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Einstein, Durkheim, Russell and Chomsky: Science, Society and Language

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Einstein, Durkheim, Russell and Chomsky: Science, Society and Language

These four thinkers began in physics, sociology, logic and linguistics. Each then spoke on public ethics. Einstein and Russell warned against nuclear war. Durkheim showed how society shapes personal acts. Chomsky urged intellectuals to speak the truth about power.

At a glance

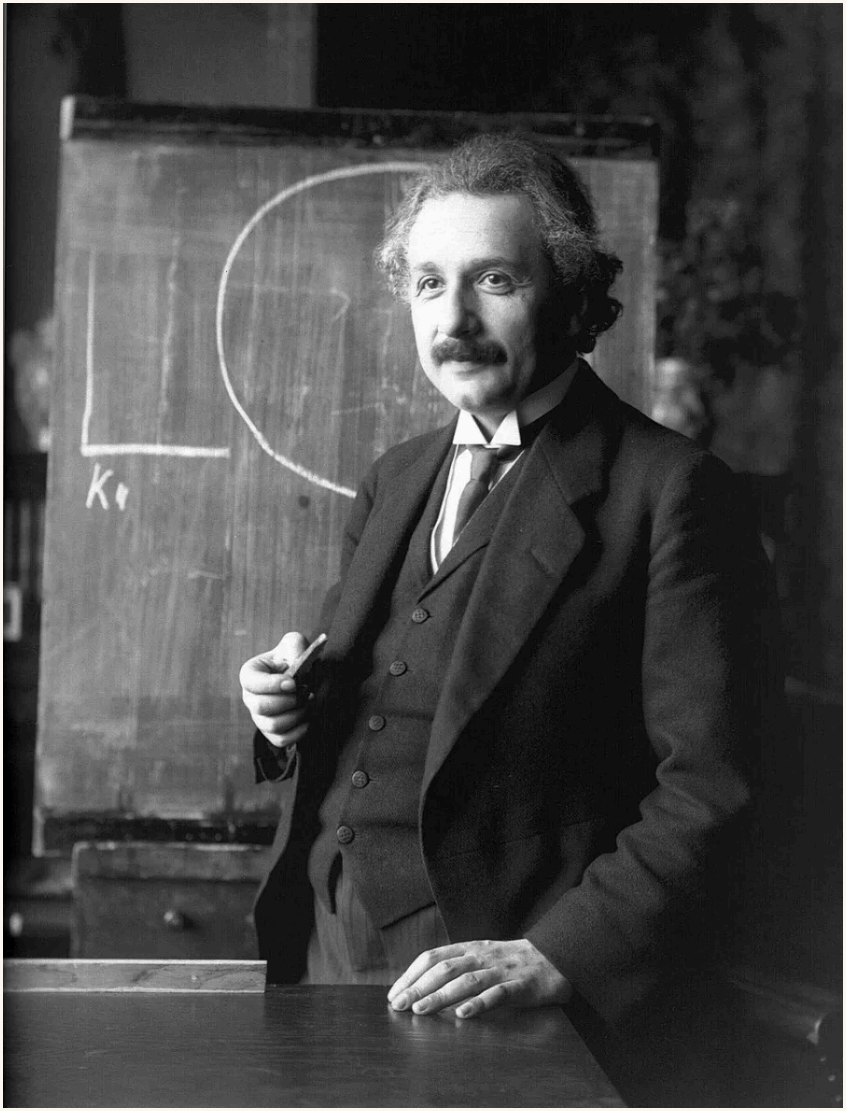
Four key facts on this topic

01 **9 July 1955**Russell–Einstein Manifesto, London.

02 **1950**Russell’s Nobel Prize in Literature.

03 **1897**Durkheim’s Suicide.

04 **1967**Chomsky’s essay on intellectuals.



Albert Einstein in 1921, photographed by Ferdinand Schmutzer. Photo: Ferdinand Schmutzer, Wikimedia Commons, public domain.

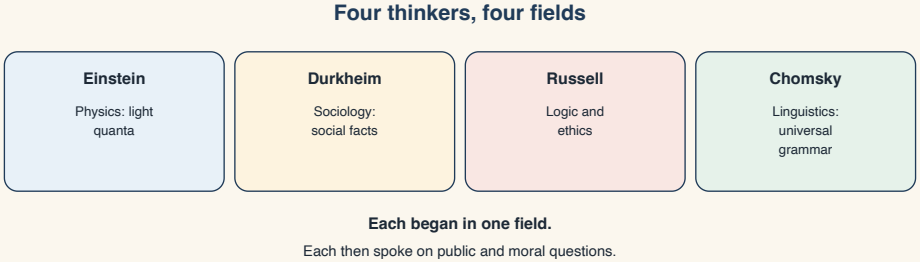
Who are the four thinkers, and what did Einstein do?

1 Four thinkers, one theme

1.1 Who are these four thinkers?

Albert Einstein was a physicist. Émile Durkheim was a sociologist. Bertrand Russell was a logician and philosopher. Noam Chomsky is a linguist.

A linguist studies human language. A sociologist studies how societies work. A logician studies the rules of correct reasoning.



Four thinkers and the fields they began in.

1.2 What do they share?

Each began in one expert field. Each then said something important about right and wrong in public life.

Einstein and Russell warned the world about nuclear war. Durkheim showed that society shapes even private acts. Chomsky asked intellectuals to tell the truth about power.

> **Quick check 1.** True or false: All four thinkers worked only inside their own field. *(True or False?)* See answer ↓

Quick check 2. True or false: Durkheim was a sociologist. *(True or False?)* See answer ↓

2 Einstein the physicist

2.1 When was he born, and what did he win?

Albert Einstein was born on 14 March 1879 in Ulm, Germany. He died on 18 April 1955 in Princeton, USA.

He won the Nobel Prize in Physics for 1921. The prize was for his services to theoretical physics. It named his discovery of the law of the photoelectric effect. He received it one year later, in 1922.

2.2 What is the photoelectric effect?

When light falls on a metal, it can free tiny charged particles called electrons. This makes sparks jump more easily between metal electrodes.

Old theory said the strength of the light should matter most. Einstein explained something different. Light comes in packets called quanta. Each packet has a fixed energy that depends on its frequency.

One such packet is a photon. A photon needs a certain minimum frequency to free an electron. Weak light of high frequency can do what strong light of low frequency cannot.

21. **Think it through:** Why does the frequency matter more than brightness? See answer ↓

Quick check 3. True or false: Einstein won the Nobel Prize in Physics for the theory of relativity. *(True or False?)* See answer ↓

Quick check 4. True or false: Einstein explained that light comes in packets called quanta. *(True or False?)* See answer ↓

Sources: nobelprize.org

3 Einstein's public conscience

3.1 Why did Einstein leave Germany?

Einstein stayed in Berlin until 1933. In that year he gave up his German citizenship for political reasons. He then went to America, as Professor of Theoretical Physics at Princeton.

He became a United States citizen in 1940.

3.2 What causes did he support after the war?

After the Second World War, Einstein was a leading figure in the World Government Movement. He was offered the Presidency of the State of Israel. He declined.

22. **Think it through:** Why would a physicist join a movement like this? See answer ↓

Quick check 5. True or false: Einstein became a United States citizen in 1940. *(True or False?)* See answer ↓

> **Quick check 6.** True or false: Einstein accepted the Presidency of Israel. *(True or False?)* See answer ↓

Sources: nobelprize.org

4 The Russell–Einstein Manifesto

4.1 What was the manifesto?

It was a warning against nuclear war. It was issued in London on 9 July 1955. Einstein had died several months earlier.

Eleven people put their names to it, including Einstein and Russell. It urged peaceful settlement of disputes among nations.

4.2 What did it say?

It said the writers spoke “not as members of this or that nation, continent or creed, but as human beings”. It asked readers to set aside their loyalties for a moment.

It also warned about the new bombs. One A-bomb could obliterate Hiroshima. One H-bomb could obliterate the largest cities, such as London, New York and Moscow.

It asked readers to learn to think in a new way. The question was not how to win a war. The question was what steps can prevent a military contest that would be disastrous to all parties.

4.3 How did it end?

It put a plain choice to the world. It asked: “Shall we put an end to the human race: or shall mankind renounce war?” Then it closed with a short appeal.

The appeal was: “Remember your humanity, and forget the rest.”

> **Quick check 7.** True or false: The manifesto was issued in London in July 1955. *(True or False?)* See answer ↓

> **Quick check 8.** True or false: Einstein was alive when the manifesto was released. *(True or False?)* See answer ↓

Sources: ahf.nuclearmuseum.org; pugwash.org

What did Russell and Durkheim add?

5 Russell: reason and dissent

5.1 Who was Bertrand Russell?

Bertrand Russell was born on 18 May 1872 at Trelleck. He was left an orphan at the age of three.

In 1903 he wrote his first important book, The Principles of Mathematics. With Alfred Whitehead he went on to extend the mathematical logic of Peano and Frege.

5.2 Why was he jailed?

During the First World War he took an active part in the No Conscription Fellowship. He was fined £100.

In 1918 he was sentenced to six months in prison for a pacifist article. Pacifism means opposing war. He wrote his Introduction to Mathematical Philosophy (1919) in prison.

5.3 How was he honoured?

Russell won the Nobel Prize in Literature in 1950. The prize was for his varied and significant writings in which he champions humanitarian ideals and freedom of thought.

The Nobel page calls him a defender of freedom of speech and freedom of thought. It notes that his views were often controversial.

> 23. **Think it through:** Why mention both ideals and free thought?
>
> See answer ↓

> **Quick check 9.** True or false: Russell won the Nobel Prize in Literature in 1950. *(True or False?)* See answer ↓

> **Quick check 10.** True or false: Russell was jailed in 1918 for a pacifist article. *(True or False?)* See answer ↓

Sources: nobelprize.org

6 Durkheim and social facts

6.1 Who was Émile Durkheim?

Émile Durkheim was born in April 1858 in Épinal, France. At Bordeaux he taught the first official sociology courses in France.

His major works include The Rules of Sociological Method, Suicide and The Elementary Forms of Religious Life.

6.2 What is a social fact?

A social fact is a pattern that belongs to a society, not to one person. Durkheim said society cannot be explained in biological or psychological terms.

In Suicide (1897) he treated the suicide rate as such a fact. He said each society has a definite aptitude for suicide, which can be measured as a rate.

6.3 What did he find about religion?

He compared Protestant and Catholic areas of Western Europe. Where Protestants were most numerous, the suicide rate was highest. Where Catholics predominated, it was much lower.

He explained this by integration. The stronger the integration of a religious community, the greater its preservative value. Being bound to a group protects people.

> **Quick check 11.** True or false: Durkheim treated the suicide rate as a social fact. *(True or False?)* See answer ↓

> **Quick check 12.** True or false: Durkheim said society can be explained fully by biology. *(True or False?)* See answer ↓

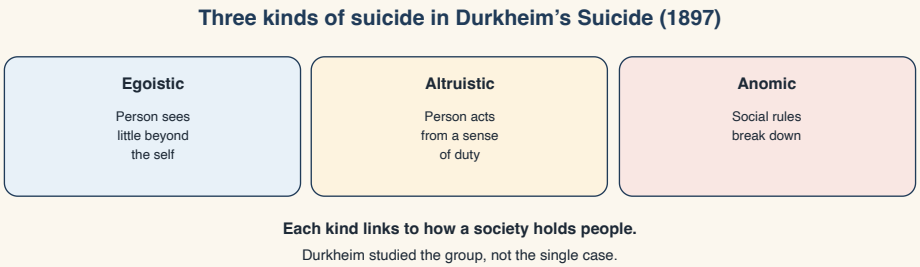
Sources: iep.utm.edu; durkheim.uchicago.edu

7 Anomie and collective conscience

7.1 What are the three kinds of suicide?

His book centres on three types: egoistic, altruistic and anomic. The egoistic person sees nothing real in the world besides the individual.

The altruistic person acts from a serene conviction that duty requires it. The anomic type comes when social rules break down.



Durkheim's three types, each tied to a social cause.

7.2 What is anomie?

Anomie means social deregulation. The rules that guide people stop working.

Durkheim said even good change can cause it. He wrote that every disturbance of equilibrium is "an impulse to voluntary death". This holds even if it brings greater comfort.

7.3 What is the collective conscience?

Durkheim used the French term conscience collective. It is translated as collective conscience or collective consciousness.

It is a fusion of individual consciences. Once formed, it follows its own laws.

Quick check 13. True or false: Anomie means a breakdown of social regulation. *(True or False?)* See answer ↓

Quick check 14. True or false: Durkheim said only bad events can cause anomie. *(True or False?)* See answer ↓

What do Chomsky and the four together teach?

8 Chomsky and universal grammar

8.1 Who is Noam Chomsky?

Avram Noam Chomsky was born in Philadelphia in 1928. He worked for decades at the Massachusetts Institute of Technology.

In 1957 he published Syntactic Structures. His work gradually changed the field of linguistics.

8.2 What is universal grammar?

Chomsky argued that language is an innate and universal human property. Innate means a person is born with it. Universal means all people share it.

He compared it to the organs of the body. It develops as a person matures. All languages are variations on a Universal Grammar. They differ only in surface details.

8.3 Is the theory accepted by everyone?

No. Chomsky's programme has been revolutionary but contentious. Critics say he discounts the diversity of human languages.

> **Quick check 15.** True or false: Chomsky said language is innate and universal. *(True or False?)* See answer ↓

Quick check 16. True or false: Everyone accepts universal grammar. *(True or False?)* See answer ↓

Sources: iep.utm.edu

9 Chomsky and intellectual duty

9.1 What did he write in 1967?

On 23 February 1967 The New York Review of Books printed his essay The Responsibility of Intellectuals. It dealt with scholars and the Vietnam War.

He wrote: “Intellectuals are in a position to expose the lies of governments.” He said they have the power that comes from political liberty. They also have access to information and freedom of expression.

9.2 What did he say in 2011?

In a lecture at MIT he updated that essay. He said, “You should hold yourselves to the same standards that you apply to others.”

He called this the principle of universality. He said it is almost universally approved in words and almost universally rejected in practice.

9.3 Did he act on his views?

Yes. He was heavily involved in the anti-war movement over Vietnam. He was arrested several times.

Quick check 17. True or false: The Responsibility of Intellectuals appeared in 1967. *(True or False?)* See answer ↓

Quick check 18. True or false: Chomsky said intellectuals should apply to themselves the standards they apply to others. *(True or False?)* See answer ↓

Sources: nybooks.com; news.mit.edu

10 What the four teach

10.1 How do the ideas compare?

The four thinkers compared

Thinker	Field	Key idea	Ethical lesson
Einstein	Physics	Light comes in quanta	Put humanity before nation
Durkheim	Sociology	Social facts shape acts	Institutions and bonds matter
Russell	Logic and ethics	Reason and free thought	Conscience and principled dissent
Chomsky	Linguistics	Language is innate	Truthfulness and public accountability

The last column is the ethical lesson a student can draw from each person.

Use this table to link each name to one idea and one lesson.

Quick check 19. True or false: Russell's ethical lesson in the table is conscience and principled dissent. *(True or False?)* See answer ↓

Quick check 20. True or false: Durkheim's key idea is that language is innate. *(True or False?)* See answer ↓

Exam Practice

Remember this

- **Einstein:** Nobel Prize in Physics for 1921; photoelectric effect.
- **Manifesto:** London, 9 July 1955; "Remember your humanity."
- **Russell:** jailed 1918; Nobel Prize in Literature 1950.
- **Durkheim:** Suicide (1897); anomie means social deregulation.
- **Chomsky:** universal grammar; The Responsibility of Intellectuals (1967).

Explain it back: Say in one line what each thinker teaches about ethics.

Practice MCQs

1. What did Einstein and Bertrand Russell jointly warn about in the Russell-Einstein Manifesto?

A. The dangers of literacy

B. Nuclear weapons' dangers, calling for peaceful conflict resolution

C. The dangers of international trade

D. The dangers of space exploration

See answer ↓

2. Bertrand Russell won the Nobel Prize in which field in 1950?

A. Literature

B. Economic Sciences

C. Physics

D. Peace

See answer ↓

3. Albert Einstein’s Nobel Prize in Physics was named for his discovery of which law?

A. Planetary motion

B. Radioactive decay

C. The photoelectric effect

D. Gravitation

See answer ↓

4. In Suicide (1897), what did Durkheim treat the suicide rate of a society as?

A. A purely private choice

B. A social fact

C. An inherited trait

D. A matter of climate

See answer ↓

5. Durkheim used the term ‘anomie’ for which condition?

A. Social deregulation

B. Excess of ritual

C. Rise of literacy

D. Loss of memory

See answer ↓

6. Which 1967 essay by Noam Chomsky dealt with scholars and the Vietnam War?

A. Syntactic Structures

B. Manufacturing Consent

C. The Responsibility of Intellectuals

D. Aspects of Syntax

See answer ↓

7. Why was Bertrand Russell sentenced to six months in prison in 1918?

A. For a pacifist article

B. For a mathematical error

C. For leading a strike

D. For refusing a Nobel Prize

See answer ↓

Answer Key

1. **B.** The correct answer is **Nuclear weapons' dangers, calling for peaceful conflict resolution**. The 1955 manifesto warned that nuclear war could end the human race. It asked nations to settle disputes peacefully. Memory hook: Remember your humanity. ↑ Q1
2. **A.** The correct answer is **Literature**. The prize honoured writings that champion humanitarian ideals and freedom of thought. Memory hook: Russell wrote his way to a Nobel. ↑ Q2
3. **C.** The correct answer is **The photoelectric effect**. Einstein explained that light comes in quanta, each with a fixed energy. Memory hook: 1921 prize, photons. ↑ Q3
4. **B.** The correct answer is **A social fact**. He said each society has a definite aptitude for suicide, shown by its rate. Memory hook: rates belong to societies. ↑ Q4
5. **A.** The correct answer is **Social deregulation**. Anomie is a condition in which social rules stop working. Memory hook: a-nomos, no norms. ↑ Q5
6. **C.** The correct answer is **The Responsibility of Intellectuals**. It said intellectuals can expose the lies of governments. Memory hook: 1967, duty to tell truth. ↑ Q6
7. **A.** The correct answer is **For a pacifist article**. He had written it in the Tribunal. He wrote Introduction to Mathematical Philosophy in prison. Memory hook: 1918, pen and prison. ↑ Q7

Quick-check answers

1. **False.** Each also spoke on public and moral questions, such as war, society and truth. ↑ 1
2. **True.** He studied how societies work and helped found sociology as a field. ↑ 2
3. **False.** The prize named his discovery of the law of the photoelectric effect. ↑ 3
4. **True.** Each quantum has a fixed energy linked to its frequency. ↑ 4
5. **True.** He left Germany in 1933 and took US citizenship in 1940. ↑ 5
6. **False.** He was offered the post and declined it. ↑ 6
7. **True.** It was issued on 9 July 1955. ↑ 7

8. **False.** Einstein died several months before the text was released. ↑ 8
9. **True.** The prize honoured writings that champion humanitarian ideals and freedom of thought. ↑ 9
10. **True.** He was sentenced to six months in prison. ↑ 10
11. **True.** He said each society has a definite aptitude for suicide, shown by its rate. ↑ 11
12. **False.** He said society cannot be explained in biological or psychological terms. ↑ 12
13. **True.** Durkheim used the term for a condition of social deregulation. ↑ 13
14. **False.** He said even a change that brings greater comfort can disturb the balance. ↑ 14
15. **True.** He called it a species-wide trait that develops as one matures. ↑ 15
16. **False.** The programme is contentious, and critics say it discounts the diversity of languages. ↑ 16
17. **True.** It was printed in The New York Review of Books on 23 February 1967. ↑ 17
18. **True.** He called this the principle of universality. ↑ 18
19. **True.** He accepted jail for a pacifist article and defended free thought. ↑ 19
20. **False.** That is Chomsky's idea. Durkheim's is that social facts shape acts. ↑ 20
21. **Think it through.** Each photon works alone. A photon with too little energy cannot free an electron. Adding more such photons does not help. ↑ 21
22. **Think it through.** The bomb made war a danger to every nation. A shared world body is one answer to a danger shared by all. ↑ 22
23. **Think it through.** Defending free thought means defending views you may dislike. Russell's own views often caused anger, yet he defended this freedom. ↑ 23

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