

HUMANITIES INSTITUTE
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Kepler (1981)

John Banville

OVERVIEW

Kepler is a carefully crafted and reimagined account of the life of one of the greatest scientists and mathematicians to have ever lived. Set mainly in Prague, the novel beautifully retells the life and times of Johannes Kepler, a German scientist, cosmologist, mathematician and astrologist who lived from 1571 to 1630. Kepler also served as court mathematician to the Holy Roman Emperor Rudolf II. Kepler is most famous for publishing the first defence of the Copernican system and for detailing for the first time the nature of the elliptical orbits of the planets in our solar system. The novel recreates late sixteenth-century and early seventeenth-century Germany and Prague, complete with these societies' susceptibility to plague and disease (two of Kepler's children die in the novel) and their post-Reformation religious disputes. The novel begins with Kepler having to leave Graz in Germany for Prague for religious reasons as he has received an invitation to work for the famous Danish mathematician Tycho Brahe. It then details the trials and tribulations of Kepler's life and the personal and political contexts for the publication of his great works, *Mysterium Cosmographicum*, *Astronomia Nova*, *Harmonice Mundi* and *Somnium*.

LITERARY/HISTORICAL NOTES

John Banville gives us a brilliantly reimagined life of Kepler and his times even though Banville had never visited Prague by the time he came to write the novel. The post-Reformation world that Banville recreates for his protagonist and his family is vivid and highly believable. Banville researched all the biographies of Kepler and many of the books that Kepler himself would have been familiar with. The biographical details and family histories of Kepler and his wife Barbara Müller are also explored in the novel. Banville did try to adapt the novel as a film, and he planned to cast Ben Kingsley as Kepler, but in the end the project was never finished.

MAIN CHARACTERS

Kepler	Johannes Kepler, the famous astronomer, scientist and mathematician
Tycho Brahe	The famous Danish cosmologist and scientist with whom Kepler works with.
Barbara	Kepler's wife, twice a widow by the age of 22, when she marries Kepler.
Jobst Müller	The father of Barbara, who is reluctant to let his daughter marry Kepler
Regina	The daughter of Barbara from a previous marriage
Michael Mastlin	Kepler's teacher when he was a student at the University of Tübingen
Emperor Rudolph	King of Bohemia and Holy Roman Emperor
Hoffman	A nobleman in the Kingdom of Bohemia.
General Wallenstein	A general at the court of Frederick.
Kepler's mother	A herbalist and local healer, she ends up being tried as a witch.

PLOT

Religious Conflict with the in-laws In one of the frequent flashbacks in the novel, Kepler remembers his student days in Tübingen and his courting of Barbara Müller. It was something of an arranged marriage. Barbara Müller is independently wealthy and she expects to live a good life. Kepler's inability to secure regular work leads to strains in their relationship. At one time, his father-in-law, Jobst Müller, came to stay with them but had never been happy to have his daughter marry Kepler. He was only ever interested in the accumulation of wealth and he knew Kepler would struggle to hold down a job. Kepler was more of a Calvinist than anything else. However, Jobst had already converted to Catholicism and the religious conflict plagued their relationship. Jobst also felt that his son-in-law was arrogant and refused to toe the line. When Jobst learns that Kepler's salary at the school has been reduced to 175 florins a year (not even a month), he flies into a rage. The ensuing argument all but severs any remaining ties between Kepler and his father-in-law.

Unhappiness in Graz Kepler had been working as a teacher in a school in Graz. He had been teaching mathematics and even astronomy in the school but the noble parents of the children began to complain about his teaching style. The inspectors of the school also expected that the boys be

regularly flogged and they had a strong regard for discipline. However, most of the students could not follow Kepler's lessons and complaints about Kepler were made to the inspectors, who were constantly be called in to observe his teaching. When Kepler was summoned to a meeting with the Rector of the school, he had to admit that he was not a good teacher. He tells the Rector that his mind is too preoccupied with his own research in astronomy. The Rector tells him that even though he teaches astronomy well, the inspectors do not think astronomy is a suitable subject for the students of the school. As a solution, the Rector advises that the inspectors have suggested that Kepler teach arithmetic and Latin rhetoric in the Upper School. Now, everyone knows that the students of the Upper School are simply there to go hunting, play sports and also prepare themselves for married life. They have no interest whatsoever in philosophy, science and mathematics.

Move to Bohemia Kepler realises that he would never be happy in such a position. The Inspectors would expect him to flog the students daily and on the one occasion he had tried to flog a student, he hadn't been able to go through with it. Kepler also realises that it would be impossible for him to continue his research in astronomy while working in such a school. He therefore makes the desperate decision to uproot his family from Graz and take them to the court of Tycho Brahe, who lives in an old castle in the countryside of Bohemia. He arrives at Brahe's court, having had to travel all the way from Graz in Austria with his wife and young family. It was a long, arduous journey over rough terrain in a carriage and his family are exhausted and desperate.

Conflict with colleague, Tycho Brahe Brahe is a mathematician whose best work is behind him and has spent years making notes about the orbits of the planets. He is impressed by the young Kepler, but he is also proud. He doesn't like Kepler's arrogant attitude and is going to make Kepler beg for his assistance. Baron Hoffman steps in to help negotiate an agreement between Kepler and Brahe. But Kepler is furious and Brahe is unwilling to give in. Hoffmann accepts Kepler and his family at his home in Prague as they await the response from Brahe.

Terms and conditions Kepler reminds Hoffman that all he wants is access to some of Brahe's papers and also a regular salary. He also asks for Brahe to appeal to the emperor so that his Graz salary can be continued for the work he is doing with Brahe. Hoffman tells Kepler that he can stay on and work with Brahe. However, there is one condition: Kepler must make a written apology to Brahe and also make a declaration of secrecy. Brahe is very possessive of his years of astronomical data and does not want them shared with anyone.

Insults and death As Kepler explains his case to Hoffmann, it emerges that he has insulted Brahe's feelings by telling him that his cosmological system has flaws: Brahe puts the earth at the centre of the world but makes the other five planets circle the sun. Kepler believes Brahe is jealous of him and his understanding of the cosmos. One morning, after Brahe has been out all night drinking, he calls Kepler to him to tell him he is ill. Kepler does not take it seriously. Brahe says to him: "Remember me. Do not let me seem to have lived in vain" and he repeats these same words to Kepler a week later on his deathbed.

Royal Support for Scientists

Emperor Rudolph Kepler meets Rudolph, who is known to be a bit of a recluse and has little time for the business of State, but he is interested in Kepler's astronomical ideas. Rudolph agrees to have Kepler work on the *Tabulae Rudolphinae* with Brahe. These tables will bring together all the current knowledge on the cosmos in one set of tables.

Emperor Ferdinand Emperor Ferdinand Ferdinand of Styria, a Catholic who was famous for persecuting Lutherans, takes up the throne of Bohemia after Rudolph's death. Kepler realises that, once again, because of religious differences, he will not be allowed to practice in the Court. Kepler will then return to tutoring and school teaching. Later on, there is a partial settlement when the emperor offers Kepler all that he requests. He is promised a salary of 1000 florins and a house. The money owed him by the emperor will also be repaid and he will have sufficient paper to publish whatever books he desires. However, in the end, he only receives the house and a portion of the salary promised.

Witchcraft trial for Kepler's mother While he is at his family home, he notices that his mother still practices her occult medicine. Kepler also gets word that many locals in the town have begun to blame his mother for strange occurrences and even for some deaths. Kepler is worried for his mother because many women have been sentenced to death for practising witchcraft. His mother is accused of witchcraft goes on trial but escapes with a warning and a public humiliation where she is made to

face the instruments of torture brandished by the court's torturer. By decree of the Duke of Wurttemberg she is declared innocent.

Scientific Works

Discovery of Mars orbit Kepler finally accepts the terms of the agreement with Brahe, in part because he sees Brahe as a direct link with Copernicus. Brahe puts on a huge banquet to welcome him back. Kepler begins his first assignment – a task resulting from a wager Tycho's son had made with him while drunk. He promised to plot the correct path of the orbit of the planet Mars in seven days! Because he proposes the solution to Brahe around the banquet table in front of all the guests, Brahe has no option but to grant Kepler access to his notebooks. Kepler discovers that the orbit of Mars intersects the sun at a fixed angle to the orbit of the earth. After a night of drunken revelry, Kepler has an epiphany on the street as he is listening to fiddle music and watching the dancers. He realises that the principle of uniform velocity is false! However, on rechecking his results he discovers his mistakes. Plotting the correct orbit of Mars will, in the end, take him seven years!

Kepler's Third Law Kepler recalls how he imagined the eternal laws of the universe as a fabulous creature, a mythic bird, that he is hunting. He recalls how he had glimpsed this bird when he was 23 years old. It was a moment of discovery that he will never forget and keeps coming back to in order to inspire himself to continue with his work. Kepler discovers his third law of planetary motion, which states that the squares of evolution of any two planets are to each other as the cubes of their mean distances from the sun.

Historical Events

War We also learn that Emperor Rudolph is at war with the Turks and that his territory is at risk. In other letters we learn that Emperor Rudolph is an ineffective leader when it comes to warfare. In the end, control of Emperor Rudolph's territory is transferred to his brother Matthias.

Peasant revolt As Kepler is printing his *Tables*, the Lutheran peasantry revolt and lay siege to his home town of Linz. Finally, Kepler decides to move to the town of Ulm with his family. Two kinsmen of Tycho Brahe call to offer to escort him to England with them. But Kepler decides not to leave his war-torn country.

Conclusion

The final part of the novel takes place in the last year of Kepler's life, 1630, when he works on his new book, *Somnium*. He also journeys on his own in harsh winter conditions deep into Bohemia to enquire after the money owed from the emperor but only gets as far as Regensburg and the home of his friends. Here it ends with Kepler remembering the words: Never die, never die.

THEMES

Dedication and Perseverance One of the main themes of the novel is dedication and perseverance in the face of challenging obstacles. Kepler's passion for scientific discovery and his belief in his own vision of the movements of the planets in their orbits is inspiring. He never stops believing that he can solve the mystery of planetary orbits despite numerous personal and political struggles. In the end, he will prove that planetary orbits are elliptical and establish his three laws of planetary motion that become known as Kepler's laws. Kepler builds on the work of Copernicus and Brahe before him to prove that the motion of the planets is directly linked to the area of their orbits and to their distances from the sun. He is also not afraid of admitting his mistakes so that he can begin his calculations all over again. A number of times, for example, when he is calculating the correct orbit of the planet Mars, Kepler realises that he has been mistaken in his approach. This does not prevent him from finding the inspiration to start again with a completely new approach. His quest to find the correct orbit for the planet Mars was initially supposed to be completed in 7 days. In the end it took him about 7 years.

Religious Morality Despite being a scientist, Kepler is also a deeply religious man. He sees connections in everything and he traces these connections back to God's design for the cosmos. He believes that planetary motions influence all human endeavours, even human characters and personalities. For this reason, he is unwilling to give up on any part of his belief system. Kepler believes that all parts of the cosmological system are connected. Even when he is threatened with losing lucrative royal appointments due to his unwillingness to accept such religious doctrines as the Formula of Concord on the omnipresence of the body of Christ, he does not give in. He would sooner

travel halfway across the country to find an influential nobleman who is willing to intercede for him and his views than change his own beliefs.

The Spirit of Scientific Discovery The novel also gives us a realistic account of the sixteenth and early seventeenth centuries and the age of 'The Scientific Revolution'. The world was still reeling from the Copernican revolution, and people and religious movements were still desperately trying to come to terms with how these changes affected them and their place in the world. The novel recreates this world of change brilliantly while also demonstrating how these changes impinged on the daily lives of ordinary and extraordinary people. Kepler's mother, for example, is slow to give up on her belief in occult remedies. Due to the changes taking place in society her practises are now regarded as a form of witchcraft and she narrowly escapes with her life.

CHARACTER ANALYSIS

Kepler Kepler is a gifted and dedicated scientist, astronomer and cosmologist. He is also a visionary. He appears somewhat delusional and eccentric to those with little understanding of the value of scientific discovery. They fail to understand how something as abstract as planetary motion can shape the direction of one's entire life. However, Kepler is also a great negotiator, a spirited defender of reason and rational argument, and a pragmatist. Finally, he is a compassionate person and does all in his power to defend his mother when her life is at risk for alleged witchcraft.

Pragmatic After Kepler has received repeated letters from his daughter Regina demanding that he send her all that she is due from her mother's estate, Kepler gives a clear explanation for why his wife's estate has greatly diminished. He reminds Regina that her mother Barbara was accustomed to a certain quality of life and that this required money. He also reminds Regina that her grandfather Jobst Muller had promised Kepler 70 florins a year for her upkeep when he had married Jobst's daughter. It turns out Jobst had never paid any of this allowance. Kepler's reminds Regina that he is fully justified in deducting from the inheritance a "just and suitable recompense".

Driven Kepler is a man driven to achieve his ambitions. Nothing will prevent him from conducting his research and getting his books printed and published. A good illustration of his determination occurs towards the end of the novel, when Kepler's hopes are raised that he might finally win a regular position and salary with the new emperor. However, it all comes to nothing. Or so Kepler thinks until the day he sees some workmen with a cart trundling up to his house. They dump a printing press at his door! Despite not having the stipend, having a large family to feed, and growing older, Kepler persuades himself that he is a fortunate man. Despite all the hardships, humiliations and disappointments, Kepler decides that he will return to printing almanacs and navigational calendars for sailors and to teaching what he calls "brats" simply so that he can earn a living to support him in his research.

Vain Kepler can often appear somewhat eccentric and even arrogant to those around him. For example, when he comes to the Court of Tycho Brahe, he is unwilling to beg for a position and he is perhaps a little too demanding of the old, respected royal mathematician. Kepler refuses to relent and instead he travels with his family to the residence of Baron Hoffmann to request that he intercede on his behalf with Tycho Brahe. While speaking to the Baron and his wife, Kepler criticises the mathematical work of the great Tycho Brahe. When Hoffmann makes Kepler aware that Brahe has been a little insulted by his disrespectful treatment of him, Kepler is incredulous. His vanity had blinded him to how he might be offending others who had offered to help him. Hoffmann tells Kepler that Brahe will only accept Kepler and his family back in his home – the castle of Benatek – if he writes a written apology and a declaration secrecy.

Inspired Kepler is often described as inhabiting a kind of dream-like state when he is most inspired. Not only does he have visions, he also keeps recalling the memories of important teachers and mentors and their words about the nature of experimentation and discovery. For example, he frequently recalls the words and the advice of Baron Hoffmann, the nobleman who mediated between him and Tycho Brahe. Hoffmann advised him not to neglect the mysteriousness of the commonplace or the magic of the ordinary and it is something that Kepler has kept in mind. He likes to focus on the simplest details in nature such as the movement of a snail across the wall to remind himself of the majesty of nature and of the harmony that runs through everything in the cosmos. When he was a boy, Kepler was in awe of the movement of a small snail across a pane of glass in a window. Staring at the underside of the shell, Kepler was amazed at how the different parts of the snail worked in

harmony to produce such a fluid movement. It was a moment that inspired him to look for the harmony in objects around him, even in the cosmos itself.

Tycho Brahe Tycho Brahe is about 50 years old when Kepler comes to stay with him. He therefore has his best work behind him. Brahe was one of the most famous astronomers and mathematicians to have lived. He is responsible for plotting the exact coordinates of thousands of stars and his research also built on the work of Copernicus in helping future scientists like Kepler determine the precise nature of the orbits of the planets.

Compassionate Tycho Brahe is ultimately a compassionate man who recognises the genius of Kepler. He invites Kepler and all his family to stay with him in his home at the castle of Benatek in Bohemia even though he knows that Kepler is in a sense losing his job because he refuses to follow the religious dictates of the day. Brahe also shows his compassion when he takes Kepler to the emperor to ensure that Kepler is the one who will most likely replace him as royal mathematician.

Barbara As Kepler's wife, Barbara is the person who has been closest to him. However, Banville rarely, if ever, grants us insights into what Barbara thinks of her husband. Barbara is 22 when she marries Kepler. She has already been married twice (both previous husbands are dead). She therefore comes to the marriage with a good fortune. She also has a daughter, Regina, from her previous marriage. Barbara comes across as a supportive wife despite their lack of understanding and Kepler's impatience with her. She does also experience many hardships of her own. She has little say in who she marries and she experiences the loss of at least two of her children.

Practical Barbara has no time whatsoever for Kepler's research and his investigations. All she seems to be concerned with is raising her children and living the lifestyle she has grown accustomed to. She is therefore understandably in a state of anguish when she sees her husband moving from job to job and from house to house without any stable employment. She understands that her husband's work has brought them into the company of some important people, but she is concerned for the well-being of her family.

Money-minded Barbara is so concerned about the well-being of her family, she seeks the counsel of her father, Jobst, on occasion. When Jobst comes to stay with them, Barbara conspires with him to try and make Kepler see sense. They want to persuade him to try and get a steady job especially when the local school he works at has been shut. Jobst and his daughter essentially gang up on Kepler. Jobst and Barbara listen in disbelief as Kepler explains why he is hopeful about a new spirit of tolerance coming to the state. Barbara then reminds her father in front of Kepler that the salary they receive for his work at the school is very small. She intends to rile her father so he will make Kepler see sense. Barbara knows too that her father has failed to keep his promise of paying an allowance of 70 florins a year for Regina. The scene alerts us to the fact that the marriage of Barbara and Kepler is not so harmonious. It seems that Barbara is willing to put up with the nomadic lifestyle, but she expects her famous husband to be earning a higher salary.