



## **Invisible: The Dangerous Allure of the Unseen**

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## **Invisible: The Dangerous Allure of the Unseen** Philip Ball

If you could be invisible, what would *you* do? The chances are that it would have something to do with power, wealth or sex. Perhaps all three, given the opportunity.

But there's no need to feel guilty. Because these impulses, and plenty more, have always been at the heart of our fascination with invisibility. Precisely because it points to realms beyond our senses, the notion of invisibility has long performed as a receptacle for fears and dreams, as something that hints at worlds where other rules apply; and as a mighty power and a terrible curse, a sexual promise, a spiritual condition.

This is a history of invisibility in our culture. It takes in Plato, the occult in the Renaissance and the Middle Ages, Shakespearian ghosts, ether and cathode rays and nineteenth-century science, spiritualism, electromagnetism, H.G. Wells, the microscopic world, camouflage, prestidigitation and twenty-first century nanoscience.

Here is everything you've ever wanted to know about the invisible - from the medieval to the cutting-edge, fairy tales to telecommunications, from beliefs about the supernatural to the discovery of dark energy.

## **Invisible: The Dangerous Allure of the Unseen Details**

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## **From Reader Review Invisible: The Dangerous Allure of the Unseen for online ebook**

### **Richard Thompson says**

This was an interesting and fun book that turned out to have a bit more to it than I had expected. I was expecting it to be a romp through the folklore and science of invisibility with lots of interesting stories and cautionary tales, and it delivered on those promises, but it also nicely explicates and defends Ball's thesis that there is a deep connection between the mythology and science of invisibility. The folklore of invisibility has spurred scientific research, and many leading scientists who have been involved in the study of invisible things have also been drawn to the non-rational aspects of the invisible. On the other hand, non-scientists yearn for scientific explanations of the invisible and cloak their invisibility myths in scientific garb. I think that there is always some intersection between science, imagination and popular beliefs, but it is hard to think of any other area of study in which they are more tightly interwoven than invisibility.

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### **Alberto says**

Un ensayo que compré y comencé a leer para descansar de los temas históricos y sociológicos y no solo me ha sorprendido sino que me ha fascinado por completo. Leído en dos días. Muy bueno.

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### **Kristi Thielen says**

Ball's complex book examines invisibility as it plays across many fields of knowledge: religion (Christianity's holy spirit); folklore (demons and fairies); literature (H. G. Wells' *The Invisible Man*) and pop culture (magic, seances, movies and TV shows).

But the bulk of his book explores the concept of invisibility in the world of science. The theory of gravity, the concept of dark matter, quantum physics, the world of microbes - all require us to believe in something that is, unseen by the naked eye.

He also discusses the contrasts between invisibility and concealment, the latter being an issue with creatures evading a predator and armed forces seeking to mask themselves as much as possible from the view of the enemy. He reserves his final chapters for a look at modern science as it grapples with the - as yet unobtainable - effort to craft an invisibility cloak.

No, you - unlike Harry Potter - won't be wearing a true invisibility cloak anytime soon; it would require computers far more sophisticated than anything we have now. But who knows what might be possible, in the century to come?

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### **Cheryl Valentine says**

Great read. Religious studies meets physics. This is definitely a keeper.

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## Arko says

It is a book dedicated on how invisibility persisted since antiquity of human civilization and played role in enchanting people and also instilling a curiosity among those who were able to ask the right questions thus helping to unravel many of Nature's hidden wonders.

It is a fun read especially how author gave importance to all sorts of invisibility along with moral values & curiosity associated with it, yet I felt that Author could have done better to balance the transition from orthodox irrational approach towards the invisible to our modern rational & systematic way of Science. Although much invisibility of our Nature remains to be understood along with adopting ways to be invisible, but it is certainly not similar to the bewilderment owing to the orthodox approach towards invisibility as it used to be. Author has somewhat put these two in close knit relatable ground which is my objection.

Also two of the historical incidents not being highlighted in this book , firstly , Le Gras being the first work on photography by J.N.Niépce in France (before the British work) and initial ground work of wireless radiowave transmission by Acharya Jagadish Chandra Bose (Before Marconi).

But overall it is a very nice book.

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## Ryan says

*Invisible* is an overview of the invisible. Ball takes a historical approach to documenting invisibility spells, x-rays, string theory, etc.

The title "the dangerous allure of the unseen" makes no sense at all, and I suspect it's one of those instances in which the American title is made more dramatic than the more sensible (one assumes) British subtitle.

The most admirable thing about this book is probably just the core focus -- things that are invisible -- but today's standard of popular non-fiction makes this book a bit dull. Ball is not very strong at writing narratives and framing his exposition. His voice comes across as often snide as often as it does charming.

I found this book searching for something else entirely on my library's website. My favorite thing about libraries, after the cost, is how often I take chances on books I find in random searches.

I'd read another book by this author, but I don't plan to find his other books *right away* or even in the next year.

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## P D says

3.5 stars

The central theme of human fascination with the 'invisible' turns out to have a lot of wiggle room, as Ball starts with medieval magic, transitions to Victorian-era science and spirituality, quantum mechanics, and

then ends with the quest for a modern-day invisibility cloak, which of course looks nothing like the pop culture version but happens to meet the strict definition of creating an appearance that certain types of wavelengths have passed through without being refracted/reflected in any way by the material. At times invisibility itself disappears entirely, but Ball always comes back to it, albeit with some stretches of the imagination which are nonetheless fascinating to consider (I mean, if you're going to bring up the use of women as objects/conduits, that's basically its own book; what's included here reads more like speculation on the author's part, even though he has plenty of sources in the endnotes. There's also some tangential references to anthropology which, while referenced multiple times, aren't ever developed).

I enjoyed the way Ball ties these elements—as well as some pop culture references—together; he makes some interesting points about the risk scientists face when they make use of this terminology to attract interest in their projects. In particular, this book is worth reading because it is adamantly against the condescending attitude modern society has against older ones where their speculations have since been disproven. There's a heavy emphasis on Victorian science, which happens to cross into the realm of psychic explorations (cue 90% of the show 'Penny Dreadful')—but, as Ball notes, these people were systematically investigating unseen phenomena, which isn't a far cry from, say, the many-worlds speculation or string theory in general.

The one real issue I had with this book is that, despite the mention of Eastern/pseudoEastern influences on some of the people in here, we never spend more than a couple of paragraphs exploring how invisibility pervades world culture. This book ends up being dominated by Edwardian/Victorian culture, on which there are already many books.

Science is increasingly a global endeavor and as such, its global influences deserve attention.

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### **Dean Anderson says**

Spreads his net a little too wide, but still has interesting facts and ideas.

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### **Al Bità says**

Imagine the alluring possibility of having some special object (some magic ring, helmet, cloak or similar device) which could make one invisible at will. Its allure lies in its potential for voyeurism and illicit sexual adventures; its promise to facilitate undetected trickery, mischief, robbery, and even murder; to provide personal protection from impending danger; and ultimately as a means of achieving and establishing ultimate power and control over others. The idea appears to sanction absolute liberty to do whatever one might desire at any time, with no personal responsibility or accountability involved. So it should not surprise to find that throughout history this concept appears pretty constantly in many of our stories and myths: we thrill at the idea.

Ball cleverly uses this literary conceit of ours to examine not only the question of invisibility itself, but also of the related concept of what is “unseen” — a kind of corollary which tempers the excitement of personal invisibility with uncertainty and fear, as when someone or something other than yourself is in some way invisible to you. Suddenly, it's not so thrilling and exciting any more... It all becomes a perfect paradox, one which finds “resolutions” only by proffering other apparently incompatible binary paradoxes, such as the

spiritual/material, ignorance/knowledge, fantasy/reality, and the religion/science divides.

The “invisible” and the “unseen” are the central topics of this work. While the earliest explanations of these ideas stem from magic, mysticism and the spiritual, the gradual development of science (= knowledge) and related advanced technologies in many disciplines has identified many of these ideas as being based on ignorance, particularly in regard to those things which are linked to one’s physical visual limitations. Associated ideas concern deception (intentional or otherwise), camouflage, misdirection and trickery.

At the same time Ball warns that science, also, can find itself in uncharted and consequently unchartered territories, as in its need to “create” concepts such as “dark matter” and “dark energy” to compensate for (rightly or wrongly) perceived inconsistencies in our current cosmic understanding of the universe. Similarly, at the microscopic level of quantum physics and quantum mechanics which “exist” simply as mathematical extrapolations yet to be fully evaluated; but in the meantime such “spooky” concepts as instantaneous action at a distance, time travel, and multiple universes verge on the magical and the mystical when scientists talk about them...

If I am reading Ball correctly, I suspect his stance is one which in general disputes the absolute distinction between the proposed dualities mentioned earlier above. Instead, he seems to argue that these binaries, although apparently at odds with one another, in fact feed upon each other, thereby ironically nurturing and reinforcing each other.

Ball has a knack for writing fluently and easily about these interesting ideas as they have been used through history and literature, and readers willing to go along for the ride will no doubt enjoy his informative and entertaining excursion through them.

A curious aside: my copy of the book is the hard cover 2014 edition published by Bodley Head. If one removes the (white) dustcover one will notice that the book’s boards are covered in a jet black, yet soft to the touch, plastic layer on which the book’s sub-title (only) and the author’s name are printed in caps. Turn to the back cover (also covered in the same velvety black material) and one will find that a *reversed* copy of the front cover is printed, as if we were seeing the backs of the letters on the front cover from behind. It’s almost as if the combination is meant to make one think that there is no “book” in between! Is this a sly wink and nod on the part of the publishers to give anyone noticing this oddity a wry smile of recognition of one aspect of the author’s central concept? It worked for me!

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### **Alice Heiserman says**

I began reading this book from the library but needed a longer time to digest it so I bought a copy and I am glad because it is very dense and requires careful reading. The author, a Brit, understands all aspects of things that are invisible--their history, literature, mythology, occult sciences, and physical and biological sciences and describes how people have considered things that are invisible throughout western cultural history. What is fun about this book is how all these elements are combined and the interplay between them, including a clear elucidation about the role of science and seance. The footnotes are filled with wonderful arcane material. I need to go back to review this book because it is too much to take in at a first read.

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## **J.D. says**

I'm puzzled by this book. It's a careful study of the subject of invisibility, and quite a comprehensive one. But, below the surface, it's sort of a mess and the subject—or subjects—are presented in a way that creates more confusion than new knowledge. I approached the book excited, as I'm writing a Sci-Fi story that involves invisibility. And I wanted to know what's known about the topic; the book fell providentially in my hands.

Rather than dealing with the subject of invisibility by themes—*invisibility in Physics, etc.*—all topics are subsumed in chapters that deal with any and all invisible things, from X-rays to electrons, and from those to microbes, magician tricks, and even ghosts. It does include also (luckily) modern attempts to manipulate light to make things invisible. At times, I had to restart chapters just to see what I was reading about, or what each thing discussed had to do with the others. After a while, it was maddening.

I didn't feel that I have learned much about "our fascination with the invisible" but just got little pieces of information about narrowly-defined subjects. The ones I knew about (I've taught both Human Physiology and Physics) were poorly covered, and the recurring sections on spirits and séances reminded me of "Spook" by Mary Roach, but without the humor. It's a huge missed opportunity, as the title might detract others to attempt a similar book. Maybe "Invisible. The Revised Edition" will be better.

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## **C.G. Fewston says**

*Invisible: The Dangerous Allure of the Unseen* (2014) by the polymath Philip Ball is a collection of essays that explores and seeks to illuminate the desires to understand and ultimately control the invisible forces all around us. From Tolkien's and Gyge's magic rings, morals of Glaucon, cloaks of invisibility, invisible children, occult forces and sacred magic, theological thermodynamics, the invisible men of science fiction, natural camouflage, time bandits, the Holy Spirit, X-rays, and to the mythic and magical connotations of invisibility, Ball does wonders as he crosses time and space to bring readers a semi-full spectrum encompassing the historical and contemporary implications involving the "unseen" in our everyday lives.

"For Plato, then," writes Ball, "invisibility was not a wondrous power but a moral challenge—to which none of us is likely to prove equal. Invisibility corrupts; nothing good could come of it. In particular, invisibility will tempt us towards three things: power, sex and murder. This is the promise that lured people to seek invisibility throughout time, whether by magical spells or esoteric arts or devices and garments that confer the ability to vanish" (p 4).

Any reader who has crossed the pages and vanished into H.G. Wells's *The Invisible Man* (1897) or Ralph Ellison's *Invisible Man* (1952), one can attest to the fact of how invisibility, either an absence bearing no physical presence to the naked eye or a social mindset making a minority "unseen" as it were, power corrupts the individual's morals which leads to shameless acts of sexual degradation and then to murder.

Either writers regarding invisibility as a choice topic are not very original, or Plato, as Ball asserts, has a keen understanding of how invisibility in any form challenges a person's morals. One could even apply this principle to the unseen bankers and corporate heads of conglomerates across the world today.

“Invisibility, then,” explains Ball, “provides access to liminal places tinged with desire, allure and possibility. Such allegorical content means that magical invisibility in fiction should never function simply as a convenient power that advances the narrative. It should not be bought cheaply, nor used idly. That is why the One Ring in The Lord of the Rings supplies a more satisfying, more mythically valid emblem than the cloaks of invisibility in the Harry Potter series. The latter, made from the hair of a creature from the Far East that can make itself invisible, are trinkets, a piece of incidental, even mundane magic. But magic must not be incidental or mundane, for it pulls on a subtle web of forces and must therefore have consequences. Frodo Baggins’ ring will, in the end, steal souls and reduce the bearer to a pitiful, malevolent wraith. That is what invisibility, when depicted in its truthful symbolic guises, does to us: it transforms us and pulls us into another realm” (p 6).

What Ball is claiming is that if fiction, or even science in the real world, deals with forces of nature which far exceed our own human powers, there must be substantial consequences affecting the human condition. Now this can be a physical and spiritual change, as in Frodo and the One Ring, or the malevolent power behind the unseen forces can cause corruption in a far more comical sense. As in the following case of one Spaniard in 1582:

A Spaniard, having dealt with magical recipes and texts, “decided to use invisibility magic” in hopes of changing the course of history by murdering the Prince of Orange (p 14).

“Since [the Spaniard’s] spells could not make clothes invisible,” writes Ball, “he had to strip naked, in which state he arrived at the palace and strolled casually through the gates, unaware that he was perfectly visible to the guards. They followed the outlandish intruder until the purpose of his mission became plain, whereupon they seized him and flogged him” (p 14).

Of course there are various kinds and degrees of invisible forces out there in the universe and world around us, and these forces often remain constant and unseen. Magnetism is one such force. And so is love. Ball, coincidentally, sheds some light on these two magical powers:

“The word magnet derives from the region of Magnesia on the Aegean Sea, where lodestone can be found, but it might also share an etymological root with magic itself. In the Middle Ages the Latin word for diamond, adamas, came to also be used for magnets, and is said to be linked to the French aimant, love—for the attraction of iron and magnet was commonly viewed as a kind of love, or as natural magicians, would put it, sympathy” (p 19).

And unseen love being one of the most powerful forces of attraction in the human condition continues to mystify even the greatest of minds to date. How can anyone explain two lonely hearts living decades in longing to one day collide and forever be shaped and reshaped and united in an invisible poetry of emotions, magnetized and inseparable.

But Ball does not stop there. He goes on to consider the invisible forces of God and Economy.

“There was nothing particularly heterodox in this vision of God acting through a beneficent, invisible force,” Ball explains about Isaac Newton’s attempt to fully conceptualize gravity as a power or ether in the cosmos presented “in a frame of nature by the will of God” which could reveal “divine action in the world” (p 29).

Ball continues, “It was a commonplace of seventeenth-century theology that God exercised providential and active control over events on earth. That was the true provenance of Adam Smith’s famous Invisible Hand that purportedly maintains economic stability: as historian Peter Harrison has said, ‘almost certainly, when

readers encountered the phrase in Smith, they would have understood it as referring to God's unseen agency in political economy'—whether Smith intended it or not. Humans, like planets, were deemed to be led by God's invisible hand to accomplish His ends" (p 29).

And Ball addresses how aspects of neoliberalism could be dated back to such religious beliefs in an "invisible hand":

"It seems appropriate," argues Ball, "that the neoliberal conviction in the ability of the unchecked market to bring about economic stability turns out to have its roots in an expression of religious faith" (p 29).

Ball even further challenges Friedrich Nietzsche's famous motto "Gott is tott" and Karl Barth who strongly ascertained that "there are no such things as ghosts" (p 62-63).

Ball writes, "We can see, then, that Barth was wrong. It is not the idea of a Holy Ghost that has suffered in recent times, but that of God the Father—too embodied an entity to appeal to any but the most literalist of believers. God has now Himself become the Spirit: disembodied, omnipresent, a life force and a process congruent with a contemporary view of the 'sacredness of the earth'. Those Baroque images of a radiant greybeard among the clouds now seem quaint if not absurd. God is not dead, he has just become invisible" (p 64).

An invisible God; what do you think about that?

But this is as religious as Ball gets in his collection of essays totaling 282 pages, but his writing at times soars off the page and leaves one breathless with the depth of scientific research and the lyrical resonance which leaves the reader haunted by ghostly images of its own. As in the following passage I shall end with:

"As we will see," writes Ball, "work on cathode rays soon led to the discovery of X-rays and radioactivity. Because he used phosphors to reveal them, [Sir William] Crookes [1832-1919] befriended the French expert on phosphorescence Alexandre-Edmond Becquerel, whose son Henri discovered the 'uranic rays' emanating from uranium that the Curies christened radioactivity. These rays heralded a century of new extremes of light and dark, brighter than a thousand suns and stygian as the world's end."

"Half a century later and on the other side of the world," Ball explains, "they were destined to cast shadows burnt onto municipal stonework like the imprints on photographic plates, while the people whose shapes they recorded had, like their city, vanished" (p 115).

Invisible (2014) will make the reader question the attempts science makes to harness and manipulate invisible forces, which as Plato warned in the beginning, leads to far more devastating moral defects; but at the same time Ball remains objective and provides a glimpse of hope in how humanity can evolve and better equip itself with the patient control and harmony to become unified with these unseen forces—whether magical, spiritual, or scientific—and to use such knowledge wisely, rather than like magic books of old that "acquired the same talismanic function as a great deal of the academic literature today: to be read, learnt, cited, but never used" (p 27).

I wish, I pray, I hypothesize that readers will not dive into Ball's invisible world as if it were a part of the black hole of academic writing, but rather consider the knowledge within as a chance to see the unseen in a new way.

Keep reading and smiling...

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## **Sagi says**

Holy moly. It took me a while to get through that book, but it's good. It goes through invisibility's role in culture from phantasmagoria & magician's tricks, talismans & potions, animal & military camouflage, ghosts, hallucinations & hypnotic manipulations, bending light or camera projections or other physics/technology things of the modern world... I wish they would have spent more time on hallucinations & hypnosis, but the rest was really very thorough. A little dense, but by no means difficult to read or comprehend (until the end chapters on current research). I learned some stuff & thought about some things in new ways. Good times!

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## **Paul says**

The ability to become invisible has been a fascination of the human race for millennia. But what would you do if you could vanish from sight? Would you use your new found power or abuse it? In this book, Philip Ball has mixed science and history to reveal this subject. Starting with the myths and legends of Plato, before moving through the occult fascination of the dark and middle ages, and ends up with the Victorians and their captivation with ghosts, fairies, magic and auras.

Following the historical part, Ball moves onto the modern ages with several interesting chapters on the advent of radio transmissions, on radiation and X-rays, the discovery of bacteria and viruses following the invention of the microscope. There is a chapter on the evolution of military camouflage, from the bright reds and blues of the army, and how they ended up with the drab khaki colours for armies. The naval part is quite good, with photos on some of the mad ideas that they had to hide boats and ships from the enemy. The stealth aircraft these days manage to look like something the size of a golf ball on a radar screen, quite amazing given their size.

Overall it is a good book. I felt that he spent a little too long on the historical detail, and I would have preferred much more on the modern technologies that scientists and engineers are using to make people and object disappear from sight. Worth reading though, as all Philip Ball's book are.

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## **Akin says**

Enjoyable. One thing I wish this book had covered (not least because Ball is a wonderfully lucid writer, with flashes of very dry humour) is the issue of being rendered invisible – a passive actor in another's world, so to speak – as opposed to being the protagonist, and trying to figure out how to make oneself invisible. Polly Toynbee worked as a chambermaid once, and was quite shocked (iirc) to discover that people who knew her IRL swept right past her.

(This may be someone else. Too lazy to check. But I think it is her.)

It goes beyond the service industry, of course. I'm convinced that a good proportion of social tensions can be put down to people being rendered invisible, and the (often) transgressive means they resort to to make their

presence in the social sphere felt.

AS I said, though, and with regret, this is probably beyond the remit of this particular book. But Ball seems a sound enough fellow to take it on.

All this aside, this book – a social, scientific and empirical consideration of man's attempts to become invisible (usually for sex or money, as the author helpfully points out) – is well worth reading.

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