

# isaac newton the scientist who changed everything Printable PDF

## Isaac Newton the scientist who changed everything

Isaac Newton stands as one of the most influential figures in the history of science. His groundbreaking discoveries and innovative theories revolutionized our understanding of the universe, laying the foundation for modern physics and mathematics. From his laws of motion to his work on gravity, Newton's contributions fundamentally altered the way humanity perceives the natural world. This article explores the life, achievements, and enduring legacy of Isaac Newton, highlighting why he truly changed everything.

## Early Life and Education

### Birth and Childhood

- Born on January 4, 1643, in Woolsthorpe, Lincolnshire, England.
- Orphaned at a young age; his father died before he was born.
- Grew up with his mother and was a solitary child with a keen interest in mechanics and mathematics.

### Academic Journey

- Attended Trinity College, Cambridge, in 1661.
- Demonstrated exceptional talent in mathematics and natural philosophy.
- During the Great Plague in 1665-1666, he returned home and began intensive independent research, which marked the beginning of his revolutionary work.

## Major Scientific Contributions

### Laws of Motion

Newton formulated three fundamental laws that describe how objects move:

- **First Law (Inertia):** An object remains at rest or moves in a straight line at constant speed

unless acted upon by an external force.

- **Second Law:** Force equals mass times acceleration ( $F = ma$ ).
- **Third Law:** For every action, there is an equal and opposite reaction.

These laws underpin classical mechanics and are still taught as the foundation of physics today.

## Universal Law of Gravitation

- Proposed that every mass attracts every other mass in the universe.
- The gravitational force is proportional to the product of their masses and inversely proportional to the square of the distance between them:

$$F = G (m_1 m_2) / r^2$$

- Demonstrated that gravity governs planetary motion, explaining why planets orbit the Sun and objects fall to the ground.

## Calculus: The Mathematics of Change

- Independently developed calculus, a branch of mathematics essential for understanding change and motion.
- His work on fluxions provided tools to analyze dynamic systems.
- Although Leibniz also developed calculus independently, Newton's contributions laid the groundwork for modern mathematical analysis.

## Optics and Light

- Conducted experiments with prisms, demonstrating that white light is composed of a spectrum of colors.
- Developed the theory that light consists of particles (corpuscles), influencing later wave and particle theories.
- Published "Opticks," which detailed his experiments and theories about light and color.

## Major Publications and Their Impact

### Mathematical Principles of Natural Philosophy (Principia)

- Published in 1687, this work is considered one of the most important scientific texts ever.
- Established the laws of motion and universal gravitation.
- Provided mathematical framework that explained celestial and terrestrial phenomena.

## Opticks

- Published in 1704, focusing on experiments with light and color.
- Influenced the development of optics and the understanding of light waves and particles.

## Legacy and Influence

### Revolutionizing Physics and Mathematics

- Newton's laws formed the basis of classical mechanics, guiding scientific thought for centuries.
- His development of calculus enabled precise modeling of dynamic systems across physics, engineering, and beyond.

### Impact on Astronomy

- His explanation of planetary motion confirmed Kepler's laws and supported heliocentric models.
- Laid the groundwork for later advancements in celestial mechanics and space exploration.

### Philosophical and Scientific Methodology

- Emphasized empirical evidence and mathematical rigor.
- His approach set the standard for scientific inquiry and experimentation.

## Enduring Legacy

- Newton's work influenced countless scientists, including Einstein, who expanded upon his theories.
- His discoveries fostered the Scientific Revolution, transforming society's understanding of nature.
- His name remains synonymous with intellectual brilliance and scientific discovery.

## Newton's Personal Life and Character

## Personality and Interests

- Known for his intense focus, curiosity, and sometimes combative nature.
- Had interests beyond science, including alchemy and biblical chronology.
- Despite his scientific rigor, he was deeply religious and believed his work revealed divine order.

## Controversies and Disputes

- Engaged in notable disputes with other scientists, such as Gottfried Wilhelm Leibniz over calculus.
- His personality sometimes led to conflicts within the scientific community.

## Conclusion: Why Isaac Newton Changed Everything

Isaac Newton's contributions transformed the scientific landscape, providing the tools and theories that continue to underpin modern science. His laws of motion and universal gravitation unlocked the mysteries of celestial and terrestrial phenomena, enabling humanity to comprehend the universe in unprecedented ways. The development of calculus equipped scientists with a powerful mathematical language to describe change and motion, influencing countless disciplines beyond physics. Newton's meticulous approach to experimentation and theory set a new standard for scientific inquiry, fostering a legacy that endures to this day.

In essence, Isaac Newton did not merely advance science; he redefined it. His work bridged the gap between observation and theory, between mathematics and nature. As a result, he truly changed everything—altering our understanding of the universe and paving the way for future generations of scientists, engineers, and thinkers. Newton remains a towering figure whose influence continues to shape our world and our knowledge of it.

**Meta Description:** Discover how Isaac Newton, the scientist who changed everything, revolutionized physics, mathematics, and our understanding of the universe with his groundbreaking laws of motion, gravity, and calculus.

### Isaac Newton: The Scientist Who Changed Everything

When discussing the revolution of science and the foundation of modern physics, few names resonate as profoundly as Isaac Newton. His groundbreaking insights and relentless curiosity transformed our understanding of the universe, laying the groundwork for countless scientific advancements. Newton's legacy is not merely one of discovery but of a paradigm shift that forever altered the way humanity perceives nature, motion, and the cosmos.

## Early Life and Education

Understanding Newton's profound impact begins with exploring his formative years. Born on January 4, 1643, in Woolsthorpe, Lincolnshire, England, Isaac Newton's early life was marked by a mixture of intellectual promise and personal challenges.

## Family Background and Childhood

- Newton was born prematurely, and his early years were fragile, leading to initial doubts about his survival.
- His father, also named Isaac Newton, was a farmer who died shortly before Newton's birth.
- Raised by his grandmother after his mother's remarriage, Newton's childhood environment was modest but intellectually stimulating.

## Education and Academic Pursuits

- Newton attended the King's School in Grantham, where he displayed an early aptitude for mathematics and mechanics.
- In 1661, he enrolled at Trinity College, Cambridge, initially intending to study law but quickly gravitating toward mathematics and natural philosophy.
- The period during the Great Plague (1665-1666) forced the university to close temporarily, during which Newton returned home and conducted some of his earliest groundbreaking experiments.

## Major Scientific Contributions

Newton's scientific achievements span multiple disciplines, including mathematics, physics, optics, and astronomy. His work was characterized by a rigorous approach, mathematical innovation, and a quest to unify the natural laws governing the universe.

## Mathematics: The Foundation of Calculus

- Newton developed what he called "the method of fluxions," now known as calculus, independently of Gottfried Wilhelm Leibniz.
- His version of calculus provided a powerful toolset for analyzing change and motion, essential for advancing physics.
- Key contributions include:
  - The formulation of the fundamental theorem of calculus.

- The development of differential and integral calculus.
- Newton's calculus was instrumental in solving complex problems involving rates of change and areas under curves, which were previously intractable.

## Physics: The Laws of Motion and Universal Gravitation

- Newton's "Philosophiæ Naturalis Principia Mathematica" (Mathematical Principles of Natural Philosophy), published in 1687, is regarded as one of the most important scientific works ever.

- Major breakthroughs include:

- The Three Laws of Motion

- First Law (Inertia): An object remains at rest or in uniform motion unless acted upon by an external force.

- Second Law: Force equals mass times acceleration ( $F = ma$ ).

- Third Law: For every action, there is an equal and opposite reaction.

- Law of Universal Gravitation

- Every mass attracts every other mass in the universe with a force proportional to the product of their masses and inversely proportional to the square of the distance between them:

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$$F = G \frac{m_1 m_2}{r^2}$$

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- This law explained phenomena from the fall of apples to planetary orbits, unifying celestial and terrestrial mechanics.

## Optics and Light

- Newton's experiments with prisms demonstrated that white light is composed of a spectrum of

colors.

- He proposed the particle theory of light, challenging the wave theory prevalent at the time.
- His work *Opticks* (1704) laid the groundwork for modern optics and influenced the development of telescopes and spectrometry.
- Newton also invented the reflecting telescope, now called the Newtonian telescope, which used mirrors to eliminate chromatic aberration.

## Astronomy and Cosmology

- Newton's laws provided the mathematical framework to understand planetary motion, eclipses, and the behavior of comets.
- His work influenced the eventual development of celestial mechanics, culminating in the later contributions of scientists like Laplace and Einstein.

## Methodology and Scientific Approach

Newton's approach to science was characterized by a blend of empirical observation, mathematical rigor, and philosophical inquiry.

## Empiricism and Experimentation

- Newton emphasized careful experimentation and observation, especially in optics.
- He devised precise experiments to test hypotheses about light and color, often conducting meticulous laboratory work.

## Mathematical Formalism

- Newton believed that mathematical description was essential for understanding natural laws.
- His ability to translate physical phenomena into mathematical equations was revolutionary, providing predictive power and clarity.

## Philosophical Foundations

- Newton was influenced by the mechanistic philosophy of Descartes and the empirical methods of Bacon.
- He sought to uncover universal laws governing nature, believing that the universe operated like a vast, comprehensible machine.

## Controversies and Challenges

Despite his monumental achievements, Newton's life and career were not without disputes.

### Calculus Dispute with Leibniz

- The simultaneous development of calculus led to a bitter dispute with Gottfried Wilhelm Leibniz over priority.
- The controversy fueled nationalistic tensions between Britain and continental Europe.
- Today, most historians recognize both as independent discoverers.

### Allegations of Alchemy and Mysticism

- Newton devoted significant time to alchemy and biblical chronology, reflecting his interest in mystical and religious ideas.
- While these pursuits were controversial, they influenced his worldview and scientific thought.

### Conflict with Robert Hooke and Others

- Newton had disputes with contemporaries like Robert Hooke regarding the nature of light and gravity.
- These conflicts sometimes hindered collaboration but also spurred Newton to refine his theories.

## Legacy and Impact

Newton's influence extends beyond his lifetime, shaping the course of science and philosophy for centuries.

### Scientific Revolution

- Newton is often regarded as a central figure in the Scientific Revolution, bridging the gap between classical philosophy and modern science.
- His synthesis of empirical observation, mathematical analysis, and theoretical modeling set new standards for scientific inquiry.

### Modern Physics and Beyond

- Newtonian mechanics remained the cornerstone of physics until the advent of Einstein's relativity.
- His methods and principles underpin engineering, astronomy, and many technological advancements.

## Philosophical and Cultural Impact

- Newton's work challenged traditional views of the universe, promoting a worldview based on natural laws.
- His emphasis on rational inquiry influenced Enlightenment thinkers and fostered a scientific mindset.

## Honors and Recognitions

- Newton was knighted by Queen Anne in 1705, becoming Sir Isaac Newton.
- He served as the President of the Royal Society for over 30 years.
- Numerous institutions, awards, and scientific concepts bear his name, including the unit of force, the newton (N).

## Conclusion: The Enduring Genius of Isaac Newton

Isaac Newton's life exemplifies the relentless pursuit of knowledge and the transformative power of scientific inquiry. His innovations in mathematics, physics, optics, and astronomy did not merely add to human understanding; they revolutionized it. Newton changed the way we see the universe, moving from a worldview filled with mystical explanations to one governed by rational laws and mathematical precision.

His ability to unify diverse phenomena under a single set of principles exemplifies the ideal of scientific elegance and rigor. As the scientist who truly changed everything, Newton's legacy endures, inspiring generations of scientists, thinkers, and innovators. His work continues to be a testament to human curiosity and the profound impact that dedicated inquiry can have on the world.

**Question** Why is Isaac Newton considered one of the most influential scientists in history? **Answer** Isaac Newton is regarded as one of the most influential scientists because he revolutionized physics and mathematics with his laws of motion, universal gravitation, and contributions to calculus, fundamentally changing our understanding of the universe. What are Isaac Newton's most famous discoveries? Newton's most famous discoveries include the laws of motion, the law of universal gravitation, and the development of calculus, which provided the mathematical framework for understanding motion and gravity. How did Isaac Newton's work impact modern science? Newton's

work laid the groundwork for classical mechanics, influencing fields from engineering to astronomy, and his methods of scientific inquiry and mathematical techniques remain central to scientific research today. What was Isaac Newton's role at the Royal Mint? Isaac Newton served as the Warden and later Master of the Royal Mint, where he played a key role in combating counterfeiting and reforming the currency system in England during the late 17th and early 18th centuries. What are some lesser-known facts about Isaac Newton? Lesser-known facts include Newton's interest in alchemy and biblical chronology, his intense curiosity about hidden meanings in religious texts, and that he was also involved in biblical studies and attempted to decipher prophecies.

**Related keywords:** Isaac Newton, physics, gravity, calculus, laws of motion, scientific revolution, mathematician, optics, classical mechanics, universal law of gravitation

## Everything Everything English Edition

**everything everything english edition** is a compelling novel that has captured the imagination of readers around the world, offering a unique blend of romance, drama, and social commentary. Originally published in 2015 by author Nicola Yoon, this book has become a bestseller and a must-read for young adult fiction enthusiasts. The English edition has played a crucial role in making this engaging story accessible to a global audience, contributing to its widespread popularity and critical acclaim.

## Overview of "Everything Everything" English Edition

### What is "Everything Everything"?

"Everything Everything" is a young adult novel that tells the story of Madeline Whittier, a girl who has severe combined immunodeficiency (SCID), which confines her to her home. Her world is turned upside down when a new neighbor, Olly, moves in next door. The novel explores themes of love, vulnerability, identity, and the desire for independence.

### The Significance of the English Edition

The English edition of "Everything Everything" serves as the primary version for readers in English-speaking countries, including the United States, the United Kingdom, Canada, Australia, and others. Its clear, engaging language and accessible prose make it ideal for a broad audience, including young adults and educators.

## Key Features of the English Edition

## Language and Style

The novel is written in a conversational and relatable tone, making it easy for readers to connect with the characters and their experiences. Nicola Yoon employs a mix of narrative styles, including diary entries, illustrations, and text messages, which enrich the storytelling.

## Format and Accessibility

The English edition is available in various formats, including hardcover, paperback, e-book, and audiobook. This versatility ensures that readers can enjoy the story in their preferred format, enhancing accessibility.

## Illustrations and Design

The book features visual elements such as diagrams, charts, and doodles that complement the narrative, making it more engaging, especially for visual learners. The design of the English edition is modern and appealing, aimed at capturing the interest of young readers.

## Themes Explored in "Everything Everything"

### Love and Connection

At its core, the novel is a heartfelt exploration of love in unconventional circumstances. Madeline's relationship with Olly develops amidst her physical limitations, illustrating how love can transcend barriers.

### Isolation and Freedom

Madeline's condition leads to social isolation, prompting reflections on the importance of independence and the human need for connection and exploration.

### Identity and Self-Discovery

The story delves into Madeline's journey of understanding herself beyond her illness and discovering what it means to live fully.

### Medical and Ethical Issues

The novel touches upon medical conditions like SCID and raises questions about medical ethics, research, and the possibilities of medical interventions.

## Critical Reception and Impact

### Reception of the English Edition

Critics have praised the English edition for its engaging narrative, innovative format, and emotional depth. It has been lauded for its ability to address complex themes in a manner accessible to young adults.

### Educational Use

Many educators incorporate "Everything Everything" into their curricula to discuss themes such as health, ethics, and relationships, making the English edition a valuable resource in classroom settings.

### Adaptations and Media

The novel was adapted into a successful film in 2017, starring Amandla Stenberg and Nick Robinson. The English edition served as the primary source material, further extending its reach and influence.

## Where to Find the English Edition

### Retailers and Online Stores

The English edition of "Everything Everything" is widely available through major booksellers such as:

- Amazon
- Barnes & Noble
- Book Depository
- Waterstones

### Local Bookstores and Libraries

Supporting local businesses is easy, as most independent bookstores and libraries stock the English edition. Many libraries also offer digital borrowing options for e-books and audiobooks.

### Digital and Audiobook Formats

For readers who prefer digital media, the English edition can be purchased or borrowed as an e-book or audiobook via platforms like Kindle, Audible, and Apple Books.

# How to Get the Most Out of "Everything Everything" English Edition

## Discussion and Study Guides

Complement your reading with study guides and discussion questions to deepen understanding and facilitate conversations about the novel's themes and characters.

## Book Clubs and Reading Groups

Joining a book club can enhance the reading experience, allowing for shared insights and interpretations of the story.

## Related Media and Adaptations

Watching the film adaptation or exploring author interviews can provide additional perspectives and enrich your appreciation of the novel.

## Conclusion

The **everything everything english edition** stands as a vital gateway for readers worldwide to experience Nicola Yoon's captivating story. Its accessible language, innovative format, and poignant themes make it a standout in young adult literature. Whether for personal enjoyment, educational purposes, or literary exploration, the English edition continues to inspire, educate, and entertain a diverse audience. If you haven't yet read "Everything Everything," exploring the English edition is an excellent step toward understanding a story that celebrates love, resilience, and the human spirit.

**Meta Description:** Discover everything about the "Everything Everything" English edition, including its themes, features, availability, and why it's a must-read for young adult literature fans.

**Everything Everything English Edition: An In-Depth Analysis of the Popular YA Novel and Its Unique Approach**

In recent years, the young adult (YA) genre has experienced a renaissance, captivating audiences with stories that blend emotional depth, speculative worlds, and compelling characters. Among these, "Everything Everything English Edition" has emerged as a standout, garnering critical acclaim and a dedicated fanbase. This edition, meticulously translated and adapted for English-speaking readers, offers a nuanced exploration of themes such as love, identity, vulnerability, and societal constraints, all woven into a fast-paced, emotionally charged narrative. In this detailed guide, we'll delve into the origins, plot, themes, stylistic features, and cultural impact of the "Everything Everything English Edition," providing a comprehensive overview for both new readers and

seasoned fans.

## Origins and Background of "Everything Everything"

### Origin of the Story

"Everything Everything" is originally a novel by the American author Nicola Yoon, published in 2015. The story gained widespread popularity for its inventive premise, relatable characters, and thought-provoking questions about what it means to truly live and love. Its success led to a film adaptation in 2017, further cementing its place in contemporary YA culture.

### The English Edition

The "Everything Everything English Edition" refers to the officially translated and published version of Nicola Yoon's novel for English-speaking markets. This edition aims to preserve the nuanced storytelling of the original while making it accessible to a wider audience. It also includes specific linguistic and cultural adaptations to resonate with English readers.

### Significance

The edition is notable not just for translation accuracy but also for its design, cover art, and supplementary materials—such as discussion questions, author notes, and glossary—aimed at engaging readers more deeply with the text.

### Plot Overview

#### The Main Premise

The story centers around Madeline "Maddy" Whittier, a teenage girl who has spent her entire life confined indoors due to severe combined immunodeficiency (SCID), making her allergic to the outside world. Her life is characterized by routine, safety, and a virtual existence—until a new neighbor moves in.

#### Key Plot Developments

- Introduction of Olly: The arrival of Olly, a spirited and enigmatic boy, disrupts Maddy's carefully controlled world.
- Romantic Connection: As their friendship blossoms into a romantic relationship, Maddy begins to question her limitations and the boundaries imposed by her illness.
- Revelations and Risks: The narrative takes dramatic turns as secrets are unveiled, and Maddy

faces difficult choices about her health, independence, and future.

- Climactic Decisions: The culmination involves a daring decision that challenges her understanding of safety, love, and what it truly means to live.

### Themes Explored

- The desire for freedom versus safety
- The power of human connection
- The complexity of identity and self-discovery
- The impact of societal and familial expectations

### Literary and Stylistic Features

#### Narration and Perspective

"Everything Everything" employs a first-person narrative from Maddy's perspective, immersing readers deeply into her internal world. Her voice is characterized by a blend of innocence, curiosity, and subtle humor, which makes her relatable and authentic.

#### Use of Language and Tone

Nicola Yoon's writing style in the English Edition balances simplicity with poetic imagery. The language is accessible yet evocative, capturing Maddy's emotional landscape and her vivid imagination.

#### Visual Elements

The novel incorporates visual cues such as handwritten notes, diagrams, and illustrations that enhance storytelling and provide a tactile experience, making it especially engaging for YA audiences.

#### Short Chapters and Pacing

The story is divided into brief chapters, often from a single perspective, which creates a rapid pace and heightens suspense. This structure appeals to readers seeking a quick, immersive reading experience.

#### Major Themes and Messages

### - The Quest for Freedom

Maddy's confinement symbolizes broader questions about autonomy and the human desire to explore and experience life beyond societal or personal restrictions. Her relationship with Olly challenges her perceptions of safety and risk.

### - Love as a Transformative Force

The novel explores love's capacity to inspire courage and change. Maddy's connection with Olly becomes a catalyst for her to re-evaluate her limitations and embrace her agency.

### - Identity and Self-Discovery

Throughout the story, Maddy navigates her understanding of herself beyond her illness. Her journey reflects the universal struggle of adolescence—forming an identity apart from others' expectations.

### - Family and Caregiving

The novel also examines the dynamics of caregiving, parental love, and the sacrifices made by family members. Maddy's relationship with her mother and her desire for independence are central to the narrative.

### - Society and Vulnerability

The story raises questions about societal perceptions of illness and vulnerability, challenging stigma and highlighting the importance of empathy and understanding.

### Cultural and Social Impact

### Representation and Diversity

"Everything Everything" has been praised for its inclusive representation of a protagonist with a chronic illness, fostering awareness and empathy among readers. The English Edition enhances accessibility, broadening its reach.

### Influence on YA Literature

The novel's success has influenced other YA works that blend romance with speculative or realistic elements, emphasizing emotional authenticity and diverse experiences.

### Adaptations and Media Presence

The film adaptation introduced the story to a broader audience, while various book clubs and educational programs utilize the novel as a tool for discussions on health, independence, and love.

### Critical Reception and Controversies

#### Praise

- Engaging storytelling and relatable characters
- Innovative narrative techniques
- Thought-provoking themes

#### Criticisms

- Some readers find the plot predictable or overly sentimental
- Questions about the realism of certain plot points
- Debates over the portrayal of illness and dependency

### The Role of the English Edition

The English Edition plays a crucial role in addressing potential cultural gaps, ensuring that idiomatic expressions, cultural references, and emotional nuances are faithfully conveyed to English-speaking audiences.

### Why Read the "Everything Everything English Edition"?

#### For Fans of YA Fiction

The novel offers a compelling blend of romance, drama, and adventure, making it an ideal pick for readers who enjoy emotionally driven stories with a touch of the fantastical.

#### For Those Interested in Illness Representation

It provides an insightful look into living with a chronic illness, fostering empathy and understanding.

## For Readers Seeking Inspiration

Maddy's journey is a testament to resilience, courage, and the importance of pursuing one's own happiness against all odds.

## Final Thoughts

The "Everything Everything English Edition" stands out as a significant contribution to contemporary YA literature. Its careful translation and adaptation ensure that the story's emotional core and thematic richness are preserved, allowing English-speaking audiences to experience Maddy's extraordinary journey. Whether you are a newcomer to the novel or a longtime fan, this edition offers a beautifully crafted, thought-provoking reading experience that explores the fundamental human desire to love, explore, and truly live.

In summary, "Everything Everything" in its English edition has cemented itself as a must-read for those interested in stories that challenge perceptions of vulnerability and courage. It exemplifies how YA fiction can be both entertaining and meaningful, encouraging readers to reflect on their own boundaries and the limitless possibilities of love and life.

**Question** What is the main plot of 'Everything, Everything' English edition? The story follows Maddy, a girl with severe immune deficiencies, who develops a relationship with her new neighbor, Olly, challenging her isolated life and exploring themes of love and self-discovery. **Who are the authors of 'Everything, Everything' English edition?** The novel was written by Nicola Yoon. **Is 'Everything, Everything' suitable for young adult readers?** Yes, it is a popular young adult novel that deals with themes relevant to teens, such as identity, love, and personal growth. **Has 'Everything, Everything' been adapted into a movie?** Yes, the novel was adapted into a film released in 2017 starring Amandla Stenberg and Nick Robinson. **What are the main themes explored in 'Everything, Everything' English edition?** The book explores themes of love, vulnerability, illness, independence, and the desire for adventure beyond limitations. **Where can I purchase 'Everything, Everything' English edition?** It is available at major bookstores, online retailers like Amazon, and can be found in both physical and e-book formats. **Are there any discussion guides available for 'Everything, Everything'?** Yes, many educators and book clubs have discussion guides and study questions available online to facilitate deeper understanding. **What has been the critical reception of 'Everything, Everything'?** The novel has received positive reviews for its engaging storytelling, relatable characters, and thought-provoking themes, making it a popular choice among young adult readers.

**Related keywords:** Everything Everything, English edition, novel, book, dystopian, romance, young adult, contemporary fiction, indie, paperback

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