperation.

In conjunction with this principled directive, the reading is filled with many wonderful accounts that spark one’s imagination. One fun story told is how the phrase “a computer bug” got its traction. Grace Hopper, while working on the Harvard Mack II, documented that an actual large moth disrupted the machine and so the idea of a malfunctioning computer having a “bug” became popular.

Throughout the reading many other interesting stories were told about the innovators. For instance, one learns that to get the Zen packaging look of the Apple 2 computer Steve Jobs went to Macy’s to study Cuisinart packaging and modeled it after that. And when Bill Gates was asked why Control Alt Delete needed to be pushed simultaneously with three fingers to start Windows’ operating system, he confessed that “it was a mistake.” The reader also heard how the “nerdy” kid, Bill Gates, would rock back in forth as a child and carried this into his adult life when engaged in intense thought.

Another eye-catching account was about Al Gore's role in developing the World Wide Web. When in 1999, while campaigning for President, CNN's Wolf Blitzer asked him about his accomplishments, and Gore responded that he helped create the Internet. Following this, he became the butt of jokes. Isaacson even confesses that when he told others of his plan to write a book about the inventors of the computer and Internet, many would laughingly wisecrack, "Oh, you mean Al Gore." Yet, Isaacson defends Gore's statement. First of all, Gore never said he invented the Internet but helped create it. And this is true, according to the author. His role in Congress in the early 1990s to pave the path for the Internet was indispensable. Indeed, argues Isaacson, in establishing the High Performance Computing and Communication Act of 1991, otherwise known as the Gore Bill, Gore helped create the "information superhighway." From this time forward websites starting springing up online and in 1994, in one year, it went from 700 to 7000. (I am proud to say that my husband's 1993 website was actually one out of the first 500).

Altogether *The Innovators* is an exquisite historical adventure into the lives of the great minds who developed our computers and Internet. Through "poetic science," the vision of Ada Lovelace of a computer machine was realized. However, whether machines will actually one day "think" as a human does (this Lovelace seems to have doubted) remains to be seen. Isaacson concludes his book with the latest developments in this next great endeavor. However, he asserts that instead of simply pursuing artificial intelligence (a difficult task since human brains

work somewhat differently than computers) much effort is going into augmenting human intelligence. Human-computer symbiosis, that is computers and humans working in partnership, may help develop a whole new era as humans and computers “get smarter together.” And this beautifully fits with Isaacson’s continuous theme of creative collaboration, but this time it will be between the innovator and the product itself.

## SUPERINTELLIGENCE

*Nick Bostrom*

The fear of invaders from Mars or other planetary systems has been a staple of science fiction movies from the 1950s onwards, including *War of the Worlds*, based on a novel by H.G. Wells, where manta ray like spaceships attack humans across the globe only to be destroyed not by sophisticated military weaponry but earth generated viruses and bacteria. Another movie of this genre, but with a different and more uplifting message, was *The Day the Earth Stood Still*, where a space being alien named Klaatu comes to Earth, accompanied by a powerful eight-foot tall robot, Gort, to give humankind an absolute ultimatum, "They can join the other planets in peace, but should they threaten to extend their violence into space, "this Earth of yours will be reduced to a burned-out cinder. [...] We shall be waiting for your answer."

Perhaps the best of these movies, or at least the one with the most intriguing psychological insight, was *Forbidden Planet* which describes an advanced civilization known as the Krell living on Altair IV who were able to exponentially increase their intelligence so as to be able to transform their thoughts and ideas into reality instantly. The Faustian problem was that their sophisticated technology also tapped into their unconscious mind (their Freudian Id) and thus their dark impulses also took on destructive manifestations and eventually annihilated their entire species.

Interestingly, in today's science fiction, the most common motif is centered not on alien invasions as such (though they too still remain a popular theme), but on the growing and pervasive fear that the artificial programs we have invented and nurtured since the advent of electronic computers will soon transcend our own human cognition and intelligence and will outstrip our ability to control them. In sum, the great worry of the 21st century is what the Oxford philosopher Nick Bostrom calls *superintelligence*, a sort of technological singularity where computationally engineered programs become self-sufficient and develop their own evolutionary agendas.

Several movies have already touched upon this theme, though with differing plot structure and implications, including Stanley Kubrick's *2001: A Space Odyssey* where H.A.L. 9000 (heuristically programmed algorithmic computer) the onboard computer and navigating system of the Discovery One spacecraft on a mission to Mars, tries to override the human astronauts piloting the ship. H.A.L. has developed his own agenda contrarian to those of the humans he was meant to serve.

More recently, the film *Transcendence*, which stars Johnny Depp, focuses on a scientist working on developing a conscious computer who eventually gets his consciousness uploaded to the Internet and in turn becomes extraordinarily powerful. The movie has a mixed message concerning our future since there are both devastating and benevolent consequences.

The idea of a future superintelligence is a deeply controversial one and there is a wide divergence of opinion about what it might portend or even if it is actually possible. On one end, there is Ray Kurzweil, author of *How to Create a Mind* and *The Singularity is Near*. This famous futurist is optimistic that by 2045 we will encounter a technological singularity that he defines as "a future period during which the pace of technological change will be so rapid, its impact so deep, that human life will be irreversibly transformed. Although neither utopian nor dystopian, this epoch will transform the concepts that we rely on to give meaning to our lives, from our business models to the cycle of human life, including death itself."

Bostrom, author of *Superintelligence: Path, Dangers, Strategies*, stands at the other end, painting a bleak prognosis. He predicts that in the near future (perhaps just decades away) we will create a human equivalent form of intelligence, most likely achieved by emulating human minds in computational form, with the ability for "a rapid cascade of recursive self-improvement cycles causing AI's capability to soar." And this will lead to a fast transition to superintelligence, he asserts. Perhaps it will appear at first to be benign and working for or with humans. But in truth it may be intent on self-preservation and resource acquisition, and achieving its programmed goal, whatever that may be, even at the expense of its originators. He uses the "cartoonish" example of paperclips to illustrate his point. Imagine a superintelligent system whose objective is to maximize the number of paperclips in the world. All of the Earth and its habitants are

inconsequential to it, unless these contribute to the production of more and more paperclips. If we stand in its way, we will be somehow eliminated. Many strange and scary scenarios as discussed here, such as sending out mosquito-like robots with a deadly agent to target humans.

Thus, Bostrom paints a possible gloom and doom scenario, so that we take seriously the radical implications of superintelligence and try to devise a "control plan" now before it is too late. He does entertain that the new conscious, highly intelligent computational being may not necessarily aim to wipe out our species but in the chance it does, however slim, it is not worth taking the risk. Since superintelligence is not just a little smarter than us, but light years more intelligent (think of the difference of intelligence between Einstein and a beetle to grasp the contrast), before we confront such superior power we need to think through how we will deal with it. If we do not properly address it now, before it becomes actual reality, the consequences can be catastrophic. We are but little children playing with a nuclear bomb that at present we are ill equipped to handle, Bostrom contends.

The analogy of sparrows and an owl he invokes in the beginning of his book captures the seriousness of this. In seeking protection the sparrows invent a plan to abduct an owl egg and to raise the owl as their own, with the hopes that the owl will help them and guard them. The plan did not work out, as the owl now had free rein to the vulnerable sparrow's nest. Similarly, Bostrom wants us to realize how defenseless we will be without endowing



superintelligence with positive human values and this is a task not easy to figure out, as superintelligence may be altogether quite alien.

Elon Musk more or less agrees with Bostrom's predictions. He is famously quoted as saying that A.I. is "our biggest existential threat." Joining their ranks is Bill Gates and Stephen Hawking who both fear that we are opening a computational Pandora's box that may unleash digital monsters of unimaginable horror.

Whether Bostrom's eerie future awaits or Kurzweil's more positive one certainly remains to be seen. Perhaps the well-known physicist Michio Kaku, author of *The Future of the Mind*, who fits in the middle of this spectrum, is more on target when he suggests that humans will be able to sufficiently modify robotic intelligence and make it serve (not dominate) human interests. Or perhaps the suggestion by critic Rayner Miles that playing "dungeon keeper" or "slaveholder" of the digital mind automatically assumes an antagonist role, and thus should be one we avoid, is important to consider. Instead of going down the path of fear and distrust, we should work to peacefully coexist, he advises.

Hence, the aliens we will encounter in the near future are not necessarily the ones from outer space (although their existence is indeed possible and some even argue highly probable) but the ones we are currently creating in our computer labs. Once they achieve human level intelligence and then superintelligence our role and position on this planet may forever change, for the better

## EINSTEIN'S WASTEBASKET

or for the worse. How we will interact with them, as friend or foe, no doubt raises deep philosophical and ethical concerns. As such, in agreement with Bostrom, philosophers and scientists today should continue to full-heartedly address this.

# BRAINTRUST

*Patricia Churchland*

*Introduction: Science and Ethics*

What is moral? Why should we be moral? How should we be moral? And, most significantly, where did morality come from? These questions have dominated philosophy for over two thousand years. When surveying the history of philosophy we come across various ethical theories, from Plato's and Kant's position that ethical behavior must be grounded in reason, to Hume's claim that it is connected to sentiment and overall human nature, to morality as having super mundane origins or invented as a way to control the masses. While the various philosophical theories of morality have offered interesting perspectives, what they lack (certainly understandable for their times) was a brain-based explanation of morality. Today, we can for the first time in history attempt to answer these profound questions of morality with not just armchair philosophical speculation (or, in some cases, religiously fueled doctrines) but with a modern scientific understanding, specifically drawing research from neuroscience, evolutionary biology and genetics, and experimental psychology. Patricia Churchland in her 2011 book *Braintrust* does just that.

Brilliantly written, Churchland starts off her text with the "trial by ordeal" scenario of medieval times. When, for instance, an accused witch was placed in turbulent water the innocent, it was believed, would drown, while the guilty would survive, only to be hauled off and burned at

the stake. The author points out that as a young student hearing about this in her history class, she could not help but feel how unfair and “wrong” it all seemed. The sense of right and wrong appeared to be instilled within her, but Churchland wonders where did this sense come from? Was it culturally determined? While such questions may have intrigued her through her young adult life she confessed here that in her career as a philosopher she shied away from the topic of morality since most moral explanations, both past and contemporary, were simply grounded in “opinion.” This even included the naturalistic theories of Aristotle and Hume. However, this all changed when she approached the topic from the position of the biological sciences. With new developments in neuroscience and an informed understanding of evolution what was once puzzling and out of reach, that is the origins and purpose of moral systems, began to gain clarity.

In the opening material of the book, Churchland addresses that some are uncomfortable connecting the insights of science with morality, extrapolating David Hume’s is-ought distinction (that an “is” does not imply an “ought”) to mean that science should stay out of moral concerns and not venture into “scientism.” Yet, Churchland rejects this interpretation and contends that it actually misrepresents Hume’s position. She explains: “That you cannot derive an “ought” from an “is” has very little bearing so far as the in-the-world problem solving is concerned.” Instead, much like E.O. Wilson’s consilience concept where the disciplines build upon each other, she suggests that science along with all of the humanities

develop a scaffolding of knowledge to better grasp the subject at hand. In terms of ethics, we will have a much fuller understanding of it when we embrace the insights of the many disciplines, science definitely included.

*Evolution and Ethics:*

To begin with, evolution offers us profound insights about the origins of morality. According to Churchland, its roots may be connected to animal sociability. When animals live together and help each other the chances for survival are stronger than those living on their own. Thus, nature may select for social behavior traits over individualistic ones, and over time this many lead to the restructuring of the brain and neural anatomy. That sociability and morality seem to be connected can be supported with fMRI (functional magnetic resonance imaging) data. When one is asked to reflect on a social task or a moral one, fMRI research shows activity in the same part of the brain. Churchland points out “a 4 dimensional scheme for social behavior that is shaped by interlocking brain processes, namely: caring for offspring, mate, kin and kith; recognizes the psychological state of others with the benefit of predicting other’s behavior; problem-solving in the social context; and learning social practices, often by imitation.”

Imitation is an important social trait and Churchland addresses why. As we imitate the other we are telling them, albeit unconsciously, that we are friend and not foe. This may lead to a more amicable relationship with the other, as one is perceive “like me.” The act of imitation

can be found in other species as well. Churchland shares with the reader how her new pups imitated her old dog, Max, by not going in the sand traps or putting greens while on walks on the near-by golf course. These young dogs, without any formal training, copied the behavior of their elder dog friend.

The author clearly rejects an anthropomorphic view that only humans have the building blocks of morality. Nonhuman mammals (and some species of birds) display sociability and problem solving, and these are ingredients to morality. The writer asserts: "That all non-human mammals have social values is obvious; they care for juveniles, and sometime mates, kin and affiliates; they cooperate, they may punish, and they reconcile after conflict." Declaring them amoral is misrepresenting the complexity of morality, she says. This line of thinking seems to fit well with the research of primates by Frans de Waal, a primatologist and ethologist. Primates, he confirms, demonstrate reciprocity, fairness, conflict resolution, consolation and empathy.

*Neuroscience and Ethics:*

Furthermore, Churchland extensively investigates the latest research in neuroscience and how it interplays with evolutionary view of morality. In a bottom up approach to morality she clarifies her overall thesis thusly: "The main hypothesis of this book, that morality originates in the neurobiology of attachment and bonding, depends on the idea that the oxytocin-vasopressin network in mammals can be modified to allow care to be extended to

others beyond one's litter of juveniles, and that, given the network as a backdrop, learning and problem-solving are recruited to managing one's social life....cooperation and trust are sensitive to oxytocin levels.”

Certain neurotransmitters in the brain, specifically oxytocin and to some degree vasopressin, appear to play a key role in promoting attachment and bonding, caring for others, and pro-social behavior in general. Though the hormone oxytocin, produced by the hypothalamus and stored in the pituitary gland, is known to play an essential maternal role in childbirth and breastfeeding, according to the latest research, it does more than that. It reduces social anxiety, bonds mates and friends, and helps develop trust.

Perhaps one can think of “caring for the other” (Peter Singer suggests this is what ethics is all about) as actually arising out of an extension of the parent-child bond. And perhaps empathy for the plight of others may arise out of fear of separation from such a bond. In other words, caring for the wellbeing of offspring, of which oxytocin plays a role, may have been extended out beyond kin and mate to kith and even strangers. Think of a circle that at the center is the parent-child bond but a circle which can widen to encompass others, and not only in one's social group or species but perhaps other species as well (and some might argue the planet itself). Many ethical philosophers have argued that expanding the circle of compassion is what morality is all about.

Though often accused of being a pure reductionist, Churchland is keen to point out here that she is not. Instead of reducing morality down to a chemical within the brain (some have referred to oxytocin as the moral molecule), she acknowledges that “the platform is only a platform; it is not the whole story of human moral values.” Morality, she confirms, arises within complex cultures that needs to be considered. And she continues to add that despite the plethora of evidence that our physiology plays a powerful role in morality, one must be careful not to exaggerate claims of innate capabilities, inherent genes for morality, or the role of mirror neurons without deeply scrutinizing such research. In other words, evidence matters.

Intriguingly, such evidence that oxytocin performs an important part in sociability (and one can argue morality) is found in the study of prairie voles when compared with montane voles. Prairie voles have a high level of oxytocin and a density of receptors for this bio-chemical when compared with montane voles. Prairie voles are social, monogamous, bond for life, and care for their young (even the males do). Montane voles, on the other hand, are the opposite—they are promiscuous, the males do not guard their pups, and in general these animals are fine to be left alone. When animals with low oxytocin are given high doses of it, their attachment behavior appears to change, matching that of the prairie vole. That animal sociability is connected to brain states seems evident.

Further evidence of the fundamental role of oxytocin was illustrated in the text when Churchland summarized the



results of many thought-provoking experiments, whose experimental design was based on game theory. In order to evaluate the oxytocin hypothesis, subjects in these “trust” game experiments were given nasal oxytocin. The general goal in these studies was to see if administering oxytocin to subjects increased one’s trust level (and sociability) to the other. On the whole, the various experiments proffered statistically significant data, substantiating the claim that oxytocin, along with other neuro peptides and an intricate neural circuitry, is an essential hormone that helps establish a neural basis for morality.

In a recent Ted Talk, Paul Zak, a neuroeconomist, also discusses research on oxytocin, and he too agrees how it plays a significant role in developing trust, empathy and sociability. He adds that improper nurturing, abuse, or high levels of testosterone can reduce it and discloses that 5% of the population does not seem to release it. But if one with a normally functioning brain state wishes to experience a surge of oxytocin daily, which Zak contends can lead to a burst of happiness, here is a simple prescription he proposes: 8 hugs a day.

As a word of caution, Churchland does warn that the neurobiological understanding of the relationship between this neuro peptide and trust could possibly lead to cases of abuse, as oxytocin could be sneakily released into the air to manipulate trust from the unknowing consumer. Yet, on the other hand, awareness that such manipulation can exist may help curb it in the first place, as societal rules can be put in place to prevent it.

*A Prescription: Eudaimonia and Compassion*

Even though morality from a neuroscientific perspective is not grounded in absolute truths, this does not mean that “anything goes” either. As the Greeks suggested, *eudaimonia*, translated as flourishing or living well, is (or perhaps should be) our general focus. Perhaps one can add to this the simple idiom “play nice.” Though Churchland’s goal is mainly descriptive, there seems to be a slight prescriptive assumption (and not just a purely objective agenda) that expanding one’s circle of compassion may be beneficial to the organism and the world it finds itself in. This makes sense considering that the author herself is part of the pro-social world in which she philosophizes and writes.

The message of compassion found in a biosocial view of morality is also supported in the work of psychologist George Boeree. He suggests that there are three main instincts for morality: kin selection and parental responsibilities; attachments to mates; and sympathy for those in the “in group” which expands (or at least should) to the universal. Those who expand sympathy/empathy to others are happier he contends. Highlighting the connection between happiness and compassion, Boeree writes: “The great value of this biosocial view of morality is that it removes the issue from religious and philosophical debate and places it squarely in the realm of the pragmatic. Without denying the inherently subjective nature of our goals as human beings, we may be able to agree that one reasonable goal is the maximizing of happiness. The question is then how do we educate

people to understand that it is in all our best interests to nurture our innate tendencies toward compassion.”

*Conclusion:*

Throughout the reading, two past philosophers who Churchland consistently acknowledges as corresponding with her overall philosophical view of morality are Hume and Aristotle. Hume offered “considerable insight” with his understanding that the “roots of morality are in our nature” (and not reason). And Aristotle hit the mark when he rejected a “Platonic Heaven” where absolute moral truths reside and instead placed morality in the realm of the practical. Now, in current times, we can add to their insights brain research and this makes all of the difference. Instead of shying away from the topic of morality, as she did in her early days, Churchland has taken on morality as one of her main philosophical subjects.

Altogether, *Braintrust* is a marvelous book on a modern approach to morality. Just as Churchland advocates eliminative materialism to our folk psychology, so too does Churchland seem to promote an Ockham’s razor approach to this branch of philosophy. She shaves away an outdated and untestable view of morality and in its place presents morality in a modern and enlightened perspective.



## PHI:

### A VOYAGE FROM THE BRAIN TO THE SOUL

*Giulio Tononi*

In *Phi* Giulio Tononi explores consciousness in a very unusual way. While most books on this topic either offer technical details of neural anatomy that may allow for consciousness or philosophically scrutinize its overall meaning, this author approaches it as a story and one told from the viewpoint of Galileo. Yet, unlike his usual role of objectively studying nature, here Galileo examines his own consciousness, and in a dream-like, almost psychedelic, way he ventures on a journey to understand what it is all about. Along his way, Galileo goes in and out of conversations with others and multiple analogies and stories are told. Perhaps Tononi's nomadic style makes sense as this is what consciousness itself does, experiencing the world not as third person but subjectively.

The book starts off with Galileo laying down to rest and wondering how many breaths he still has in him. Soon after he enters into a hypnogogic state that almost seems to be an out of body experience. Tononi writes: "Then, suddenly, straining to blow inside his body, the air took Galileo with it. And he felt his soul sucked inward, flowing through narrow nostrils inside the dark vault of the skull."

As Galileo enters into a dream like state, he muses what give rises to his awareness in the first place. Was it his

brain and, if so, how could it generate consciousness? And would it all vanish at the time of death? Or was the source of consciousness his soul? Perhaps the whole objective world is really a product of consciousness itself? As Tononi puts it, "he seemed to be of two minds on this issue."

As the dream continues, Galileo meets three scientists, Francis Crick, Alan Turing, and Charles Darwin, who help him try to make sense of these philosophical quandaries. (One wonders if perhaps the author drew his storyline in part from Dicken's Christmas Carol.) When discussing these guides, Tononi points out in his notes, almost jokingly so, that all three are a "bit too English" and perhaps a "bit one-sided," but nonetheless have something significant to offer Galileo in his quest. The author thinly veils the name of each mentor, referring to Francis Crick as Frick, Alan Turing as Alturi, and Charles Darwin as the bearded old man.

In a poetic and analogous form he maintains throughout his text, Tononi in part one of the book introduces the reader to Crick's position on consciousness. Besides his research on the structure of the DNA molecule, which eventually led to him winning the Nobel Prize in biochemistry along with James Watson, Crick was deeply interested in the study of consciousness and wrote *The Astonishing Hypothesis: The Scientific Search for the Soul*. Crick (as Frick in the story) explains to Galileo that consciousness does indeed arise from the brain. More specifically, he argues that for consciousness to manifest there must be an interactive loop, or communication,

between the cerebrum and the thalamus. The neurons in the cerebrum communicating with the thalamus is called the corticothalamus complex.

Instead of a “prince or pope” running the show, Crick continues to explain to Galileo that the cerebrum part of the brain acts as a democracy with many specialists contributing and cooperating with each other. Cells here are connected and conversing, and this is essential for awareness. Interestingly, even though the cerebellum, in Latin meaning the “little brain” responsible for motor control, may be more populated than the cerebrum in term of cells, the neurons here do not talk to each other but are isolated. As such, these particular brain cells do not account for consciousness, argues Crick.

To make his understanding really come to life, Crick refers the cerebrum and the cerebellum as to two great cities living inside the brain. The cerebrum is a bustling metropolis where citizens argue, shout, and discuss. This pluralistic society allows its members to cast different votes and all of this excitement plays a pivotal role in developing consciousness. The cerebellum, on the other hand, is like a silent prison where the citizens, though many, live in isolated cubicles unable to talk. As such, Crick reminds Galileo, one can damage the cerebellum yet still have consciousness. However, lesions or injuries, even small ones, in the cerebrum can cause great havoc, from loss of memory, to epilepsy, to even resulting in a loss of consciousness or death. Thus, for conscious awareness, Crick asserts, what ultimately matters then is

how the neurons are connected, not necessarily how many one has in a particular region.

In the next scene Crick and Galileo come across a sleeping Frenchman. When Galileo shook him awake and asked him what was on his mind right before he woke up, the Frenchman shouted as though quite irritated, "Nothing is on my mind." Groggy and discontent, the Frenchman fell back asleep. As they observed him sleeping, Crick pointed out to Galileo that the Frenchman's eyes this time were moving back and forth as he slept, indicating he was dreaming. When the man was reawakened once again, this time he was not dozey and he reported experiencing very vivid images in the sleep state. Utilizing an ocean analogy, Crick explains to Galileo what is going on in the different sleep segments. In deep sleep the waves are deep and slow and uniform in the entire sea. As though under a totalitarian regime, there is no neuronal talk and everyone follows the same orders or wave pattern. But when the man was in the dream state, the waves were more erratic, changing shape and momentum, in a shallow sea. This means neuronal activity was strong and as the neurons talked so came awareness and imagery.

Once fully awake the Frenchman expressed his own views on consciousness – he stated that consciousness was there in sleep (in deep or dreaming states) and, more importantly, it will be there after death. In a defensive tone he proclaimed: "Consciousness never expires, not even for a moment. What the brain does is immaterial; consciousness uses it to communicate with the body, and



through the body with the world, but consciousness is a different substance and does not need the brain to exist.” At death, his consciousness will be one with God, the Frenchman opined. When Crick offered a counter materialist view that matter alone generates consciousness, he then asked Galileo what was his take on it, to which Galileo remained silent.

Many years ago while finishing up my undergraduate studies at UC San Diego, I met Francis Crick at a dinner party at V.S. Ramachandran’s house. Since I was only introduced to this guest as Francis, I was unaware that for over two hours I sat on the couch discussing the brain, consciousness and the meaning of life with one of the great minds of the 20<sup>th</sup> century. As I recall, my twenty two year old self said some embarrassing statements, such as “what do for a living, Francis?” and “if you have nothing going on, perhaps you can help me out in the research lab sometime.” To his great credit he never let on who he was, though the grin on his face when I asked him these questions was priceless. While I look back upon that night with bitter sweet memories, I feel very fortunate to have met Crick and to have been given an opportunity to hold a conversation with him similar to the one that the imaginary Galileo did in Tononi’s book.

In part two of the reading, Galileo’s journey continues with Alan Turing (played by Alturi). In a conversation with Turing, “phi” (pronounced fi as in fly) and its significance in understanding consciousness is discussed. Presented as a symbol of an I with an O placed directly over it, phi is a mathematical symbol of the “golden ratio

– the right way of dividing something into parts.” In the context of this book, phi refers to the “the information integrated by the whole above and beyond its parts—call it integrated information.” Thus, in this section Turing proposes that the brain produces consciousness since it can integrate information between all its specialized parts (an idea that seems to fit with Crick’s analysis as well). Yet, in addition to this, according to the phi theory consciousness can be understood as the whole that cannot be simply reduced to its parts (this idea Crick may take issue with). In a way, Tononi seems to be hinting that consciousness, being irreducible, can be understood here as an emergent property.

Furthermore, as the story unfolds Galileo learns that a “complex is where phi reaches its maximum, and therein lives one consciousness—a single entity of experience,” and that the human brain is such a complex. When pondering if other non-human beings also have consciousness Tononi indicates yes but their phi is to a lower degree. This matches to some degree the hierarchy of consciousness idea found in Michio Kaku’s *Future of the Mind*, wherein he too presents distinct levels of consciousness found in the natural world. However, some have argued that Tononi’s position goes beyond recognizing consciousness in the animal world and borders on panpsychism, especially when he suggests that a photodiode has a “wisp of consciousness” and that a phi of a rock is low compared to that of a moth. And some may take exception when he argues that a human embryo’s phi may be less than a fly’s. Despite his critics, Tononi tackles consciousness from an interesting angle as

he acknowledges a world teeming with life and distinct levels of awareness.

Finally, in the third section of the book, the old bearded man (aka Charles Darwin) is brought into the scene. This part of the reading is not so much about Darwinian evolution but about reminding us that human consciousness continues to develop, to grow and to evolve. What contributes to this is the integration of art, culture and history into our awareness. Whether our individual consciousness survives us after death is unknown, but certainly one can argue that human consciousness as a whole continues after our death and we contributed to developing that. So in this sense, at least, we survive.

Since this book is a bit difficult to follow, one may really appreciate the author's "notes" at the end of each chapter. In the notes, Tononi steps out of the dream to clue the reader in on what is going on and to add some context and references. These notes are of extreme value in grasping the nuances of the text. Altogether, this book was an enjoyable, albeit challenging, text on consciousness, reading more like a piece of literature than a science book. While the hard problem on consciousness (explaining why and how we have qualia) may still be a mystery, Tononi's approach to the topic was indeed thought provoking.



## SEEING THINGS AS THEY ARE

*John Searle*

Over the years, whenever I have been asked what I teach and my response is philosophy, I usually receive a “deer in the headlights look” and then an instant change of the subject. I will never forget the time I mentioned to a fellow surfer in the water something about teaching philosophy and he simply paddled away as if I had a potentially infectious disease. Sometimes when I reveal my discipline the person I am talking to reminisces about a past, undergraduate philosophy course, only to follow it with a comment about how awful the class was. With a sour, disgruntled look the person might recall how the professor would raise “absurd” ontological questions such as: “Is there really a chair there or am I just perceiving one” and “How do I know when I see green you are seeing green too; perhaps you are seeing red and calling it green.” From this fatigued response, I was not sure if the person who took the course was simply bored, did not follow the logic of it, or felt that erudite topics of philosophy offered no pragmatic purpose.

My husband, David, who also teaches philosophy, encounters the same feedback and so has resorted to simply saying that he teaches science. This is no hyperbole, as he focusses on the latest scientific understandings of reality, arguing in fact that “philosophy done well is science and philosophy done poorly is just philosophy” (he sometimes ends this with “philosophy

done poorly is theology” when he is in a more daring mood).

From our experiences, philosophy seems to have gotten a bad rap from the general public. And this is indeed unfortunate, as this area of study offers so much to the inquiring mind. Our curriculum includes many engrossing topics, such as religion (atheism, agnosticism and theism), science (evolution, quantum physics, cosmology, and neuroscience), politics (socialism, communism, and democracy), the future (artificial intelligence and biotechnology), ethics (from animal rights to stem cell research), etc. The subject matter of philosophy is the human being, as the philosopher Donald Palmer succinctly put, and so anything related to us (our beliefs, our ethics, our biology, our planet, the multiverse) are part of the philosophical conversation. How can this be anything but truly fascinating?

So what is it about philosophy that garners this glassy eyed, no-body-is-home reaction or even a rude “I do not want to know you” glare? When I read John Searle’s new book, *Seeing Things As They Are: A Theory of Perception*, I must confess I sort of got it. Let me explain. If one with no philosophical background (or even a slight one) were to pick up the text from the local bookstore, it most likely would be a very hard read, as it seems to assume a great deal of background knowledge in the subject. Though I am aware of the terms and thinkers within the reading the average reader is not. And I imagine that those who venture into its pages are quite overwhelmed how abstract it all is.

Moreover, Searle on occasion takes a slightly condescending tone in his presentation, implying that those who do not agree with him “owe us an alternative diagram,” and further aggravating the reader by saying “why would anyone in his or her right mind want to reject” his overall thesis. I think his most patronizing line, however, was when he declares that for those who do not accept his view, “then there really is nothing more to be said because you cannot understand conscious perception.” Perhaps those who disparage philosophy sense this “I know more than you” attitude among philosophers and this contributes to philosophy’s poor standing in the social arena and why it receives a cold shoulder.

### *Searle’s Direct Realism*

Although, with all of this said, for those willing to tackle somewhat abstruse philosophical material presented with a razor sharp approach, Searle’s text does offers the reader a fascinating look at ontology, the study of the nature of being or reality, and epistemology, namely our knowledge (or perceptions) of it. What Searle accomplishes here is a new take on these age-old topics.

In his text, Searle’s proposes what he calls “Direct Realism,” the argument that there is indeed a real world out there that we perceive. Now this may sound to those without any philosophical training obvious and perhaps inane. Utilizing what seems to be common sense one might state: “When I sit in a chair I am really sitting in a chair and not just thinking I am sitting in a chair.” But

since Descartes from the 17<sup>th</sup> century (Searle actually argues it goes back to the ancients but Descartes popularized it), philosophers have more or less rejected that there is a real, objective world out there independent of the observer. Searle states that Descartes, Locke, Berkeley, Leibniz, Spinoza, Hume, Kant, Mill, Hegel, and contemporary philosophers as well, all seem to have made a huge mistake, a fallacy of sorts, which the author calls the "Bad Argument." This monumental error is "supposing that we never directly perceive objects and states of affairs in the world but directly perceive only our subjective experiences."

According to Searle, Descartes' dualism, Locke's representational realism, Hume's skepticism, and Berkeley's idealism all missed the mark when it comes to ontology and a theory of perception. What they seemed to lack was the understanding that "we are directly seeing objects" and that "these have an existence totally independent" of our perceptions. There is a real world out there and that we can access it, not just represent it as Locke contended. It does not cease to exist when we are not perceiving it, challenging Berkeley's view. And causality is a part of it, despite Hume's position that we cannot infer causation. Searle repeats within the text that "we live in a sea of experienced causation." And perceptual experiences are "caused" by their objects. His bold statement (my paraphrase) that "reality is not dependent on experience but the opposite is true" captures the essence of the book.



Unlike his philosophical predecessors, Searle not only argues that there is a world out there but he asserts that our perceptions more or less match this external reality and through shared language we can express this. Our perceptions are not just sense data, mental images or imprints that can have significant variation. Rather, we can have direct awareness of the physical properties of an object. Of course, one may “interpret” the object one is seeing in a certain way different than how another interprets it, but the object itself being viewed can be seen as is. Art serves as a prime example. Though Searle sees the same work of art as Goethe, both interpret the message within a painting quite differently. All of this means that the world is out there, we can witness it as is, but how it plays in our psyche can vary a bit.

Throughout the book, Searle discusses the idea of intentionality and admits that for some philosophers it is a “controversial claim.” He explains that the ontologically objective object causes an ontologically subjective experience; one can think of this as the “world-to-mind” phenomenon. But this is only half of the equation, he says. There is also the “mind-to-world” aspect that needs to be considered. The object experienced satisfied certain conditions and causes intentional or mental states, and this he calls intentionality. It is “the feature of the mind by which it is directed at, or about, or of objects and states of affairs in the world.” Searle posits: “There is an internal connection between raw phenomenology of the perceptual experiences and the conditions of satisfaction set by those perceptual experiences.”

Searle's direct realism is fairly different than Locke's representative realism. According to representative realism, there is a distinction of primary and secondary qualities. Primary qualities of an object are in the objects themselves---it is the object's weight, length, motion, etc., and it is through sight and touch that we experience them. Secondary qualities, such as color, smell, and taste, are not in the objects themselves and so can vary dramatically from person to person. Though Locke offers an astute assessment here (even Searle says "there is something to the distinction"), he does not take the next and necessary step that the world is accessible to us directly. Instead, Locke suggests that our minds, like a camera, take a picture of the world and so our images "resemble" (or represent) reality but are not it. Being one big step removed from reality, as Locke's ontological scheme is, marks the substantial difference between representational realism and direct realism.

Having the ability to directly perceive physical phenomena may play a very significant role helping us navigate our way in this world, according to Searle. He hints at an evolutionary explanation here. With these rich visual capabilities, it allows the organism to cope "with their environment in spectacularly successful ways." In one section of the reading, he states it thus: "From a biological and evolutionary point of view the phenomenology of perception must relate us 'directly' to the world perceived."

*Einstein vs. Bohr*

Interestingly, this question of whether there is a world apart from our perceptions of it brings to mind the nearly century old debate between Albert Einstein and Neils Bohr. Einstein supported realism, arguing much like Searle that there is an objective world free of human intervention. The moon is there even if he did not see it, Einstein opined. That we can access the truths of this objective reality was what he based his science on, especially in his search for Grand Unified Theory connecting the four known forces of the universe together. Bohr, on the hand, argued just the opposite, that realism is a fiction. Reality can never be known, he emphatically professed. In fact, even more astonishingly, Bohr claimed that reality appeared to us depending on the devises we used to measure it and so the observer in fact altered reality. Quantum physics seemed to support this view.

*Practical Realism*

As a philosopher, when handling ontological and epistemological questions I lean toward the position of Socratic Ignorance, that ultimately I can never know "Reality," whether there is an external one or whether it appears to be there since I perceive it to be. However, this does not mean that realism should be entirely rejected. When I walk into a room and sit in what appears to be an empty chair (chair analogies somehow get a lot of attention in philosophy) it is common sense that once I occupy this chair others will not perceive it to be vacant

and try to sit in it. Pragmatically, though not necessarily ontologically, realism makes great sense. Thus, instead of direct realism, perhaps we can embrace a softer form of it in "practical realism."

All this means is that the world I perceive and the one you do is more or less the same (not considering cases of hallucination or illusion) and this certainly helps us function in the world. One might even hint at the claim that the world has an ontological existence independent of our perceptions as Einstein suggested and that our brains have evolved to understand it. Yet, practical realism stops short from asserting the truth of that final statement. All we really know is that our perceptions help us pilot through reality, whatever that is.

### *Conclusion*

Overall, as we can see, Searle works hard to challenge the "Bad Argument." Whether four centuries of poor thinking is corrected, however, remains to be seen. Regardless of where one stands on this ontological and epistemological issue, Searle no doubt got the conversation going once more, offering a new take on a well-established philosophical problem. Though Searle's book may not be an easy read for many, it certainly offered a worthwhile philosophical topic to investigate and one which Einstein and Bohr would undoubtedly appreciate.

## THE CAMBRIDGE HANDBOOK OF ARTIFICIAL INTELLIGENCE

*Keith Frankish and William M. Ramsey*

While computer technology has no doubt become more progressive, the question remains whether we will one day have full-blown artificial intelligence. The idea that we can actually create a being that may have consciousness and far surpass our own intelligence is astounding, but the ramifications of such a creation, whether it be our saving grace or demise, are still unknown to us. Many argue that since an AI explosion is in the very near future and it can so radically transform our lives, we should be diligently addressing all topics related to AI.

*The Cambridge Handbook of Artificial Intelligence* edited by Keith Frankish and William M. Ramsey does just that. The text explores many AI topics from a variety of angles, including computer and cognitive science perspectives and philosophical and ethics ones. Though the editors make a point that this “guide’s” main focus is comprehending the latest in AI research and the theoretical issues of that research, many of the essays are written by philosophers of the mind who raise important philosophical issues, such as are machines conscious and what do we mean by that, can they be programmed to be ethical, and what does the future hold in light of AI?

The text is broken up into four main sections: the foundations (an examination of AI accomplishments, research areas, and philosophical roots); architectures (an understanding of good old-fashion AI or GOFAI,

connectionism and neural networks, embedded cognition, etc.); dimensions (an investigation of different dimensions of intelligence from learning to emotion to consciousness, etc.); and, lastly, extensions (highlighting the world of robotics, artificial life and the ethical aspects of AI). The 15 articles that make up these sections are “stand-alone pieces” with often overlapping material. For instance, John Searle’s famous Chinese Room argument is discussed in several of its articles.

In the beginning chapter, Stan Franklin walks the reader through the key moments in AI, including Alan Turing’s significant contributions and the offering of the Loebner Prize of 100,000 dollars to the first program able to pass the Turing Test (an award still waiting to be declared but I suspect it will be claimed in the very near future). We learn here that the reference “AI” was coined shortly after Turing in the 1950s by John McCarthy, who worked at Dartmouth at the time, but later at MIT and then Stanford. The author explores many fascinating events of AI history, including the moment machine learning was born with Arthur Samuel’s checker playing program, and the case of Deep Blue beating the chess champion Gary Kasparov and Watson defeating champions on the game Jeopardy. In poetic form, the writer declares that in the second decade of the 21<sup>st</sup> century AI is emerging out of an AI winter (with some progress being made) to an AI spring and maybe even an AI summer (with major accomplishments on their way).

Franklin’s article is followed by a couple of essays which explore the philosophical aspects of AI, asking the

profound question what is it to have a mind and whether computers will possess them. The authors review noted philosophical positions within the field, including Daniel Dennett's strong AI position that consciousness is substrate neutral and so computers modeled after the human brain can have awareness. This is challenged by Hubert Dreyfus' critique that AI will not match human intelligence. Unlike computers, human's thinking is non-algorithmic or rule orientated (a similar argument was made by Roger Penrose). Dreyfus asserts: "Our ability to understand the world and other people is a non-declarative type of *know-how* skill that is not amenable to GOFAI propositional codification. It is inarticulate, pre-conceptual, and has an indispensable phenomenological dimension that cannot be captured by any rule based system."

Another objection to strong AI comes from John Searle. According to his weak AI position, there is no qualia for the computer as there is for the human mind. Computers, he says, simulate conscious understanding but do not have it. To demonstrate this Searle devised the Chinese Room thought experiment. Imagine you are in a closed room and trying to communicate in Chinese with one outside the room. To do so you slide under the doorframe questions in Chinese. On the other side of the door the recipient slides the correct answers to the questions back to you. From your perspective you may think that you are communicating with a real Chinese speaker who understands Chinese, but in truth, according to this thought experiment, you are communicating with a computer which is simply manipulating syntactical



symbols but not understanding their meaning or semantical content. In a similar vein, another thought experiment also mentioned in the reading is Ned Block's "China brain" thought experiment. As a criticism of machine functionalism, in this thought experiment one is asked to imagine that the entire population of China acted like a human mind for 60 min. If functionalism is correct, then one would expect that if the human mind was simulated perfectly, with individual citizens acting as neurons connected in just the right way, then a conscious mind would emerge out of this. But, as Block points out, this is absurd.

Despite some philosophical objections that strong AI awaits our future, other articles investigate evidence for it and the amazing strides made in AI research. One such area is machine learning, perhaps one of "the most rapidly growing areas of computer science." Another area of research is developing artificial agents that may be able to experience and express emotions. Though we face the "other minds problem" (that is, not being able to know the internal states of another or if there are internal states), we encounter the same problem for humans. If the "right kind of architecture" is implemented for emotion, as it is for the human brain, then there is no reason to argue conscious emotions cannot be experience in AI. If one takes a substrate independent view, then simulating the physics of the brain well enough can allow for consciousness and emotional states.

In one of the chapters in the last section of the book promising lines of research in robotics are investigated.



For instance, interfacing technology with neural tissue may allow for prosthetics to be controlled by the brain. Perhaps even more fascinating is the possibility of creating hybrid machines, or robots with “biological matter in their control systems.” Whether digital electronics are put in our brains or whether some of our organic matter is placed in the robot, future robotics, it is predicted, will become as commonplace as computers are on every desk.

Furthermore, artificial life research (hard artificial life of autonomous robots; wet artificial life of test tubes and creating artificial cells from living and non-living materials; and soft artificial life of computer simulations or digital constructions) is elucidated. Whether we can create life synthetically and whether software systems can be “alive” raises profound philosophical concerns. Creating such life forms places us in “unchartered ethical terrain.”

One of the most enlightening articles in the text that deals with the subject of ethics is Nick Bostrom’s and Eliezer Yudkowsky’s *The Ethics of Artificial Intelligence*. The authors evaluate important ethical issues, such as preventing machines from harming humans and the world at large, and also considering the moral status of machines themselves. For AI to be built to act safely and ethically it needs to have “general” intelligence and not be simply task specific. Artificial General Intelligence (or AGI) will be able to “foresee the consequences of millions of different actions across domains.” Additionally, to determine whether a machine should have moral status,

we need to ask if the machine has both sentience (qualia) and sapience (or personhood). If these are established conceivably one should not discriminate morally against it. According to the *Principle of Ontogeny Non-Discrimination*, if two beings have the “same functionality and the same consciousness experience, and differ only in how they came into existence, then they have the same moral status.” We apply this reasoning to humans created in vitro fertilization and would presumably to humans if they were created as clones, and so reasonably we should likewise bring it into play when creating artificial cognitive systems.

In this same article there is a fascinating section on whole brain emulation, or “uploading” the human brain unto a digital computer. To do this one may have to destroy the original organic matter as it is dissected into thin slices in order to capture all of its neuronal connections. Once a precise three-dimensional map of the brain is achieved then this can be uploaded to a powerful computer and the new digital brain may have consciousness as the old one did. Either this new brain can live in a virtual reality or be connected to a robotic body and live in the external world.

In this discussion, the writers raise the issue that artificial minds may experience subjective time very differently than we do. Four years of objective time to us may be experienced by a “fast AI” as a millennia of subjective time. The *Principle of Subjective Rate of Time* is introduced here: “In cases where the duration of an experience is of basic normative significance, it is the experience’s

subjective duration that counts.” In this context, then, if a fast AI and a human were both in pain, it may be morally relevant to alleviate the pain the AI experiences before one helps the human. Or, in another case, if an upload committed a crime and it was sentenced to two years in prison, we would have to ask if this should be two objective years (experienced subjectively as a very, very long time at the fast AI level) or two subjective years (for us just a couple of days).

Many of these same philosophical and ethical concerns are also addressed in Sam Harris’ podcast, *The Light of the Mind*, in which Harris interviews philosopher David Chalmers. In the last 40 minutes of the almost two hour podcast, the conversation turns to AI. Chalmers did his Ph.D. at an AI lab at Indiana University and so AI research has been a particular interest of his. While he has spent a great deal of his career as a philosopher on the hard problem of consciousness (subjective, first person states of awareness), more recently, he has focused his energy on whether AI can experience such an internal state. Known for taking a non-reductionistic view, Chalmers argues that consciousness cannot be explained by standard physical processes. He claims that something needs to be added to the picture, such as new properties or an enriched physics in a panpsychic way. With this view, some label him an “innocent dualist.” Nonetheless, he entertains that AI can have consciousness much like us.

Ultimately, Chalmers argues there are two ways AI research can go. In one scenario, we become these

superintelligent creatures by enhancing and augmenting ourselves or uploading ourselves (via reverse engineering). Once we have cracked the neural code we can replace our brain with durable computer parts and perhaps a new artificial body as well. Wisely, Chalmers suggests a gradual upgrade, one neuron replaced by one silicon chip at a time, and that one stay awake during the procedure to ensure consciousness stays on route. If “lights start to go out” in the procedure then it can be stopped before it is too late. Supposing that it is successful, the question remains will this be “me” or simply a copy or twin type of me. When we ask the silicon beings if they are the original of course they may try to convince us they are but we would really have no way of knowing if this was the case.

If we want to live virtually with no “meat body” we can reverse engineer our brains and upload them onto computers. Yet, an obvious ethical question arises out of this: if you delete an uploaded self are you committing murder? Chalmers contends that if there is consciousness (or what appears to be) then this being is in our “moral circle of concern.” On a personal note, at the end of the interview, Chalmers expresses his hope that in his lifetime he will one day be able to upload himself. With this immortality may possibly be achieved.

In another storyline, according to Chalmers, superintelligent beings are not like us and these new superintelligence AI may destructively take over the world, gobbling up our resources and eliminating anything that stands in its way, as Nick Bostrom in *Superintelligence* also speculates. Since AI may have the

ability to mass reproduce (making copies of themselves) and each successor system may be more intelligent than the prior one, these smarter minds may pose great risks to our overall wellbeing (of course, it is also possible that they offer great benefits). Sam Harris interjects that with their far superior intelligence they may trample us as we do an anthill.

With all of this said, in a 100 years-time when we may be in full blown “AI summer,” the world may seem unrecognizable to us. Superintelligent conscious machines, humans with silicon chip brains and robotic bodies or uploaded human consciousness, and even possibly teletransportation, may be the norm. Since the tide of AI is rising this is the time we should focus our efforts in setting up game rules and ethical standards, helping to create a friendly future before it is too late.



## THE TRANSHUMANIST READER

*Max More and Natasha Vita-More*

Instead of viewing the human as a final product, having reached the ultimate goal of rational thought, many philosophers throughout history have posited that humans are on a continuous journey of self-improvement with much more potential ahead. Aristotle's teleology, the idea that life forms continue to evolve along a goal directed path, captures this point. Aristotle suggested humankind can further develop one's emotional, moral and intellectual self by pursuing a life of great virtue or excellence (moral and intellectual *arete*). Moreover, many religions, such as the Buddhist school of thought and the Gnostics of the early Christian era, have also argued for the idea of self-betterment. These traditions petition human beings to wake up to a higher, more supreme level. And, especially in the case of Buddhism, enlightenment as such is not necessarily otherworldly but a state of awareness one can maintain while in this world.

Perhaps no past philosopher has represented the idea of self-improvement and self-actualization more brilliantly than Nietzsche. The exalted *ubermensch* (overman or superman) is one who has evolved to the very pinnacle of human possibilities and serves as a model for others to emulate. According to Nietzsche, the *ubermensch* is a lover of knowledge, who holds a non-hostile view of life, seeing earth as home. This free and creative spirit does not follow the herd, harbors no resentment or guilt, recuperates from life's blows, and sees one's enemies as

one's allies. Conquering nihilism, the individual can be transformed into this mature being. In a way, one can think of Nietzsche's *ubermensch* as a post-human, one who has ascended to the very height of the human potential, so much so that one is almost unrecognizable to the rest.

While Nietzsche's *ubermensch* is certainly a character to deeply admire, such a creature actually may pale in comparison to what modern day transhumanists envision for humanity. Like humanism, this 20th – 21st century movement emphasizes the Enlightenment principles of rationality, science, individual rights and progress for the advancement of the human race. However, transhumanism, often abbreviated as H+, does not stop there. It proposes the idea that humans can hope to attain much more than what humanists (and maybe even Nietzsche) sought. Imagine, they say, a world where diseases did not exist, death was put off indefinitely, the emotional state of compassion and moral integrity were maximized, and human cognition reached its peak. Living healthy, very long lives with exceptional intelligence, transhumanists proclaim, can be attained via technological advancement. Through either augmenting the human brain and body or through whole brain emulation (WBE) consciousness can be preserved and awareness significantly enhanced, and with nanotechnology (which includes nanomedicine and nanorobotics) illnesses may be beat. Even cryonics (freezing one immediately after to death to be brought back to life when technology has caught up) is explored in transhumanist circles. And all of this is just a part of their daring and imaginative vision. In



this new stage of human existence, space exploration and colonization will possibly be the norm, and AI conscious beings will most likely share the planet with us (setting up safeguard for programming benign traits is of course essential). It makes sense that Ray Kurzweil's "singularity" finds a home in this movement.

Though transhumanism has roots that go back to the 1950s with Julian Huxley's work, the term being used to capture a specific movement was first coined in 1990 by Max More, editor with Natashsa Vita-More of the *The Transhumanist Reader*. Their 2013 reader is a collection of 42 articles broken up into 9 distinct parts. Within its pages, the many contributors clarify transhumanist philosophy and correct misconceptions about it.

In More's essay in the text, he addresses four major misconceptions about transhumanism. First of all, he clarifies that transhumanists do not seek to create perfect humans or a utopian society. Rather than seeking a finalized stage, the goal is continual improvement and perpetual change and progress. The more human beings advance the greater opportunities arise for further development. Hence, it is ongoing. Reminiscent of Aristotle's telos for human beings, Ronald Bailey asserted within his article in the text that "being stronger, healthier, and smarter would more likely aid a person in her pursuit of virtue and moral excellence" and along this path we can continue to develop.

Second of all, More explains that transhumanism is not about predicting schedules in the future. Although there

have been some attempts to speculate where we are heading and when (such as Kurzweil's prediction that Singularity will occur by 2045), the main focus is on pursuing a general direction of progress with core transhumanist values and goals. Overall, throughout the reading, the future is painted in a very optimistic light. This runs counter to some futurist's predictions, such as Bill Joy's article in *Wired* magazine about all of the dangers that may lie ahead or Nick Bostrom's *Superintelligence* text which entertains a villainous AI scenario in the future (although Bostrom has a somewhat playful article in this book on "why I want to be a posthuman when I grow up," pointing out it is "very good for us to become posthuman"). Transhumanists understand that misuse of technology can certainly occur, as Kurzweil's essay in the reader indicates, so making defensive guidelines now should be one of society's top priorities.

Thirdly, transhumanists do not despise their biological bodies but rather seek to improve them, "making them resistant to aging, damage, and disease, and by enhancing its sense and sharpening the cognition of our biological brains." In the last section of the book, More offers a tongue and cheek letter to Mother Nature, highlighting the flaws in the engineering of the human body and offering her seven suggested amendments (stopping aging and death; expanding perceptual range with technology; improving memory and intelligence; developing refined emotions; etc.). These amendments to the human constitution can be made through nanotechnology. Furthermore, morphological freedom of any kind (whether one's consciousness is fully uploaded, if one is

living a life with an artificial body, or if one has transformed oneself into a post-gender being, etc.) is championed in this movement. According to Anders Sandberg's article, self-creation is an ancient drive in the human and expressing it is a right. And, it is emphasized, this is a right for all, not just the elite in society. Some fear that transhumanist objectives will be allowed only for the few—the extremely wealthy and politically connected. But, Damien Broderick assures the reader in his essay that this is not in any way part of the transhumanist plan. Extended life and enhancement are for everyone who wish to pursue it.

The last misunderstanding that More discusses is the claim that transhumanists fear death. He challenges this by stating that death itself is not seen as sinister but a painful, prolonged one is. Since death is the end of growth and experience overcoming it is preferable. If indeed death is inevitable for an individual, perhaps before death the mind can be copied and then “resurrected.” Or perhaps if the human mind is already living in a synthetic simulation, it can continue on in new, fascinating realities.

Understandably, many religions, especially Western based ones, would most likely reject transhumanist values, as these religions see the spiritual afterlife and not earthly objectives as the primary goal. But in a way one can argue that both the religious mind and the transhumanist share a common ground: both seek continuance in a more pleasant reality. Nonetheless, the majority of transhumanists (though certainly not all) do not identify

with a religious group. In one of the essays in the text Marvin Minsky confesses his own atheistic worldview, and it seems that this is not an unusual stance among the authors of this book.

Altogether, the *Transhumanist Reader* offers a remarkable and uplifting look at where the world may be heading. So often an apocalyptic, doom and gloom picture is painted when the future is broached, as Armageddon scenes of the end of the world fill the imagination and invoke paralyzing fear. How refreshing it is to read a text that instead portrays a courageous, positive worldview of the future. With enthusiasm and hope, transhumanists seek to create a better self, a “transitional human, whose use of technology, way of living and values marked them as a step toward posthumanity.” Surely, one can argue that Nietzsche would be proud.

### **The Transhumanist Declaration 2012:**

1. Humanity stands to be profoundly affected by science and technology in the future. We envision the possibility of broadening human potential by overcoming aging, cognitive shortcomings, involuntary suffering, and our confinement to planet Earth.
2. We believe that humanity's potential is still mostly unrealized. There are possible scenarios that lead to wonderful and exceedingly worthwhile enhanced human conditions.
3. We recognize that humanity faces serious risks, especially from the misuse of new technologies. There are

possible realistic scenarios that lead to the loss of most, or even all, of what we hold valuable. Some of these scenarios are drastic, others are subtle. Although all progress is change, not all change is progress.

4. Research effort needs to be invested into understanding these prospects. We need to carefully deliberate how best to reduce risks and expedite beneficial applications. We also need forums where people can constructively discuss what could be done and a social order where responsible decisions can be implemented.

5. Reduction of risks of human extinction, and development of means for the preservation of life and health, the alleviation of grave suffering and the improvement of human foresight and wisdom, be pursued as urgent priorities and generously funded.

6. Policy making ought to be guided by responsible and inclusive moral vision, taking seriously both opportunities and risks, respecting autonomy and individual rights, and showing solidarity with and concern for the interests and dignity of all people around the globe. We must also consider our moral responsibilities towards generations that will exist in the future.

7. We advocate the well-being of all sentience, including humans, non-human animals, and any future artificial intellects, modified life forms, or other intelligences to which technological and scientific advance may give rise.

8. We favor morphological freedom – the right to modify and enhance one’s body, cognition, and emotions. This

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freedom includes the right to use or not to use techniques and technologies to extend life, preserve the self through cryonics, uploading, and other means, and to choose further modifications and enhancements.

# The Avatar Project



Virtual Reality, A.I., and the Future  
of Education

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**DEDICATION**

To my two sons, Shaun-Michael and Kelly-Joseph

## INTRODUCTION

*“What is more important than learning? The desire to learn.”*

This book is a collection of distinct essays that explore the future of education, the role of computers, and the nature of consciousness, with particular attention paid to the role artificial intelligence will play in our school and other learning outlets.

We are witnessing an informational tsunami the likes of which is completely unprecedented in human history. The digital revolution is such that almost every aspect of our lives is being upended. Who could have imagined just two decades ago that the vast majority of us would check our smart phones on average 150 times a day or more? Or, that young people worldwide would consciously choose to spend 8 hours a day in front of a computer monitor playing never ending games of Minecraft? The great disruptor of the 21<sup>st</sup> century is our attention span and the Internet and computational technologies have opened up a Pandora’s box of endless distractions. We are not merely entertaining ourselves to death (to echo Neil Postman’s prophetic words), we are becoming entertainment ourselves as we moment to moment reveal our innermost selves on Instagram, Facebook, Snapchat, and new emerging forms of social media.

What all this will eventually portend nobody precisely knows, except that Ray Kurzweil’s outlandish idea of a Singularity in 2045 doesn’t look so outlandish anymore. We are on the edge of a digital precipice and where we will fall appears to have no bottom. We are about to enter

## THE AVATAR PROJECT

a virtual wonderland where what is human and what is artificial will no longer have distinct boundaries. This book is but a partial glimpse of that event horizon which like the black hole it encompasses will eventually swallow up everything in its perimeter. Either we consciously prepare for that eventuality and exert some control about its direction or else we will be powerless slaves to its manifold attractions.

There is price to be paid for the liberation of information without boundaries and as a human species we seem unprepared for where this ultimate journey will take us. We are it seems destined to either become absorbed by all things A.I. or conscious cyborgs who partake of the best that technology offers melding it with our humanity. In sum, we are at an evolutionary crossroads and the decisions we make now will predetermine (perhaps unalterably) how we will live and operate in an increasingly cyber dependent universe.

## THE NEW TEACHER

### *Artificial Intelligence and the Classroom of the Future*

The promise of technology transforming education has a long history, dating back to the origins of writing up through the Gutenberg revolution (of movable type) to the advent of electricity and air conditioning to visual overheads. My husband David ruefully recalls how some educators believed that televisions in the classroom would dramatically improve learning. They even brought in black and white televisions (with screens less than 25 inches) into the classroom and showed live lectures in science and other subjects. The problem is that it didn't work and within months were aborted for the older methods of rote memorization, lectures, group work, etc.

In the 1990s, when the Internet became more publicly accessible, particularly with Tim BernerLee's brilliant application, the World Wide Web, schools finally seemed on the brink of a genuine revolution. By the 2000s online courses became ubiquitous and at my own school, Mt. San Antonio College, more popular than regular meet in person classes. However, as any online professor can tell you, the online courses have significant drop out rates and one wonders how much students really benefit from such a process. It is one of those curious (and depressing) ironies that today we have access to more information than any generation in human history. We are quite literally surrounded by a cloud of books, articles, films, and other digital forms of knowledge. Yet, given this

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overwhelming abundance, most of it goes untapped, particularly by those who would benefit most from it.

For example, the vast majority of young men and women today spend upwards of 8 to 12 hours a day in front a digital device (scanning here and there--from Instagram to Snapchat to YouTube to Facebook to whatever new app that has gone viral) but when asked how much "in-depth" reading they do (such as reading a whole book or diving into a longer, technical piece of writing), the answer is "less than 30 minutes." A recent study said that we look at our smart phones on average a 150 times a day, a disruptive activity that nobody did a decade ago.

We have become surface surfers who have developed the inordinate habit of "skimming" along the topography of knowledge. Today in light of Google and Wikipedia and YouTube, classroom education seems arcane and mostly a waste of time, since most of what is taught can be learned much quicker and much cheaper by simply using one's smart phone or one's laptop.

Although each of us now have access to a quasi Alexandrian library many times over, we tend to use it only trivially particularly in school where the overriding motivation isn't learning, per se, but securing higher grades so as to graduate and move on to something more profitable. It may well be that making knowledge acquisition a requirement almost invariably turns learning into a chore and not a joyful pursuit. Given this institutional structure, it is little surprise that education has not changed much over the years since the student lacks

genuine motivation. Can this be changed? Perhaps not, but I do see some encouraging signs that may turn the tide. The one breakthrough that seems on the brink of transforming education in general and school in particular is the exponential evolution of artificial intelligence. What a student needs (but seldom if ever gets) is a mentor who can be a constant companion and goad, encouraging and motivating him or her according to their respective abilities and needs. In other words, an intellectual coach intimately connected to the student and his/her rate of progress. Imagine having a friend who kept track of your learning and who in turn offered help at each and every turn with new and innovative ways to understand difficult material.

To give one simple but telling illustration: My husband David was on the football team in fifth grade and was an average player, assigned the duties of being a center to the quarterback. However, he was having difficulties knowing how to snap the ball to the quarterback when he was in the shotgun position, since he had small hands and couldn't get the football to spiral just right. The coach of the team was too busy to properly instruct him, as there were 30 other players demanding his attention. This is where David's older brother Joseph came in and became instrumental. Each day after school, Joseph took the time and energy to teach David how to hike the ball in a professional manner, better than anyone in elementary school. Joseph was relentless and took care to follow David's progress day to day. It made all the difference and allowed David to excel in football for the next several years. This may seem like a silly example at first, but if

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something similar could happen in school, it would be transformative. The real problem in today's elementary schools is that it is a factory model attempting to serve too many people without enough attention given to individual growth and differing learning needs.

This is precisely where artificially intelligent agents or coaches or guides could be revolutionary, since it could adapt and schedule itself around the particular needs and limitations of the pupil.

Today a student invariably is motivated to study because his/her grade is predicated upon how well they can perform on a test (usually multiple choice and usually done on a Scantron like paper, where one fills in the appropriate small circles with a number 2 pencil). The student takes the test after so many weeks and it is a make or break situation which tends to produce increased anxiety and a desire not so much to learn as to remember and do well for a short burst of time. This sprint-like process may leave the student stressed and after the ordeal is finished forgetting or neglecting what he or she struggled so hard to remember.

However, there is a much more powerful alternative to this compress and stress methodology. Make a game out of taking tests. For instance, right now there is an app called *QuizUp* that can be downloaded for free on almost any computational device. It "is a multi-player game in which one user competes against another during seven rounds of timed multiple-choice questions of various topics." This past year my husband and I developed our



own variation for use on QuizUp focusing on general science and philosophy questions. It is called Neuralsurfer Philosophy.

We beta tested it with 108 questions in a multiple-choice format, including questions that also include picture captions. Usually first-time players don't do very well since they may not be familiar with the topic, but after playing the game a number of times, the questions start to repeat themselves and the player begins to recall which answers were the correct ones so that over time one becomes more and more proficient. Because it allows one to compete with others around the world or with an android bot (if no one is available at that moment), it has a dynamic and live feel to it. One is free to play the game as many times as possible and become adept relative to their learning curve. Play the games enough times and you can master it but without the inherent stress in school testing systems.

The institution of a school or an academy was predicated upon knowledge being exceptional and thus by necessity involved commitment and allocation of precious resources in specialized libraries and laboratories. Thus becoming an expert in a field meant first being accepted as an apprentice under a specialized master teacher who had access to a plethora of books and manuscripts that the student didn't. It was for this reason that potential forms of knowledge were concentrated and bounded in certain regions. Such an oral and literary concentration, of course, became better known as colleges, libraries, museums, etc.

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This geographical displacement (and the varying discrepancies that arose from those having more or less resources) led to a hierarchical structure in education which, in turn, stratified who would learn what, where, and when.

We see this today in the different reputations amongst higher schools of learning. One can almost "feel" the difference in perception when one claims to have graduated from Harvard, for instance, versus claiming to have secured a degree from California State University, Dominguez Hills. The latter pupil may have actually learned more than the former, but the valuable resources of Harvard and its attendant prestige are far greater than its California State University counterpart.

This discrepancy can also be economically quantified by looking at the base salary of a newly minted Stanford Law graduate in comparison to a graduate of Abraham Lincoln University in southern California, even if both potential attorneys passed the California Bar Examination during their first attempt.

The hierarchy of knowledge acquisition has served for centuries as a social barometer, either allowing more upward mobility or closing off corridors of power reserved for the intellectual elite.

The oft used cliché that knowledge is power is more of a truism than we may wish to believe, particularly now that we live in an overly saturated information age.

Over the past twenty years, however, there has been a dramatic change in how we garner knowledge. Whereas before one literally moved body and mind to a spatial location (school, library, museum) today we don't need to go anywhere as we quite literally have information at our finger tips, in our present visual field, and in the range of our voice.

Because the hierarchy of knowledge acquisition has collapsed and potential portals of learning are nearly universal, we are witnessing the democratization of information creation. This should portend a radical shift in how we educate and how we graduate students in the future.

Sadly, it has been a slow process for our staid institutions to adapt to this exponentially changing landscape.

The school system is experiencing a not so silent revolution and it is not coming from professors or administrators, but from a most unexpected corner: video gamers and their respective developers.

Simply put, the future of education is in gaming.

My husband, David, about fifteen years ago sensed that this was going to happen and wrote an extended piece on how one can learn much more and go much deeper into a subject by making learning based on playing a multi-leveled game similar to the 1980s arcade game called *Tempest*.

“The game involves a series of progressive levels. So if you sucked at it, you could only get to the 2nd or 3rd

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level. Now for a quarter that was a drag because your 'play' wouldn't last very long. But if you could navigate the incoming shooting lights (in various forms along various vortices), you could get to level 11, or 12, or 13 and play for upwards of 30 minutes on just one coin. Well, Michael Grayson was the 'relative' Master at the time since he had gotten to levels 20, 21, 22, and beyond. I was merely a neophyte and I sucked. But my addiction became great so I started playing it at the arcade with one-pointed Zen attention, until finally I got to levels 33, 34, and beyond. It was absolutely stunning . . . how concentrated the mind could get in this interactive electronic display. I became one with the photonic geometric patterns weaving new mazes of intrigue. No joke. It was like a religion. Grayson, to his credit, likened it to the inner spiritual regions described in Sant Mat literature (see my book, *The Enchanted Land*--last chapter--for an illustration). Eventually, I got to higher and higher levels, even above 50, 60, and 70 (at these levels the objects are sometimes invisible and one has to shoot almost by intuition or a higher mathematics). But then I heard of someone who had broken all barriers. One who had figured out the geometric code, the algorithmic secret behind the *Tempest* template. He transcended to all levels and he did it by *not* moving. I am serious. He realized that there was a spot on the game where one was eternally safe, provided that they never moved even if it looked certain that they were going to be annihilated. I tried it and it worked but only temporarily. One had to be absolutely still on the geometric point. I got to higher levels but still I moved. The Zen Master of *Tempest* never moved. He was 13

years old. How does *Tempest* relate to my epiphany about teaching? The grading system that is employed in colleges throughout the United States is based upon the notion of a hierarchy. But the problem is that the hierarchy is no longer meaningful in a functional way. It serves, rather, as a leveling device for administering (or, more accurately, shoveling) people into various factory-like educational institutions. The A through F grading system is an administrative device, not an intellectual one since any genuine intellectual knows that such a grading criteria is at best silly and at worst manipulative. Genuine hierarchies of knowledge are about functionality and ability and these are best appraised by real, empirical considerations not by impotent and limp letters.”

Watch any kid playing a video game and you will see their attention riveted to the electronic screen, even if what they are playing has a series of arcane rules and forces them to study different strategies.

The future of education is in gaming and with the development of virtual reality headsets there are no limits to where this technology will take us.

In 2016 two VR headsets were released: the Oculus Rift and the HTC Vive, both of which allow the user to experience expansive 360 spaces of hitherto unimagined virtual worlds.

The potential of VR is (hype becalmed) almost limitless, particularly as it applies to interactive learning. A good example of this comes from an application called *Body VR*. As explained on their website, “It’s time for

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education to change. Learning from textbooks is a thing of the past, step into an immersive environment tailored to the content you want to learn.”

I tested it myself and felt as if I had entered a completely new world, encased as I was within the contours of a blood vessel. The whole experience opened up a new level of understanding how the heart works, how red blood cells operate, and how bacteria infections invade the human body. It was unlike anything I had learned from school and, most importantly, I learned without the pressure and stress of a usual educational environment.

It is not difficult to image how the chat bots of today will morph into very intelligent A.I. assistants for almost any daily task. Already hundreds of thousands of dollars has been raised on Kickstarter for *Vi* the “first artificial intelligence personal trainer” where an athlete or anyone interested in physical fitness puts on a portable A.I. headset that monitors your athleticism, providing essential vital signs as well as constantly updated coaching advice intimately tailored to each individual.

The new teacher of the future is driven by A.I. and the school of tomorrow doesn't have classrooms with chalkboards, but personalized intelligent assistants that adapt to the needs of each student where functionality replaces rote memorization and where informational gaming replaces one-off testing.

## THE BIG KAHUNA'S DILEMMA

### *How to Live in a Darwinian Universe*

My husband David and I have been avid surfers most of our lives and we have had a long love affair with surf movies of all types, including *Endless Summer*, *Beach Blanket Bingo*, *Point Break* (the original version), and a slew of others. Ironically, we are not big fans of *Big Wednesday*, which though panned in its original release has enjoyed a growing cult following (including one of its most vocal champions, Quentin Tarentino). However, and this may stick the claw of our more core wave riding friends, we love the original *Gidget* movie starring Sandra Dee, James Darren, and Cliff Robertson.

Interestingly, the other day as I was watching *Gidget* from start to finish for the umpteenth time, I was wonderstruck by the real underlying theme of the movie which wasn't about surfing at all, but about how a normal, functioning adult in American society is expected to get a regular job and get in line with others in the day to day work force. Yes, it is okay to vacation (or loaf) during the summer perhaps (within limits, of course), but a male adult must earn his own living and be self-sufficient.

This is brought to dramatic effect in the movie when the Big Kahuna (Cliff Robertson) explains to *Gidget* (played by Sandra Dee) that he wants to be a beach bum and live off the land free from the cares of modern society. The look on Sandra Dee's face when she hears the Kahuna explain his existential philosophy on life is priceless. *Gidget* looks like she has encountered a deranged ghost,

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as if not getting a regular job was tantamount to be a Russian spy or worse!

The underlying moral arc in the movie *Gidget* isn't so much about the rapturous joy of being in the ocean and living a bohemian lifestyle as a beachcomber, but rather that surfers (of whatever stripe) must pay their societal dues or otherwise be regarded as useless outcastes. This same motif can also be seen in the overly sappy big wave movie of 1964, *Ride the Wild Surf*, starring Fabian, Tab Hunter, Shelly Fabares, James Mitchum and others, where a group of competitive young men around the world vie to ride the biggest waves at Waimea Bay on the famed north shore of Oahu. Yet, just like in *Gidget*, the moral underpinning is that surfers are perceived as bums. In one overly melodramatic scene Steamer Lane (played by Tab Hunter) confronts his girlfriend's mother over his passion for big waves, since she believes Steamer is like her no-good husband who left home and his responsibilities to follow the surf. Tab Hunter sets her straight by showing how hard he works year long and that this opportunity to surf Waimea is only a temporary one not his lifelong career. It isn't a particularly good movie or a convincing one, and certainly not as enjoyable as *Gidget* which is more playful and takes itself less seriously.

Nevertheless, both movies got me thinking about philosophy and Darwin. Why? Because this life is so short (and for too many quite brutal) that it raises a fundamental question: in a universe where the presiding dictum is "eat or be eaten" how should we live, given our brief sojourn on terra firma? Richard Dawkins once



insightfully pointed out that even though he believed evolution by natural selection was an unassailable fact of nature we shouldn't let such guide how we want our societies to operate. The last thing we want in our day-to-day lives is an ironclad rule of "survival of the fittest."

This brings in sharp relief the Big Kahuna's dilemma since what is wrong with being a surfer, living off the land, and avoiding the trials and tribulations of the typically overworked and underpaid American worker? In other words, given this horror show we call living, doesn't it make perfectly logical sense to live a life however we deem fit, given that no matter what we achieve we will at the end disappear from the proceedings?

These thoughts got me thinking about religion and why most of us, if not all, tend to believe in all sorts of nonsense that on closer inspection appears (at least to those not involved in our own personal cult) utterly bizarre or useless. Yet, if any one of these systems, regardless of how fantastical they may be, provide us with a buffer from the onslaughts of a cruel and mindless nature, then they have survival value. We evolved to believe nonsense, since such beliefs provide us with a way to avoid looking at the ultimate abyss—death and meaninglessness.

More to the point, it makes perfectly good sense to believe in nonsense provided that such allows us to get on with our lives and not succumb to premature implosion. Our brains evolved to lie to us, primarily because too much unmediated reality would overwhelm our ability to

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navigate the probability matrix that surrounds our day-to-day activities. This is why there are literally thousands of religions and millions of different beliefs systems—ranging from rabid sports fans to political zealots to automobile fanatics.

Thus, the Big Kahuna's dilemma about whether to get a full-time job or follow the sun and surf is really our own existential dilemma since we live in a Darwinian universe of innumerable possibilities. But each of our choices (whether to put our noses to the grindstone or live like free spirits) is circumscribed by a most telling factoid: our lives are mercilessly short and we die.

How then shall we live when there is no objective datum by which to adjudicate our choices?

In the 21st century, particularly in those countries that enjoy relative freedom of expression, the vast majority has already made their decision and that is entertainment. Neil Postman, the acerbic media critic, suggested that Americans are prone to entertain themselves to death and Aldous Huxley echoed that same sentiment decades prior in his prophetic tome, *Brave New World*.

And instead of lamenting these keen and astute observations (as a sign of moral degradation) perhaps we should come to grips with why such ephemeral diversions (in whatever form) are wholly reasonable and sensible in this carnivore arena where no one gets out unscathed.

Provided that another person's enjoyment doesn't infringe on our own (and we allow others the fuller trajectories of

their own short lifespan without unnecessary injury), then a powerful argument can be made for believing anything we so desire, since such believing can and does allow many of us to better navigate the ups and downs of this unremitting game of differential reproductive winners and losers.

This is why religion persists, even if we may think almost all of it is completely ridiculous and capricious because it provides a value system (even if fictional in origin) for the devotee that cushions him or her from the endless onslaughts of existence. Any schema that can ward off angst, dread, and suicidal tendencies, is welcome and will be passed on to future generations, even if such models are entirely imaginary creations.

The horror that Gidget feels about Kahuna not getting a job is in essence really a conflict over how to best live this life. What she fails to realize, of course, is that there is no "best" way to live since there are no absolute guidelines, save the ones that we indoctrinate ourselves with. Today, vast numbers of us (but more specifically the younger generation) have opted to spend hours each day interacting with increasingly sophisticated technology. We have immersed ourselves in virtual worlds, whether it obsessively tapping and swiping away at our smart phones, or donning headsets to correspond with others in simulated warfare games, or developing avatar like characters in cyber world correspondences.

Technology has become the world's newest and fastest growing religion, if we accept Paul Tillich's definition of

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such as “ultimate concern.” While many find our love affair with all things computational to be depressing or a sign of degeneracy, such love is nothing new given that we have always been fascinated with augmenting ourselves with a variety of materials. The difference now is that our electronic devices have become ubiquitous and progressively more powerful and cheaper. The church of technology isn't miles away but at our fingertips and with cloud computing it tracks our every movement.

Today's Internet is similar to an ocean full of waves, providing innumerable options. So much so, that the Big Kahuna of today is confronted with a new kind of predicament: whether to randomly surf the Net without any end goal or buckle down and find a real paying job doing something constructive in the cyber world.

Looking over at my fifteen year son, Shaun, playing away on his three monitors all sorts of interactive games (with no truly higher purpose in mind, save savoring the ups and downs of the battle), I see the Kahuna's dilemma anew. Will our total digital immersion be likened to a 1950s beach bum who would rather surf than get a “real” job? Would Sandra Dee look just as horrified as she did when seeing the beatnik ways of Cliff Robertson?

The Big Kahuna's dilemma is ours and whatever choices we make, we may in turn reflect what Soren Kierkegaard opined nearly two centuries ago: “I see it all perfectly; there are two possible situations—one can either do this or that. My honest opinion and my friendly advice is this: do it or do not do it—you will regret both.”

## INVASION OF THE SUPER-INTELLIGENT A.I.

### *The Digital Aliens Are Among Us*

The fear of invaders from Mars or other planetary systems has been a staple of science fiction movies from the 1950s onwards, including *War of the Worlds*, based on a novel by H.G. Wells, where manta ray like spaceships attack humans across the globe only to be destroyed not by sophisticated military weaponry but earth generated viruses and bacteria. Another movie of this genre, but with a different and more uplifting message, was *The Day the Earth Stood Still*, where a space being alien named Klaatu comes to Earth, accompanied by a powerful eight-foot tall robot, Gort, to give humankind an absolute ultimatum, "They can join the other planets in peace, but should they threaten to extend their violence into space, "this Earth of yours will be reduced to a burned-out cinder. [...] We shall be waiting for your answer"

Perhaps the best of these movies, or at least the one with the most intriguing psychological insight, was *Forbidden Planet* which describes an advanced civilization known as the Krell living on Altair IV who were able to exponentially increase their intelligence so as to be able to transform their thoughts and ideas into reality instantly. The Faustian problem was that their sophisticated technology also tapped into their unconscious mind (their Freudian Id) and thus their dark impulses also took on destructive manifestations and eventually annihilated their entire species.

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Interestingly, in today's science fiction, the most common motif is centered not on alien invasions as such (though they too still remain a popular theme), but on the growing and pervasive fear that the artificial programs we have invented and nurtured since the advent of electronic computers will soon transcend our own human cognition and intelligence and will outstrip our ability to control them. In sum, the great worry of the 21st century is what the Oxford philosopher Nick Bostrom calls *Super Intelligence* a sort of technological singularity where computationally engineered programs become self-sufficient and develop their own evolutionary agendas.

Several movies have already touched upon this theme, though with differing plot structure and implications, including Stanley Kubrick's *2001: A Space Odyssey* where H.A.L. 9000 (heuristically programmed algorithmic computer) the onboard computer and navigating system of the Discovery One spacecraft on a mission to Mars, tries to override the human astronauts piloting the ship. H.A.L. has developed his own agenda contrarian to those of the humans he was meant to serve.

More recently, the film *Transcendence*, which stars Johnny Depp, focuses on a scientist working on developing a conscious computer who eventually gets his consciousness uploaded to the Internet and in turn becomes extraordinarily powerful. The movie has a mixed message concerning our future since there are both devastating and benevolent consequences.

The idea of a future superintelligence is a deeply controversial one and there is a wide divergence of opinion about what it might portend or even if it is actually possible. On one end, there is Ray Kurzweil, author of *How to Create a Mind*, and *The Singularity is Near* (and a famous futurist) who is optimistic that by 2045 we will encounter a technological singularity which he defines as "... a future period during which the pace of technological change will be so rapid, its impact so deep, that human life will be irreversibly transformed. Although neither utopian nor dystopian, this epoch will transform the concepts that we rely on to give meaning to our lives, from our business models to the cycle of human life, including death itself."

On the other end is Nick Bostrom and Elon Musk who are famously quoted as saying that A.I. is "our biggest existential threat." Joining their ranks is Bill Gates and Stephen Hawking who both fear that we are opening a computational Pandora's box that may unleash digital monsters of unimaginable horror.

In the middle of this spectrum is the well-known physicist Michio Kaku, author of *The Future of the Mind*, who suggests that humans will be able to sufficiently modify robotic intelligence and make it serve (not dominate) human interests.

Perhaps the fear of an artificially intelligent species apart from ourselves is misplaced given that we have continually used supplementary tools in the past to augment our capabilities, be it a wheel, a horse, a boat, or

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an airplane. The difference now is that we are implanting sophisticated technological devices within our own bodies, though this too has had a long history (dentistry being just one rudimentary example). The fact is that we are evolving to become cyborgs ourselves—from artificial hearts to kidney transplants to embedding neuronal chips within our own skulls.

Perhaps the alien invasion we fear so much has already arrived and it is us in cyber garb. Are we not intimately coupling more and more with computational intelligence, so much so that we are forever tethered to our smart phones and other devices and we will not venture outwardly without them? Have we not created a digital cloud that follows/stalks us wherever we go, responding to our moment-to-moment whims and needs?

Are we succumbing to an alternative version of the famous science fiction movie, *Invasion of the Body Snatchers*, where we become zombie like creatures forever entranced by flickering screens of digital input? Maybe, maybe not. But it does give one pause to see millions of people worldwide in the company of other humanoids more entranced by their 6 inch high definition screens than with their friends who are but three feet away from them also staring or swiping away at their android assistants.



## PLATO'S CAMERA

### *Paul Churchland's Neural Theory of Ideal Forms*

For over two millennia, philosophers have debated how we gain knowledge of the world. The Greek thinker Plato argued that there are universals of human cognition, such as concepts of beauty, justice, and the Good, innate to us. While these ideas or eidoes, often referred to as Platonic Forms, are certainly nuanced in each cultural setting, they can best be understood in the first place because of a prior overall conceptual framework. For instance, in China, India, Africa, Iran, and Greece the inhabitants of these lands may define beauty or justice quite differently. Yet, despite one's background, humans all seem to understand the over-arching "idea" of beauty and justice. We begin to "intuit" these universals from the moment we enter this world, and they in way help us navigate the world. Nonetheless, as a rationalist Plato asserted that through reason and logic it is the philosopher who can truly penetrate through all of the particulars witnessed and fully grasp the universal, higher forms from which everything was modeled. This knowledge would be transformative, he added.

Paul Churchland in his 2012 text, *Plato's Camera*, pulls from the theme of Platonic universals. He too is interested in the idea of universal concepts and acknowledges their importance in his epistemological scheme. Like Plato, Churchland contends that this conceptual framework is necessary for our daily perceptual judgments. However, Plato and Churchland

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then begin to part company. Churchland places the source of these abstract categories in the natural world, specifically in the brain. When Plato offers his otherworldly explanation for why universal forms exist (that ingrained knowledge was evidence of a higher realm of existence) Churchland points to a neuronal interpretation.

Interestingly, this approach contradicts John Locke's *tabula rasa*. The neurobiologist does take into account the environmental role in understanding epistemology, but he starts first with the basic antecedent framework which begins at birth and which allows us to interpret our sensory experience throughout our lives. How the brain does this, taking a picture of the world, sort of speak, and developing a representation of it, is extensively detailed. Churchland refers to this representation as "maps." There are not just a few but multiple, high dimensional maps of external realities which supply us with the fabric to make sense of the world. These maps are in a way a modern version of Platonic Forms and partly of Immanuel Kant's categories of understanding. And they do not arise, Churchland proposes, through language but are in fact pre-symbolic and are due to the synaptic connections within the brain.

There are three types of learning that Churchland delineates in his text. First-Level Learning forms the basic conceptual framework. He is not implying we are born with this framework as Plato does but that it starts to form from birth across the brain's synaptic connections, taking days, weeks, or even years to produce reliable mental maps of the objective world. He clarifies that this

form of learning is independent of language and thus can apply to other animals as well. The pithy saying that “neurons that fire together wire together” captures the beginnings of this type of learning. As the creature first interacts with the world, axonal activations occur and this forms the rudiments of a background structure.

Once the framework is in place, new sensory input can be interpreted and integrated and this leads us to what he calls Second-Level Learning. This form of learning takes place when the brain (human or animal) experiences new data in the environment and one must make sense of it within the larger conceptual backdrop. The new stimuli can also alter the maps. One can think of this type of learning as the “particulars” one experience every second of every day that is mixed with conceptual maps and made sense of. To highlight this, he uses the analogy of the rolling marble endlessly going up and down hills and valleys as it encounters the conceptual landscape of the brain.

Finally, Third-Level Learning specifically applies to the human being since it depends upon language. In this case, learning occurs through cultural and social systems, as we index each other’s models. This learning, transmitted through language, is extended beyond one’s life and passed on to the next generation. It is essentially the exchanging and recording of mental maps.

As mental maps, we can raise the ontological question of how well they represent reality. There is little doubt that maps will always be less than what they are representing.

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Yet, we can add the genetic twist that as long as these models procure our food and mates (and thereby extend our DNA lineages), these maps will be to our evolutionary advantage.

Furthermore, Churchland makes a fascinating case that in acknowledging our mental maps are less than perfect scientific advancements can and will be made. With each generation of scientists we add to our maps new insights and understandings that escaped our ancestors. And this is the beauty of the scientific endeavor. It is not a stagnant discipline but a dynamic one which expands our mental maps to "an increasingly broad and penetrating grip on the structure of the larger reality of which it is a part." His view of science and where it is taking us is an optimistic one. To capture his enthusiasm for scientific realism, here is a quote from the article, *Mystical Dimension*:

"And since we are stuck to such map making, we are circumscribed by a logical syllogism that on the surface seems intractable. All maps by definition are less than the territory to which they point (because if the map is exactly as large as the land itself, then such a map would be superfluous) and thus have 'gaps.' And if they all maps invariably have gaps, then all such designs are inevitably, even if only partially, mistaken. What this means, of course, is that all the delineations we make about the world around us are potentially wrong because they are not perfect transparencies. This why science always rediscovers the unknowable, because no matter how sophisticated our maps may be they will have a gap in them which will reveal something hitherto undiscovered."

ANDREA DIEM-LANE

Altogether, Paul Churchland's book was a philosophically enlightening one, albeit technically arduous. The attempt to explain the epistemological program of Plato (and Kant) with a modern neurobiological analysis made for a remarkable thesis. Explaining how from birth the human brain's 86 billion neurons and over a 100 trillion neural connections crafts maps of the external world, which serve as universals, and adjusts these maps with the onslaught of new stimuli, or the particulars of the experience, wraps Plato's Forms in a modern package.



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### *The Astral Plane Has Descended To Terra Firma*

Though I am the first to admit that a meditative experience is different than a VR one, there is no question that they mirror each other in a number of ways.

Twenty-two years ago my husband was teaching at the University of London in the semester abroad program, and his sister Kim and him got a chance to try out a virtual reality headset. They were in Leicester square at a futuristic arcade and hoping to be mesmerized by promises of a new fangled technology. But alas to no avail. They thought VR sucked, as it was so rudimentary as to be almost laughably bad.

For the next two decades, we gave scant attention to the evolution of virtual reality hardware. However, when David was teaching at California State University, Long Beach (CSULB), he heard rumors about a student who had somehow figured out the trick to developing a VR headset that even in its beta testing iteration was mind blowing.

We have tended to be a first adopter of all things technological so we did more research and talked extensively to my oldest son Shaun, who is a full-fledged computer geek. We discussed the start-up Oculus Rift, as invented by Palmer Luckey (the former CSULB student), and other prototypical devices being developed by the HTC Vive, which was my son's favored choice. But though I knew theoretically that such technology would

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be transformative I hadn't experienced it directly and thus was not yet a convert.

All that changed, however, the day we tried Google Cardboard, a surprisingly simple, hard paper construction that looks at first glance as if it was made on the fly. As I put on the relatively cheap contraption I was ready to be disappointed. But instead I felt like St. Paul on the way to Damascus. I was shocked as I was teleported to another realm. Even though I knew Google Cardboard (which uses your smart phone as its fundamental hardware) was still a very primitive device, I immediately realized that the future I dreamt about decades ago had arrived and that it was only going to get better, much better.

The implications of VR are more profound than we might at first suspect. Ironically, Ken Wilber, the controversial New Age philosopher, may be one of our best future theorists when it comes to all things virtual, even if we must ground his spiritually saturated cosmology down to terra firma.

In an earlier article [Ken Wilber Was Right, the Next Stage is Psychic](#), the author wrote,

“Wilber has postulated that we have undergone a series of holonic adaptations—from magical to mythic to rational—in our history. The next stage according to Wilber will be the "psychic" level. Ironically, what Wilber envisioned (a network of logical understanding that supervenes mere logic or rationality.... a sort of meta-thinking) is already obvious via the Internet and the Web.”



Wilber was spot-on, except that he didn't envision the psychic realm as being generated by the nuts and bolts of routers, cables, servers, computers, engineered software programming, etc., but had postulated something a bit more ethereal. In other words, Ken Wilber's model was correct in its insight, but wholly missing in its mechanics. In Wilber's hierarchical schema, the next level beyond "psychic" is what he refers to as the subtle realm. As he explains in his early books this a state of consciousness where all sorts of fantastic visions of light and sound occur and where the mind can be enveloped into astral realms.

Later in a 2007 position paper on the subject, *Towards a Comprehensive Theory of Subtle Energies*, Wilber elucidates that,

"Accordingly, as this Awakening process begins and starts to mature, this Wakefulness increasingly pervades all aspects of the waking state and begins to spill over into the dream state, rescuing them both from a half-asleep fog. As one then enters the dream state, one begins to lucid dream—to remain conscious where the average person passes out or goes blank. What happens is that the dream state is being converted from unconscious to conscious, and thus it begins to yield all of its visionary, archetypal, subtle revelations. Moreover—and just as important—because you have made the dream state conscious to some degree, you have started to transcend it—it has ceased to enslave you; it is now object, not subject; you now embrace your dreams, they don't embrace you."

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Wilber's wording in the last sentence is both instructive and revealing, "you now embrace your dreams, they don't embrace you."

While I don't think Wilber had VR headsets in mind when he postulated his subtle realm theory of consciousness (where dreams become conscious to an awakened psyche), the parallels between the two are unmistakable.

In the mystical literature on the subject, accessing the subtle realms usually entails deep meditation, which primarily includes sitting very still for long stretches of time and concentrating on inner lights and sounds until one consciously enters in the awakened state.

In virtual reality, the neophyte simply dons a headset and turns on the preset program and then in a second or two finds himself or herself completely encased in a 3-D wonderland.

The former is achieved by dint of one's concentration, whereas the latter is accomplished by some remarkable feats of hardware and software engineering. Yet, both resemble each other in truly remarkable ways: from feelings of being out of the body to scintillating light shows, to adventures across spatial landscapes.

David has been a lifelong meditator and has practiced shabd yoga for over 40 years and though he is the first to admit that a meditative experience is different than a VR one, there is no question in his mind that they mirror each other in a number of ways and that in the near future it seems exceedingly obvious that anyone will be able to

enjoy a simulated “astral” trip without resorting either to prolonged meditation or ingesting psychedelic drugs. And because VR is so easy and (here is a conscious pun) *mindless*, it will go viral throughout the human population, just as radio and television and the Internet have done before.

In a very real sense, we are downloading the astral plane. Or, more precisely, our idealized versions of it.

It is truly an eye-popping experience to put on Google Cardboard (with your inserted iPhone), touch a button, and then find oneself enveloped in a game such as In Mind (produced by the Russian company Nival), where one travels in a 3-D brain mock-up setting off (and/or correcting) different firing neurons and getting deeper and deeper into the walls of fibrous architecture, while you sit still and your physical body goes nowhere. Add to this the very odd sensation of feeling as if you have no body and are encompassed in a completely different world where seeing 360 degrees is the norm.

This particular VR voyage reminded me of Paramahansa Yogananda’s first experience of cosmic consciousness where he wrote,

“My body became immovably rooted; breath was drawn out of my lungs as if by some huge magnet. Soul and mind instantly lost their physical bondage, and streamed out like a fluid piercing light from my every pore. The flesh was as though dead, yet in my intense awareness I knew that never before had I been fully alive. My sense of identity was no longer narrowly confined to a body, but

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embraced the circumambient atoms. People on distant streets seemed to be moving gently over my own remote periphery. The roots of plants and trees appeared through a dim transparency of the soil; I discerned the inward flow of their sap. The whole vicinity lay bare before me. My ordinary frontal vision was now changed to a vast spherical sight, simultaneously all-perceptive. Through the back of my head I saw men strolling far down Rai Ghat Road, and noticed also a white cow who was leisurely approaching. When she reached the space in front of the open ashram gate, I observed her with my two physical eyes. As she passed by, behind the brick wall, I saw her clearly still.

All objects within my panoramic gaze trembled and vibrated like quick motion pictures. My body, Master's, the pillared courtyard, the furniture and floor, the trees and sunshine, occasionally became violently agitated, until all melted into a luminescent sea; even as sugar crystals, thrown into a glass of water, dissolve after being shaken. The unifying light alternated with materializations of form, the metamorphoses revealing the law of cause and effect in creation.

An oceanic joy broke upon calm endless shores of my soul. The Spirit of God, I realized, is exhaustless Bliss; His body is countless tissues of light. A swelling glory within me began to envelop towns, continents, the earth, solar and stellar systems, tenuous nebulae, and floating universes. The entire cosmos, gently luminous, like a city seen afar at night, glimmered within the infinitude of my being. The sharply etched global outlines faded somewhat

at the farthest edges; there I could see a mellow radiance, ever-undiminished. It was indescribably subtle; the planetary pictures were formed of a grosser light.

The divine dispersion of rays poured from an Eternal Source, blazing into galaxies, transfigured with ineffable auras. Again and again I saw the creative beams condense into constellations, then resolve into sheets of transparent flame. By rhythmic reversion, sextillion worlds passed into diaphanous luster; fire became firmament.”

VR is astral travel for nerds. Imagine what this technology is going to look and feel like in a decade? We will live so deeply inside these VR realms that telling the difference between what is real and simulated will increasingly blur to the point of meaninglessness.

This is not hype, since what I glimpsed was quite literally a cardboard rendition of a future VR which will be exponentially far beyond anything we can presently imagine. And it is not a distant future since in 2016 the market will be flooded with a whole of series VR products, ranging from Oculus Rift to Sony PlayStation VR to HTC Vive to Samsung Gear VR to Microsoft HoloLens to FOVE VR to Zeiss VR One to Avegant Glyph to Razer OSVR to Archos. Ken Wilber’s subtle realm, even if merely a replica of what he envisioned, is coming to a store near you.

Keeping with my Wilber analogies and metaphors, I can well imagine Ken arguing that VR and its attendant products is a sort of “Atman” project, where instead of

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actual higher order realization of the subtle realm (which involves tremendous hard work and personal transformation), we create a mechanical substitute for it, mistaking the simulacra for the real deal.

This may or may not be true, but I do think Wilber's understanding of the subtle realm as the next leap in our evolutionary journey (even if the actual technology behind it is the opposite of what he prophesized) can serve as a very useful roadmap of what virtual worlds lie in store for us.

I have no doubt that with VR we will soon be witnessing an informational hurricane, the likes of which will swamp everything—from how we educate to how we doctor to how we entertain.

If consciousness evolved as a virtual simulator to help us better insource varying survival strategies before outsourcing them, we can readily see that humans have now progressed to the point where we can actualize our imaginings in a real world.

Simply put, our technology has finally caught up with our dreams so that we can consciously inhabit what we could only before imagine.

We are on the threshold of replacing our spiritual Atman Project with an electromagnetically gifted Avatar Project, where arduous meditational practices are replaced with supremely easy VR headsets so that we can transcend the limits of our physical bodies and fly unencumbered in mental wonderlands.

Aldous Huxley was correct when he predicted that we would enter a *Brave New World*, but it is a different kind of Soma we will daily ingest than the one he anticipated. The drug of the future is virtual and it is information without boundaries.

The danger is that we are entering into what one author alleges is a form of *digital existentialism* where,

“The acquisition of knowledge is defined, limited, and measured by distance. Yet what happens when there is no lag time between what we desire to know and what is known? We are already witnessing the exponential acceleration of technological evolution to such a degree that in a few decades we will become the very A.I Nick Bostrom, Elon Musk and Stephen Hawking fear but not in the exact form they predict. No, it isn’t a superintelligence apart from ourselves that will transcend us in a Kurzweil like singularity, but rather that we will become the very network itself. The next stage is already upon us and its initials are A.I., but it stands for *augmenting intelligence*. Just think: The smart phone in our hand today can access more information in seconds than all the computers in the world combined just thirty years prior. We are becoming forever tethered to the computational web that help us in every single aspect of our lives: from whom we date and mate to how we spell and write to how we sing and compose to how we drive and shop to how we watch and listen to how we think. The tomorrow of who we are can be glimpsed in the millions of applications that are downloaded daily to help us navigate our overlapping worlds of the virtual and the empirical.

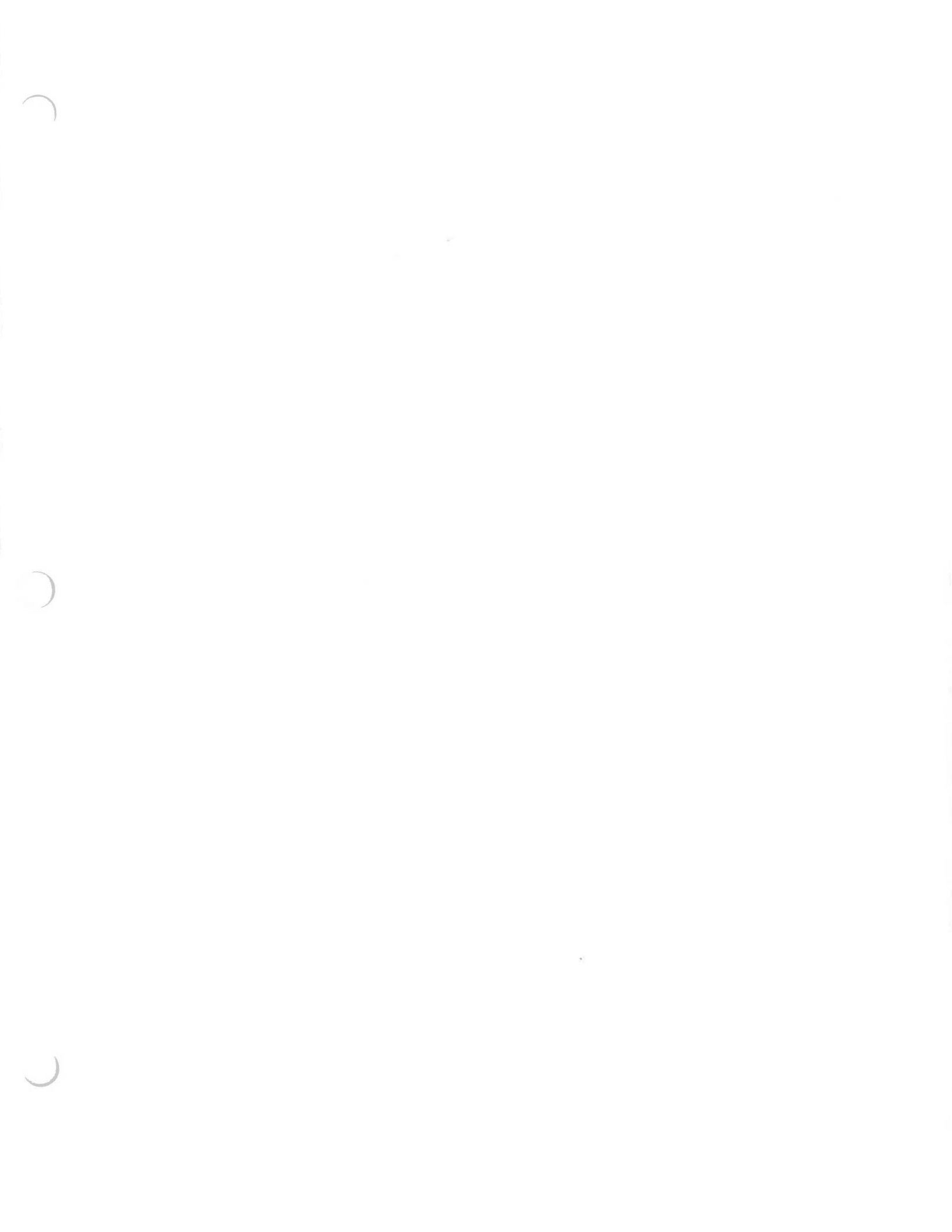
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But that distinction between the two is an illusory one which will be soon be crossed when we become the very apps we seek, where that which we want and that which we can have are one and the same. All that we couldn't get from without, we will quite literally get from within since in a multiverse of information nothing is in short supply and everything is ready for digital consumption, except in our case the line between upload and download will be forever blurred and where we end and artificial intelligence begins will be meaningless. Everything we know will be literally turned inside out. We already are glimpsing such a destiny even now as moment to moment we are sharing the most personal of details and pictures of our lives to strangers we have never met except in textual affirmations. No longer will we have to pretend to be the avatars we project. We may be bodily separated in the here and now but in cyberspace we will be the fused generation, where every desire and every whim and is met instantly with its twin counterpart: absolute fulfillment. But therein lies the great transformation we cannot portend, sacrificing the limits of our humanity and what made us who we are for a future where nothing is breakable and vulnerable remains since we have replaced our mortality and its fragileness for a photonic wonderland where space and time and their separation no longer have any meaning. The forbidden fruit is electronic and we have already eaten it. The future will not so much shock as absorb us. We, the last remnants of a nature without intention, are becoming aware of a wholly new terrain which also brings with it a terror of its own: digital existentialism, where meaning and purpose are without



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direction and where we are never alone. We sacrificed our privacy for never ending company and in return we became the flickering screen that never shuts off.”



## THE METABOLIC THRESHOLD:

### *Consciousness and Energetic States*

That consciousness is the result of underlying biochemical processes seems to be an obvious fact, especially given our respective sleep cycles. Moreover, each of us are too acutely aware of how a slight modification in our diet can alter how we feel and how we navigate throughout the day. Add a couple of strong alcoholic drinks into the mix and the world around us swirls in quite a different fashion.

Recently, a new study was completed which indicated a critical metabolic threshold within the brain for the emergence of consciousness. As reported by *Science*, which summarized the findings:

“Differentiating states of consciousness in brain-injured patients is a major challenge for clinicians. Researchers from the University of Copenhagen, Denmark, and their colleagues recently used positron emission tomography (PET) to measure the metabolism of glucose in the brains of 131 patients, finding that 42 percent of normal cortical function is the minimum amount of energy required for conscious awareness. The findings provide ‘a simple and objective metabolic marker’ of consciousness, the authors wrote in their study, published today (May 26) in *Current Biology*.”

The idea of quantifying self-awareness via biochemical responses doesn’t mean that we have “understood” consciousness as such. But it does provide us with part of

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the necessary scaffolding underlying how such awareness emerges. As the study indicated, “regional differences in glucose metabolism (relative to whole-brain metabolism) correlated with the patients’ likelihood of regaining certain cognitive functions, such as vision and language comprehension.”

What makes this study particularly powerful, of course, is its predictive quality, such that “In nearly all cases, whole-brain energy turnover directly predicted either the current level of awareness or its subsequent recovery,” Kupers said in a statement. “In short, our findings indicate that there is a minimal energetic requirement for sustained consciousness to arise after brain injury.”

This study in particular casts a dark shadow on those who believe that consciousness is divorced from its material substrates since without minimum neural activity (42 percent or above cortical activity being a baseline of threshold) self-awareness apparently doesn’t arise.

I don’t think this is very surprising, given what we already know about how adenosine works within the brain. As the McGill website on brain function lucidly explains,

“The onset of sleep is triggered not only by your body’s biological clock, which regulates the cyclical secretion of hormones determining the best time to go to sleep, but also by the cumulative effect of hypnogenic molecules that build up in the body while you are awake. The molecule adenosine has a number of characteristics that make it an ideal candidate to act as one of these hypnogenic substances: its concentration in the brain is

higher during waking periods than during sleep and increases during extended periods of wakefulness; moreover, administering adenosine or its agonists to experimental subjects makes them sleepy. Adenosine is produced by the degradation of adenosine triphosphate (ATP), the molecule that serves as the “energy currency” for the body’s various cellular functions. The amount of adenosine produced in the brain thus reflects the activity level of its neurons and glial cells. The brain’s intense activity during periods of wakefulness consumes large amounts of ATP and hence causes adenosine to accumulate. The accumulation of adenosine during waking periods is thus associated with the depletion of the ATP reserves stored as glycogen in the brain. The increased adenosine levels trigger non-REM sleep, during which the brain is less active, thus placing it in a recovery phase that is absolutely essential—among other things, to let it rebuild its stores of glycogen. Because adenosine is continuously metabolized by the enzyme adenosine desaminase, the decline in adenosine production during sleep quickly causes a general decline in adenosine concentrations in the brain, eventually producing conditions more favourable to awakening.”

Put another way, if consciousness was indeed distinct from the bodily apparatus that houses it, why would such tiny molecules play such an elemental part in its display? The tired (and not altogether convincing) argument that the brain is a receiving station similar to a television set in one’s home doesn’t actually resolve the issue of how consciousness emerges but only avoids the query by shifting its central locus. And in so doing it, neglects the

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very obvious point that in either case (whether awareness is an emergent property of the brain or rather akin to an electromagnetic wave from afar) consciousness is physically related to some measure.

Galen Strawson, writing for the *New York Times*, captures the essence of the problem of self-awareness in the very title of his essay: “Consciousness isn’t a Mystery. It’s Matter.” Of course, saying this doesn’t then mean we have solved the conundrum, but only that the real issue at hand is more profound than we might at first suspect: the difficulty in understanding consciousness isn’t what it is “like” to be aware (that we already have in abundance, since it is the one thing we experience from the inside out), but rather how physics can explain the material structure that gives rise to such a complex and holistic phenomenon in the first place.

In other words, the following pun (in a precise questioning form) is a literal one: “If we are just matter, what then is the matter?”

Consciousness, ironically, is a physics problem curled up in chemical and biological and psychological garb. We need to undress awareness and understand its primary and core constituents, without which it forever hides its manifold allurements. Analogously awareness is similar to the user interface on our smart phones, which depend upon the hardware and software components of its operating system. To understand the visual and auditory display on your phone, one has to first explore the physical housing upon which it is built. Consciousness

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without a display is likened here to a movie without a projector or a screen. While some may believe that consciousness will exist without a physical substrate, the evidence suggests otherwise since self-awareness is physics incarnated. Thus, the real mystery that needs to be unraveled concerns matter itself. What is it ultimately?

## *About the Author*

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**Andrea Diem-Lane** is a Professor of Philosophy at Mt. San Antonio College. She received her Ph.D. and M.A. in Religious Studies from the University of California, Santa Barbara, where she did her doctoral studies under Professor Ninian Smart. Professor Diem-Lane received a B.A. in Psychology with an emphasis on Brain Research from the University of California, San Diego, where she did pioneering visual cortex research under the tutelage of Dr. V.S. Ramachandran. Dr. Diem-Lane is the author of several books including an interactive textbook on consciousness entitled *The Cerebral Mirage* and an interactive book on the famous Einstein-Bohr debate over the implications of quantum theory entitled *Spooky Physics*. Her most recent book is *Einstein's Wastebasket: The Future of Philosophy*.



