

# Contents

<b>1 Overview</b>	<b>3</b>
1.1 Course Structure . . . . .	3
1.2 Philosophy of Teaching . . . . .	4
1.2.1 7 Liberal Arts of the medieval university . . . . .	5
1.3 Where and how to access material . . . . .	5
1.4 Portability and how to apply course content . . . . .	6
<b>2 The long 19th century (1789 - 1914)</b>	<b>6</b>
2.0.1 A brief history of art leading up to the industrial revolution . . . . .	6
2.0.2 Art in the Age of Revolution (1789 - 1848) . . . . .	6
2.0.3 Utopia . . . . .	7
2.0.4 Art in the Age of Capital (1848 - 1875) . . . . .	8
2.0.5 Art in the Age of Empire (1875 - 1914) . . . . .	8
2.1 The short 20th century (1914 - 1996): Art in the Age of Extremes . . . . .	9
2.1.1 Features of the early 20th century art landscape . . . . .	9
2.1.2 Postwar Arts . . . . .	10
<b>3 Aesthetic and sociological perspectives</b>	<b>10</b>
3.1 Critical Theory . . . . .	10
3.1.1 Walter Benjamin . . . . .	11
3.1.2 The Work of Art in the Age of Mechanical Reproduction	11
3.2 John Dewey's Aesthetics . . . . .	11
3.2.1 Pragmatism . . . . .	11
3.2.2 The Live Creature . . . . .	11
3.2.3 Emotions . . . . .	12
<b>4 Media Theory</b>	<b>12</b>
4.1 Marshall McLuhan . . . . .	12
4.1.1 Biographical Note . . . . .	12
4.1.2 Early Influence . . . . .	13
4.1.3 The book as technology . . . . .	14
4.1.4 The Medium is the message . . . . .	14
<b>5 Computing: Another historical interlude</b>	<b>15</b>
5.1 What the hell is a Unix? . . . . .	15
5.2 History of the internet . . . . .	16

5.3	Internet overview . . . . .	16
5.3.1	Devices . . . . .	16
5.3.2	Communication Links . . . . .	16
5.3.3	Packet switches . . . . .	16
5.4	Service view of the internet . . . . .	16
5.4.1	Provider of services to apps . . . . .	16
5.4.2	Programming interface to apps . . . . .	16
<b>6</b>	<b>Hackers and the open source movement</b>	<b>17</b>
6.1	Eric Raymond . . . . .	17
6.1.1	How to become a hacker . . . . .	17
6.1.2	The new hacker's dictionary . . . . .	17
<b>7</b>	<b>Access to information</b>	<b>17</b>
<b>8</b>	<b>Media theory now (in 2020)</b>	<b>17</b>
8.1	Douglas Rushkoff and Team Human . . . . .	17
8.1.1	Program or be Programmed . . . . .	17
8.1.2	Team Human Podcast . . . . .	17
8.2	The Social Dilemma . . . . .	18
8.3	Hyperreality . . . . .	18
<b>9</b>	<b>Adaptation and Adoption</b>	<b>18</b>
9.1	What's different about Intangible Investment? . . . . .	18
9.1.1	Sunkenness . . . . .	19
9.1.2	Scalability . . . . .	19
9.1.3	Side effects . . . . .	19
9.1.4	Synergy . . . . .	19
9.2	Shared Strategies – the automaton/FSM blues . . . . .	19
9.2.1	Simple Finite State Machine w . . . . .	20
9.2.2	Borrowing the idea of a finite state machine to work in a music lesson . . . . .	22
9.3	The blues as digested by a classical musician . . . . .	22
<b>10</b>	<b>A brief history of epistemology</b>	<b>22</b>
10.1	Ancient . . . . .	23
10.1.1	Plato . . . . .	23
10.1.2	Aristotle . . . . .	23
10.1.3	St. Augustine . . . . .	23
10.1.4	Thomas Aquinas . . . . .	24

10.1.5	John Duns Scotus . . . . .	24
10.2	Modern Philosophy . . . . .	25
10.2.1	Nicolaus Copernicus . . . . .	25
10.2.2	Galileo Galilei . . . . .	25
10.2.3	Rene Descartes . . . . .	25
10.2.4	John Locke . . . . .	26
10.2.5	Bishop Berkely . . . . .	27
10.2.6	David Hume . . . . .	27
10.2.7	Immanuel Kant . . . . .	27
10.2.8	Hegel . . . . .	28
10.3	Contemporary Philosophy . . . . .	28
<b>11</b>	<b>Course Work</b>	<b>28</b>
11.1	Where are the best places to borrow ideas? . . . . .	28
11.2	Can we please make music theory a little less boring? . . . . .	28

# 1 Overview

## 1.1 Course Structure

This course is an introduction to media theory – a subcategory of philosophy that emerged in the mid 20th century as an attempt to understand the impact that new technologies were having on the individual and, in a broader sense, society. The general tone used to convey the ideas contained throughout the notes and lectures will be an informal one, you refers to you the reader, listener and student. We refers to the teachers, authors and students that have been consulted in developing the material for this course. Us refers to the group that we happen to find ourselves in at any particular moment in time. And I refers to me, the teacher, Adam McCartney. This course is intended to introduce undergraduate level music students to the broader disciplines relevant for professional work in the arts and humanities. There are those who would consider it absurd that now, in the 21st century, investing in anything but a science related degree is simply a waste. In the face of such beliefs, it is worth pausing briefly to remember a simple point made by John Henry Newman, that a solid education in the liberal arts equips a student with tools that will ultimately lead them to become better engineers, scientists, doctors, artists, lawyers and etc.

## 1.2 Philosophy of Teaching



The satisfaction that can be gained through learning, teaching and generally sharing information and can be immense. My more positive experiences over the years as a student and teacher have tended to come from courses, books, tutorials, videos, discussions that were clear enough to allow enable an understanding of the topic from first principles – that is to say that the material related to the topic was assembled in such a way as to reveal its most fundamental ideas. Its virtually always beneficial to ask rudimentary questions about whatever it is that we are trying to understand, as such

questions will quickly reveal whether or not the topic under discussion has a basis in fact. This course also aims to introduce some of the core methods that are useful anywhere that it becomes necessary to think about something:

- Discourse
- Reason
- Logic
- Debate
- Reference

#### **1.2.1 7 Liberal Arts of the medieval university**

- Grammar
- Rhetoric
- Logic
- Geometry
- Arithmetic
- Music
- Astronomy

### **1.3 Where and how to access material**

The primary source of information for topics presented in this course can be found in the VMI digital library, which is labelled *Academic Resources For Students* and will appear as a link on the homepage of your Moodle eLearning profile. Please take the time to do the readings, this will prepare you for the discussions that will take place during class. Thinking about things is a practical exercise, it's the same as riding a bicycle or learning to play an instrument. That means that the only way that you are going to learn how to think is by engaging with the readings and exercises. Much the same as any activity that is worth learning, thinking is difficult and takes a lot of patience to get right. The texts that were chosen to be part of the course are all written in an accessible style and are not overtly academic or technical. Nevertheless, they do contain ideas and arguments that you

might not get on the first reading. My two favorite reading disciplines from when I was an undergraduate were the practice of reading for a pre-allocated amount of time and also reading each text at least three times in preparation for a class.

#### **1.4 Portability and how to apply course content**

Should you try and tell your piano tuner about Ludwig Wittgenstein's ideas on the formation of knowledge? Definitely not! In fact, they would be more likely to charge you extra fees just to get your piano tuned if you chose to do so. So where exactly can this knowledge be applied? A friend of mine is a hobby programmer and he recently told me his principle approach to work. He called it „eat your own dogfood“. Now obviously the idea of eating any kind of dogfood does not sound particularly appetizing, but it is worth considering that dogs can also eat cake. The simple idea here is that whatever type of idea or discipline you develop, it is better first practiced on yourself before inflicting it upon the rest of us; when properly cultivated a discipline is a way to nourish, develop and sustain.

## **2 The long 19th century (1789 - 1914)**

### **2.0.1 A brief history of art leading up to the industrial revolution**

The renaissance had shown that the rise of merchant classes was possible, and that there was room for a talented craftspeople to build a career out of a good reputation. Still, even the most talented artists from the renaissance and baroque periods were subjects of some royal court and often patronized (though less commonly so than in the middle ages and early renaissance) by the clergy. The dominant motives of these eras were, for instance, dedicated to the nobility and to the church. An appreciation for human ingenuity was growing and quietly, a new philosophy of reason and enlightenment was being born.

### **2.0.2 Art in the Age of Revolution (1789 - 1848)**

Before it turned into a bloody mess, the core ideals of the French Revolution (freedom, equality and brotherhood) seemed to be an articulation of the broader hopes of humanity for a brighter future. Many of the artists of the late 18th and early 19th centuries echoed these newly formed ideas of the enlightenment.

- 50 years that included late Mozart, Haydn, Beethoven, Schubert, Goethe, Dickens, Dostoevsky, Verdi, Wagner, Mary Wollstonecraft, Mary Shelly
- Art made to appeal to a literate public that was increasing in size
- The invention of machinery reduced the cost of physical labor for many, meaning there was more free time for education and pastimes
- Aesthetic themes often contained pastoral elements, or sought to simplify harmonies and form.
- The influence from classical antiquity frequently appear, along with references to similar threads from the renaissance



Figure 1: William Turner - Rain, Steam and Speed

### 2.0.3 Utopia

Much of the art of the age focused Utopian ideals, be they either in some possible future or some glorified past: there were large collections of folk tales, songs and verses that emerged during this period that bore testament

to the vision of "the folk" as being inherently virtuous. The new movements toward industrialized living and a faster pace of life, on the other hand, was often viewed with at least the usual amount of suspicion. Of course, the fall from grace and the quest for redemption is literally as old as Adam and Eve.

#### **2.0.4 Art in the Age of Capital (1848 - 1875)**

Having seen what the first half of the 19th century delivered in terms of the arts, it's not surprising that this period during the later half of the century appears somewhat underwhelming. Perhaps the real achievements.

- the era produced a rather curious architectural style with increasingly large proportions - this marks a contrast to the classically influences in the styles (like Biedermeier) that immediately preceded, where in central focus were human proportions
- funding structures of the arts changed: they were now supported by governments, bourgeoisie and increasingly the emerging working / middle class
- the Viennese ring serves as a good example to the monuments of the age
- first appearance of technically reproducible works of art (early photo camera had an immediate and profound effect on painting)
- arts were in every sense popular by the third quarter of the century, with widely distributed novels
- possible for artists to earn a good living and many (even if not rich) were well respected
- arts came to occupy a semi-religious position for many of the new middle class, also (in the case of the German speaking world) a symbol of success and status to rival Britain's economic spoils
- the artists were seen as sources of truth, authorities on beauty

#### **2.0.5 Art in the Age of Empire (1875 - 1914)**

Bourgeois identity crisis

- Orientalism

- pastiche

Established and entitled artistic circles

- the Successions of Vienna & Berlin

- the New English Arts Club

- successors to the French Impressionist Exhibition

The emergence of the avant-grade

- very limited public reception

- the anti-reality star? (like Picasso, appreciated for their phenomenal output as opposed to the qualities or content of the work)

The birth of cinema

## **2.1 The short 20th century (1914 - 1996): Art in the Age of Extremes**

### **2.1.1 Features of the early 20th century art landscape**

- Modernism
- Dadaism, Constructivism, Surrealism
- Decided move away from conventional Bourgeois tastes
- Europe (Paris) between the wars
- The invention of cinema & jazz
- Battleship Potemkin { watch?v=VMWMq4AEyjU }
- Jazz: syncopated Afro rhythms meets mechanical reproduction
- Murillo was out El Greco was in
- Also rejected: Age of Capital and Age of Empire
- Viennese Ring considered pompous & inauthentic
- most of the avant garde artists identified with progressive politics
- rise of Hitler and Stalin meant that most of the avant garde immigrated to the USA
- James Joyce Ulysses: going to the common man
- Mass media and propaganda

### **2.1.2 Postwar Arts**

- Rock & Roll, the LP
- the advertising industry
- the emergence of pop art
- Shift away from Europe
- The establishment new social democratic norms post 1950 - massive increase government funding for the arts tax-breaks in the States for wealthy patrons
- Art as Investment
- Massive Expansion of higher education
- Classical music - decline in old genres concealed by the enormous increase in their performance mostly a repertoire of dead classics
- Personal Electronics

## **3 Aesthetic and sociological perspectives**

### **3.1 Critical Theory**

Reference: <https://plato.stanford.edu/entries/critical-theory/>

In the narrow sense, critical theory refers to a strain of Marxist philosophy that appeared in early 20th century Germany. It is critical in the sense that it seeks human "emancipation from slavery", acts as a "liberating ... influence", and works to "create a world which satisfies the needs and powers" of human beings (Horkheimer 1972, 246)

Key figures of "the Frankfurt School": Max Horkheimer, Theodor Adorno, Marcuse, Benjamin

Being a strain of Marxist philosophy, central to critical theory is a critique of Capitalism. Furthermore, a strong emphasis is placed on a belief that civil society and human culture in general is undergoing a process of degeneration due to the commodification of artistic production and aesthetic experience.

It could be argued that much of critical theory is based on a revivification of an aspect of Kant's categorical imperative: namely, that one should avoid using people (including oneself) as a means to an end. A critical theorist such as Adorno might argue that contemporary pop that has been used in

the service of some form of advertising, is ultimately less moral and therefore less good or effective than say, Beethoven's 7th symphony. (Adorno *really* liked Beethoven and was big into the idea of "absolute" music).

By the same reasoning, one could argue that the whole discipline of Critical Theory is morally corrupt due to the simple fact that it essentially seeks to hi-jack and politicize branches of philosophy such as aesthetics (which are by no means inherently political).

### **3.1.1 Walter Benjamin**

A Berlin born art theorist / philosopher whose writings were a large influence on Theodor Adorno. Also a fairly dedicated Marxist, who

### **3.1.2 The Work of Art in the Age of Mechanical Reproduction**

## **3.2 John Dewey's Aesthetics**

### **3.2.1 Pragmatism**

Originated in the United States towards the end of the 19th century, largely as a reaction to what was considered the overly theoretical and technical nature of continental philosophy.

Notable Figures included William James and George Herbert Mead, who had the idea that it was only possible to define a person through their actions in the world.

### **3.2.2 The Live Creature**

Notes on reading: <https://plato.stanford.edu/entries/dewey-aesthetics/>

First couple of points to note relate to the historical evolution of aesthetics. With the rise of nationalism and imperialism, art became disassociated from religious right and with the growing dominance of capitalism, became more about documenting material wealth than integrating personal with collective experience.

This idea of the quality of experience is seemingly central to Dewey's aesthetics. It follows quite logically that experience happens essentially in conjunction with the environment and not just *in* it. Whether or not life experience can be reduced solely to the basis of needs and conquest, is not so clear. I do not think that it is self evident that all conflict and resolution arises from the frustration or gratification of basic physical or physio-psychological urges.

Nevertheless, it is possible to imagine how Dewey might try to structure his thought at this stage as he suggests that harmony and equilibrium arise from the resolution of tension. Awareness of this process, the rhythmic alteration between states of unity and disunity signifies conscious participation in the phenomenon of experience.

Dewey seems to suggest here that emotions are breaks in experience, something to be understood in retrospect. More specifically he refers to emotions as signifiers that disrupt experience. This does make some sense, as the presence of an emotion seems, quite certainly, to require a level of abstraction that seems to move the subject into an acute awareness of the distinct mode, through which he now views experience.

He sets up an interesting comparison between scientist and artist, shows that both are trying to shape material according to their thought processes.

He points out that nature already has emotional qualities. That some aspects may appear comforting or disturbing.

Aesthetic experience then involves a temporal process where action, feeling and meaning are one. The cumulative effect of these on one another is balance. This is only possible, in a dynamic world, where experience takes place.

Passing out of disturbance into harmony can provide man's most intense experience. Happiness is the result of a deep fulfillment in which our whole being has adjusted to the environment. This seems to directly contradict what he says above about emotion, although on a more subtle level he seems to be suggesting something closer to integration here than happiness. Personally, I would place the core of aesthetics at integration.

### **3.2.3 Emotions**

The previous section suggests that aesthetics is essentially an act of integration. The experience of this act, ultimately leads to an emotional experience. Emotions are not static, they possess dynamic qualities and can grow or shrink over time.

## **4 Media Theory**

### **4.1 Marshall McLuhan**

#### **4.1.1 Biographical Note**

- born Edmonton, Canada 1911

- died 1980
- BA/MA at the University of Manitoba
- Doctoral Studies at Cambridge

<https://www.marshallmcluhan.com/biography/>

#### 4.1.2 Early Influence

At Cambridge (entering in 1934) he studied under the professors I.A. Richards and F.R. Leavis.

It's worth considering that there were some pretty incredible advances taking place in the fields of Mathematics and Physics (both theoretical and applied) during the first half of the 20th century.

- Bertrand Russell and Alfred North Whitehead had published "Principia Mathematica", both of whom held professorships in mathematics at Cambridge
- Ludwig Wittgenstein started a fellowship at the University in 1929
- Alan Turing studied there as an undergrad from 1931 to 1934 and was elected a fellow of King's College in 1935 (at age 22) after his dissertation offering a proof of central limit theorem was well received

Besides the obvious name dropping, the purpose of pointing out these figures is to emphasize that there was a lot of "technical" academic work happening at Cambridge during this time. In particular, Russell & Whiteheads work on finding a formal description of mathematics saw the development of specialist notation.

In an attempt to keep up with these advances, fields more traditionally rooted in the humanities, themselves began to embody the new practices of logic and formalism as they emerged from mathematics, physics and early computational theory.

It seems that I.A. Richards was particularly interested in forming a new, multidisciplinary approach to literary criticism that could give formalist, self-contained and objective accounts of what was being said in any literary work. It appears that to some degree, Richards was trying to incorporate cybernetics into his theories on literary criticism.

Thinking about the human mind as one part of a cybernetic system, was an idea that influenced McLuhan profoundly, and research in and around this idea became a central part of his work throughout the rest of his career.

#### **4.1.3 The book as technology**

*"Water is unknown to a fish until it discovers air"*

In "The Gutenberg Galaxy" McLuhan presents a dazzling array of ideas, that often closely focus on the multi-sensory (or multi-dimensional) context of literary ideas. For instance, he writes about Shakespeare's use of perspective in King Lear, pointing out that it may be the first time that a writer has employed the use of a three-dimensional first person perspective on a scene within the context of a literary work. For McLuhan, the interesting point here is that the written word seems to be reaching out beyond the page, and evoking our other senses to aid our perception of the scene.

Print is an extension of writing, which itself is an extension of speaking and in turn thinking. The process is inherently circular, a new technology emerges to form a super set of the technology that immediately preceded it.

For McLuhan, technology is always an extension of the mind (the cognitive/sensory apparatus) and therefore it influences the formation of ideas.

#### **4.1.4 The Medium is the message**

<https://web.mit.edu/allanmc/www/mcluhan.mediummessage.pdf>

- The nature of human relationships, interaction and work was shaped by the first industrial revolution: the introduction of the machine and the philosophy of the "division of labor"
  - The essence of the electronic/digital revolution is entirely the opposite of this because (integral & decentralised)
- First principles look at the nature of certain types of business in the (post)-industrialized world
  - IBM → information processing
  - AT&T → moving information
- Does technology add itself on to what we already are?
- What does it mean to understand the "grammar" of a particular technology?
- How are artists in a unique position to encounter technology?
- The fact that it is currently being debated as to whether big tech should be treated as utilities is reminiscent of the idea that technological media are resources comparable to water, coal, cotton and oil.

- Bertrand Russell: the technique of the suspended judgement was the great discovery of the twentieth century
- A.N. Whitehead said that of the 19th century it was the discovery of the technique of discovery (starting with a result and working backwards)
- The work of the artist represents the only documentation of the continuous adjustment to the various new factors of personal and social life as they are extended.
- The artists job is to engage with the present totally

## 5 Computing: Another historical interlude

"Give me six hours to chop down a tree and I will spend the first four sharpening the ax"

- Abraham Lincoln

The next couple of sections serve to offer a very brief overview of the history of computing. Although computers are ubiquitous and a thorough discussion of the history of their development might be of more interest to those with a more technical interest, the culture around computing is actually pretty interesting. We've been talking a lot over the past couple of lectures about some of the sociological developments that have taken place over the past 150-200 years. We've focused on the artist and the means of production used to make art. Also, we've asked some fairly general questions about how the context within which art is made (or taught) influences the production. The purpose of this rather long-winded exposition is to spend some time reasoning about our current environment. The better that we are able to perceive the situation, the more likely it is we will reach for the right tool when it comes time to do the work.

### 5.1 What the hell is a Unix?

Unix is a simple operating system that was born in 1969, invented by Ken Thompson at Bell Laboratories (a research branch of AT&T). This is not really the place to go into a detailed history of how it developed, if you are interested, check out Brian Kernighan's writings on the subject, along with Eric S. Raymond and Mike Loukides. All will offer a slightly different perspective on the origins of Unix and how it has developed over the years.

There are some diverging opinions on why Unix has been successful as an operating system. It's not uncommon to hear people speaking in hushed tones about free software and the open source movement as reasons for its longevity and success. Others will put it down to factors associated with the nature of the computer hardware business in the 1980s. Either case is not particularly important to understand for our purposes. What is important is that there seems to be some consensus around how its use in Universities and research environments ultimately contributed to its popularity. The point here being, that the University is still one of the rare places where a more open-ended form of creativity is encouraged. Unix suits researchers because it is accessible, easy to use and fun to hack.

## 5.2 History of the internet

- invented as a way for mutually trusting and cooperative parties to exchange information for the common good
- for a more detailed history see . . . the internet

## 5.3 Internet overview

### 5.3.1 Devices

- host = end system, runs apps

### 5.3.2 Communication Links

- fiber, copper, radio, satellite

### 5.3.3 Packet switches

- routers and switches

## 5.4 Service view of the internet

### 5.4.1 Provider of services to apps

- Web, VoIP, email, games, eCommerce, social net

### 5.4.2 Programming interface to apps

- hooks
- service options (postal)

## **6 Hackers and the open source movement**

### **6.1 Eric Raymond**

#### **6.1.1 How to become a hacker**

<http://www.catb.org/esr/faqs/hacker-howto.html>

#### **6.1.2 The new hacker's dictionary**

<http://hackersdictionary.com/html/index.html>

## **7 Access to information**

- Public libraries
- University/Specialist Libraries
  - MdW -> any registered student in Austria can get a library card
  - Nationalbibliothek
- Bootleg libraries
  - use a onion browser that masks your IP address to find bootleg libraries
  - Tor browser to access Library Genesis <https://gen.lib.rus.ec>

## **8 Media theory now (in 2020)**

### **8.1 Douglas Rushkoff and Team Human**

#### **8.1.1 Program or be Programmed**

<https://www.youtube.com/watch?v=imV3pPIUy1k&feature=youtu.be>

#### **8.1.2 Team Human Podcast**

<https://teamhuman.fm>

## 8.2 The Social Dilemma

- Critical
- Real information less interesting than fake news
- Reality / Hyper-reality

## 8.3 Hyperreality

- Concept that was introduced by the French Philosopher Baudrillard

# 9 Adaptation and Adoption

As is clear from the writings and materials presented in the context of Media Theory, the ideas definitely have a sociological character and do not shy away from looking critically at the impact of new media on society.

There is of course another way to look at new media, by harking back to a simpler time, when new technology was mainly focused around creating physical devices on to which software could be embedded and the entire package could then be sold as a product.

I like simple, pragmatic ideas that can be used creatively to make life easier. Also one of the points that I've been somehow trying to convey during this course is that new technologies are actually a very valuable resource. They can be very useful and fun if they are used correctly.

Jonathan Haskel wrote a pretty popular book that came out a couple of years ago called **Capitalism Without Capital: The Rise of the Intangible Economy**. In a very interesting way, the book creates a survey of the current economic climate and makes a few very interesting points. The central thesis pretty much centers around the nature of investment has changed.

By the way, I read the title as "Capitalism for People that don't have very much money" i.e. ("Capitalism for musicians"!)

## 9.1 What's different about Intangible Investment?

This character is pretty central to the book's thesis, it lays out the four main features of the modern economy. These features relate to the development of new products and technologies.

### **9.1.1 Sunkenness**

Once an investment is made in developing a product, the cost is sunk i.e. it can't be recovered through resale as has sometimes been the case with other types of "classical" capitalist investment.

### **9.1.2 Scalability**

Scale is *the* holy word in the modern digital economy. Everything is built to scale. The reason that there is so much emphasis put on scalability, is that the cost of reproduction and distribution are negligible. Once you have a product that is ready for the market, you can sell it everywhere and to everyone.

### **9.1.3 Side effects**

### **9.1.4 Synergy**

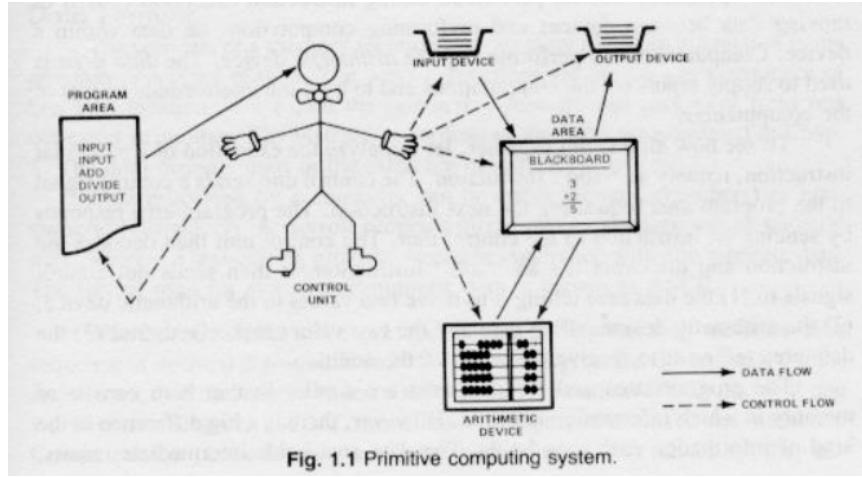
This is my favorite of the four S's:

Synergy \Syn"er\*gy\, n. [Gr. ?. See Synergetic.]

1. Combined action; especially (Med.), the combined healthy action of every organ of a particular system; as, the digestive synergy.  
[1913 Webster]
2. An effect of the interaction of the actions of two agents such that the result of the combined action is greater than expected as a simple additive combination of the two agents acting separately; -- also called synergism..  
Opposite to antagonism.  
[PJC]

## **9.2 Shared Strategies – the automaton/FSM blues**

Okay, before I get into the nitty gritty of borrowing some theoretical models from computer science. Here is a fantastically simple diagram of a primitive computer. (The image is take from the 8086 primer by Stephen P. Morse, a technical manual on computer programming)

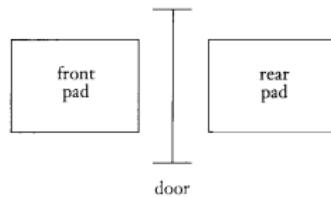


**Fig. 1.1** Primitive computing system.

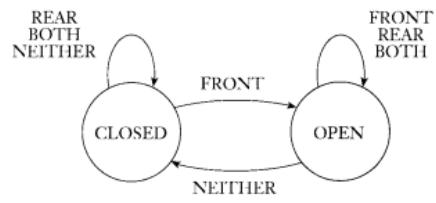
### 9.2.1 Simple Finite State Machine

w

Okay, so according to Michael Sipser's definition a computer can be essentially expressed in a very simplistic way. Basically, a computer is a machine that should somehow interact intelligently with reality. As we have seen above, a computer consists of memory (some representation of the "state" of things in the real world), processes (actions to be taken according to memory) and interaction (some way to gain information about the real world).



**FIGURE 1.1**  
Top view of an automatic door

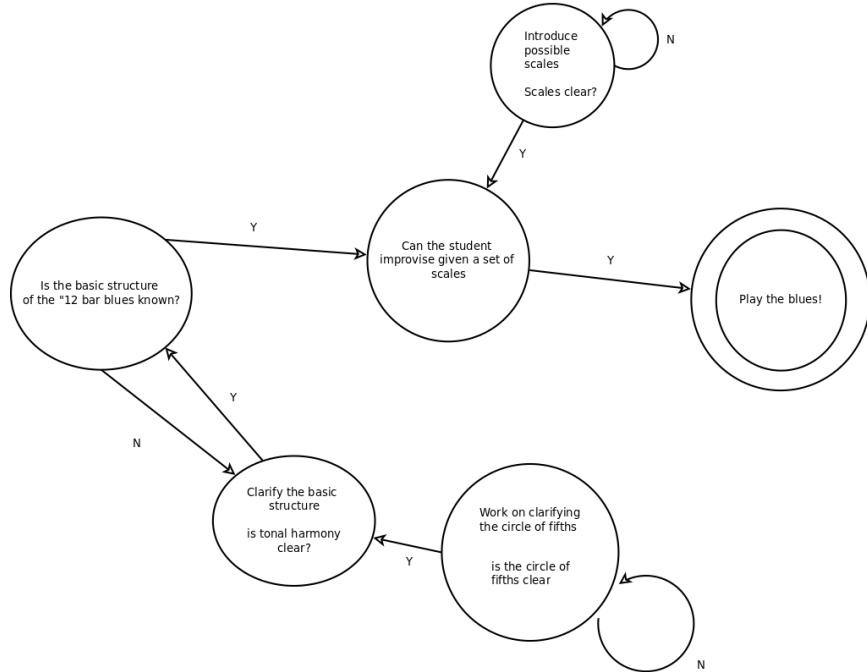


**FIGURE 1.2**  
State diagram for automatic door controller

		input signal			
state		NEITHER	FRONT	REAR	BOTH
		CLOSED	OPEN	CLOSED	OPEN
CLOSED		CLOSED	OPEN	CLOSED	CLOSED
OPEN		CLOSED	OPEN	OPEN	OPEN

**FIGURE 1.3**  
State transition table for automatic door controller

### 9.2.2 Borrowing the idea of a finite state machine to work in a music lesson



### 9.3 The blues as digested by a classical musician

[https://youtu.be/AibHJB\\_j1BI](https://youtu.be/AibHJB_j1BI)

## 10 A brief history of epistemology

<https://www.britannica.com/topic/epistemology/The-history-of-epistemology>

Epistemology is the branch of philosophy that is concerned with the knowledge and limits of human knowledge. It comes from two greek words: *epistēmē* ("knowledge") and *logos* ("reason"). It can be considered alongside metaphysics, logic and ethics as one of the four main branches of philosophy. It is worth noting that all four branches have been the subject of intense focus and rigorous discipline a number of times throughout the ages. These days, it's not uncommon to hear the term philosopher employed in slight jest to refer to someone who is interested in some of the "bigger ideas" about in the world, and not necessarily concerned about sweating the details. While there are of course bad philosophers who fit this description, the disciplines

within philosophy itself can be extremely technical. In this way it is much like science or music. You don't have to be a genius to take part and make a contribution, you just have to show up and do the work.

## 10.1 Ancient

### 10.1.1 Plato

ca. 5th-4th century BCE

The theory of forms - Plato had this idea that all reality was somehow related to a set of ideal forms that existed in a purely conceptual or abstract realm. This is an idea that goes back to Pythagoras and the harmony of the spheres - the idea that musical harmony and beauty is someone a true expression of the nature of reality. [https://youtu.be/\\_-JfYjmo50A](https://youtu.be/_-JfYjmo50A)

The allegory of the cave <https://youtu.be/1RWOpQXTltA>

### 10.1.2 Aristotle

384-322 BCE Broadly remembered as a "natural philosopher". Less concerned with ideal forms and more so with the nature of the world around him, understood in terms of first principles i.e. a set of predicates about the nature of a particular system that can be knowable through direct experience (this is the basis of the scientific method) and also a set of truths which may be derived logically from the first principles. Scientific truth can be demonstrated by means of syllogisms

All stars are distant objects. All distant objects twinkle. Therefore, all stars twinkle.

Interestingly, Aristotle extends his interest in material truth to the human soul, the anima.

### 10.1.3 St. Augustine

354-430 AD With St. Augustine of Hippo we see the embrace of Christianity, largely known as neoplatonism. It represented a return to glorification of ideals.

As we have pointed out elsewhere in this course, the preservation of thoughts and ideas, along with the making of art and music, was largely influenced by the Christian church throughout the middle ages and into the renaissance. Indeed we see that many philosophers are themselves members of the clergy or thereby closely associated (Thomas Aquinas, Meister Eckhart, Thomas More). During these periods leading up to the renaissance

and scientific revolution, there seems to have been a fairly substantial preoccupation with metaphysics, attempts to prove the existence of God and often great attempts to make other areas of philosophy fit a metaphysical narrative that was largely sympathetic to the Christian doctrine.

#### **10.1.4 Thomas Aquinas**

die Ratio Perfecta bonitatis

ipsum esse (existence itself)

The mind seeks its completion in knowing existence. His discussion in the Summa theologiae is an elaboration of the thought of Aristotle. He posits that knowledge is obtained when the intellect engages actively with an object that is received through the senses.

In a way this can be shown to relate to the practice of syllogism that we encountered earlier. Aquinas gave the example of the perception of an animal such as a dog, then by observing the fact that the dog is alive, being able to form the abstraction of life from there. Therefore, the properties of a specific object or being do not just merely convey information about one particular dog, but enable understanding of the broader context within which a dog exists.

#### **10.1.5 John Duns Scotus**

1266 - 1308 Forerunner to David Hume. Basically these philosophers were rediscovering the works of Aristotle as they were being passed back to the fringes of Europe via the Islamic scholars. Scotus' work revolves around 'four main classes of things that can be known with certainty'.

1. Things that are known to be simply true, including true identity statements and propositions (later analytic) such as Man is rational. From Scotus' point of view, these truths coincide with what makes them true.
2. Experiential knowledge -> this gave rise to a confidence in induction i.e. if something can be perceived to be true for some thing, or if some action necessarily always produces the same results in similar things, then it can be inferred to be a general property of the action itself and therefore true for all things. This is not a belief that survived the middle ages.
3. Perception and apprehension of one's own actions or state of being. If you are awake, you know yourself to be awake.

4. The class of things knowable through the human senses.

The major contribution that Duns Scotus made to epistemology was to highlight the distinction between "intuitive" and "abstract" cognition.

## 10.2 Modern Philosophy

While we often think about philosophers as purely secular thinkers, in reality this was far from the truth, particularly in the middle ages and early modern period, philosophers were still largely preoccupied with proof of the existence of God i.e. Descartes meditations and Spinoza's ethics, even large swathes of Kant's work is done largely in an effort to rationalize (and therefore legitimize in the modern sense) existing Christian morals. That said still, there is further sedimentation of the idea of the formation of knowledge as essentially bipartite - one part sensory experience of reality, the other part imagination. This is laid out in particular over the course of three books that are commonly associated with the Scottish Enlightenment (although Locke was English and Berkeley Irish).

### 10.2.1 Nicolaus Copernicus

Argument for heliocentrism in *On the Revolutions of the Celestial Spheres*. Epistemologically shocking for a number of reasons:

- directly contravenes the way that humans perceive the sun
- contradicted existing written accounts in the bible

### 10.2.2 Galileo Galilei

Used a telescope to reveal that unaided human vision gives false, or at least seriously incomplete information about the celestial bodies. (As an aside, Benedict Spinoza was a lens grinder as well as being a philosopher.) Distinction between primary and secondary properties of an object. Primary: mass, dimensions (exist in objective physical reality) Secondary: color, smell (exist in the sensory perceptions)

### 10.2.3 René Descartes

Influenced by the rediscovery of skepticism and the emergence of modern science. Although he thought that reason and science would one day make men the masters of nature, he had at least one issue with skepticism and sought

to make it the central focus of his meditations. In meditations he paints a picture of a dual being (body and mind) and considers the possibility that some evil genius has deceived him to such an extent that all his beliefs are infact false. His contention was that this cannot be true in the fullest sense, for to have such beliefs, false or otherwise, he is thinking and then he exists. Therefor, his belief that he exists cannot be false, as long as he is thinking. The argument is most famously summarized by the line **cogito, ergo sum** ("I think, therefor I am").

- Went to to make the distinction between two different sources of knowledge: intuition and induction
- also proved the existence of God (to his own satisfaction)
- believed the ultimate source of knowledge to be reason
- it was fairly widely aknowledged that much of Descartes' philosophical work it tautological (it relies on itself to be true)
- his most lasting contribution has been coordinate geometry

#### 10.2.4 John Locke

Held the belief that experience was the ultimate arbiter of knowledge and went on to categories two kinds of experience sensation and reflection.

An essay concerning human understanding (1690) Definition of knowledge as: "the perception of the connexion of and agreement, or disagreement and repugnancy of any of our ideas." Knowledge is contained within three categories:

1. intuitive knowledge
2. demonstration or proof
3. sensitive knowledge - "the particualr existence of finite beings without us"

He also opens up to formally include probablity alongsie certainty through knowledge.

### 10.2.5 Bishop Berkely

A Treatise Concerning the Principles of Human Knowledge (1719)

Rejects notions of primary and secondary qualities and matter, retains belief in the existence of mind. Makes the assertion that notion exists except ideas and spirits.

“ There was a young man who said "God" Must find it exceedingly odd To think that a tree Should continue to be When there's no one about in the quad.

Dear Sir. Your astonishment's odd; I am always about in the quad. And that's why the tree Will continue to be Since observed by, Yours faithfully, God. “ Basically, Berkely believed that for any nonthinking being, **esse est percipi** ("to be is to be perceived").

### 10.2.6 David Hume

An enquiry concerning human understanding (1739)

Throws out all Lockean assumptions and focuses on kinds of perceptions "impressions" and "ideas". Impressions are what the mind experiences most vividly and ideas are the "faint images" of impressions. Impressions are felt and ideas are thought.

Hume overlooked the fact that it is not possible to quantify emotinoal experience in terms of these two categories - i.e. thinking about happiness is not a lighter version of being happy.

Perceptions are either simple or complex and this is true for impressions and ideas. For instance the perception of an apple is complex in that it consists of a combination of shape, color, texture and smell. Complex impressions and complex ideas need not correspond to one another. The famous example is of Pegasus. However, the formation of every simple idea is preceded by the experience of a simple impression. Hume therefor draws a causal link between simple impressions and simple ideas (the former causes the latter).

### 10.2.7 Immanuel Kant

Idealism refers to the idea tha everything that exists is mental. transcendental idealism was Kant's schtick. Basically that there is pre-existing knowledge of which humans are innately aware. This is formed and extended through their interactions with reality. Or put another way, all theoretical knowledge (i.e. scientific fact) is a mixture of what is given in sense experience and what is contributed by the mind.

Kant also believed that there existed a world unknowable to the mind that is fully independent. This world consists of "things-in-themselves" (noumena), which do not exist in space and do not enter into causal relations.

Kant's assertions about the mind being the primary source of knowledge about many aspects of reality essentially turns the tables or inverts the traditional world - mind relationship of epistemology up to this point. Kant thought about it as a type of Copernican revolution for philosophy.

Three kinds of proposition that express human knowledge:

1. analytic a priori propositions - "All squares have four sides"
2. synthetic a posteriori propositions - "The cat is on the mat"
3. synthetic a priori - "Every event has a cause"

#### **10.2.8 Hegel**

### **10.3 Contemporary Philosophy**

We covered many of the key figures earlier in the course

- Bertrand Russell
- Ludwig Wittgenstein
- George Herbert Meade
- John Dewey
- Jean Piaget
- Jean-Paul Sartre

## **11 Course Work**

Semester requirements are to do the readings, and submit two essays, one short (ca. 1000 words) and one longer (ca. 2500 words). Actually, the medium that you present these works is flexible - in the past students have produced podcasts, written essays, made lesson plans. The important thing is that you work on forming an idea and presenting it in a coherent way.

### **11.1 Where are the best places to borrow ideas?**

### **11.2 Can we please make music theory a little less boring?**