

NICHOLAS HAMMOND

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## Introduction

The principles of pleasure are not firm and steadfast. They are different for everyone, and vary in each particular, with such diversity that there is no one more unlike another than themselves at different periods.

(*De l'esprit géométrique*, OC 11, 174)

Pascal is a name familiar to students and scholars in an astonishingly wide range of disciplines. Mathematicians recognise him through Pascal's Triangle or Pascal's calculating machine (which itself gave its name to a computer language). Physicists and historians of science (as well as those in technological fields) acknowledge his pioneering work on the vacuum. The word *jesuitical* owes its pejorative sense exclusively to Pascal's blistering satirical attack on the Society of Jesus in his *Provincial Letters*. Students of philosophy and theology know him through Pascal's famous Wager, which itself forms part of one of the most renowned pieces of religious apologetics, the *Pensées*. Even early forms of train-spotter (or, rather, coach-spotter) have cause to be grateful to him for helping to set up the first public transport system in Paris. It is a sobering thought that he achieved all this, having suffered from years of ill health, before the age of 39, when he died.

In our age of increasing specialisation, perhaps unsurprisingly, very few books have been able to reflect adequately the diversity of Pascal's achievements. Moreover, all too often studies of Pascal can be uncritical of his work, sometimes amounting simply to hagiographies of the man. It is hoped that this *Companion* to Pascal will go some way not only toward weaving together the many strands of his thought and influence, but also to offer a balanced view of his work.

Although each of the chapters can be read separately, various links between the chapters will enable the reader to make connections between the different areas of Pascal's output.

Pascal lived at a time of political and religious upheaval, which is reflected in much of his writing. In chapter 1 Ben Rogers examines Pascal's life within the context of seventeenth-century France, and ponders the paradox of how much and yet how little we know of Pascal the man. In order to understand more fully the influence exerted by Pascal on subsequent generations of writers, it is essential to explore those thinkers who influenced him. Many names will reappear over the course of this book, but none more so than two major writers. In chapter 2 Henry Phillips considers Montaigne (whose *Essais* Pascal knew well) and Descartes (whom Pascal met on two occasions), both of whom shaped Pascal's thought as much as he reacted against them.

Pascal's achievements in the field of mathematics are discussed in chapters 3 and 4. A. W. F. Edwards considers briefly Pascal's work on mathematics as a whole before analysing in detail Pascal's treatise on the Arithmetical Triangle (chapter 3). In the following chapter Jon Elster explores decision theory from many angles of Pascal's output, comparing Pascal's conception of human behaviour with elements of modern decision theory and focusing particularly on the Wager.

The great contribution Pascal made to scientific research forms the basis of the next two chapters. Daniel Fouke's study of Pascal's physics (chapter 5) takes into account the major part played by experimentation in his investigation of the vacuum and the statics of fluids. Given the importance of experimental evidence in Pascal's scientific thought, Desmond Clarke examines in a chapter on Pascal's philosophy of science (chapter 6) the implications of such experiments and the concept of scientific knowledge, which Pascal formulated. Jean Khalfa develops this concept in chapter 7, in his piece on Pascal's theory of knowledge, extending his analysis to Pascal's religious thought.

Pascal's spiritual writing is marked by a particular conception of grace formulated by various thinkers who named themselves 'disciples of St Augustine'. Michael Moriarty demonstrates in his chapter on grace and religious belief (chapter 8) the role played by faith in Pascal's work, explaining also the background to seventeenth-century debates on grace that so dominate his *Writings*.

on *Grace*. It is to be expected, then, that biblical texts form an essential part of Pascal's opus. In 'Pascal and holy writ' (chapter 9) David Wetsel considers how biblical exegesis in Pascal's time differs greatly from modern biblical interpretation, at the same time showing how Pascal's rendering of aspects such as biblical chronology remain key to his apologetic writing.

The *Provincial Letters* are justly celebrated for the way in which Pascal makes what might have seemed like an obscure theological debate accessible to a wider readership. In Richard Parish's piece (chapter 10), Pascal's brilliance as polemicist and parodist is convincingly brought to the fore.

The remaining chapters of this book deal primarily with the *Pensées* and a number of related shorter texts. Pascal's contribution to social and political thought is shown by Hélène Bouchilloux in chapter 11 to form a coherent part of his wider persuasive aims. In chapter 12 Pierre Force considers the role of philosophical method, a term more often associated with Descartes. He refers to the part played by what he calls 'the business of persuasion' in Pascal's writing, and it is precisely this aspect which forms the focus of my discussion in chapter 13.

The final chapter, by Antony McKenna, is devoted to the extraordinary afterlife of the *Pensées* in the seventeenth and eighteenth centuries, dominated as it was by the influential readings of the original Port-Royal edition by such prominent thinkers as Malebranche and Bayle.

In the *Pensées* Pascal often states his abhorrence for indifference: for example, in L 427/S 681 he argues that 'the immortality of the soul is something which is of such importance to us and which touches us so profoundly that we must have lost all sense to be in a state of indifference as to what it is all about'. It would be safe to conclude that the many furious debates which his mathematical, scientific, philosophical and religious thought inspired both during his lifetime and in subsequent centuries convincingly prove his success in avoiding indifference in his reader. To provoke a reaction, whether positive or negative, represents for Pascal an important step in the search for truth.

It is hoped that this volume will lead readers back to Pascal's own writing, always so rich and provocative. As he would say, 'Vous êtes embarqué [You have embarked]'.

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BEN ROGERS

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# 1 Pascal's life and times

We know little about Pascal. We also know a great deal about Pascal. We know little in the sense that Pascal never wrote about himself or his life in any detail, while contemporaries who did write about him offered something close to hagiography.<sup>1</sup> We know a great deal about him in the sense that his writings on science and human nature, society and salvation, tell us much about his view of the world and the developments of his day. We know or can confidently infer, to take a few random examples, how he perceived birth and death, royalty and papacy, Epictetus and Descartes, hare coursing and theatre-going, the execution of Charles I and the Peace of the Pyrenees.<sup>2</sup> Indeed, to the extent that his perceptions were always fresh and insightful – and that taken together they offer an almost unfathomably original and subtle philosophical vision – it is easy to feel that we know him intimately.

## CHILDHOOD

France of the 1620s and 1630s, the France in which Pascal was raised, was one of Europe's major powers, the centre of a vibrant movement of Catholic renewal and of an increasingly educated and refined ruling class. But it was also a place of seething conflict and chronic political instability. The Wars of Religion, which very nearly led to the permanent break-up of France, had come to an end in 1594, when Henri IV took Paris, but civil war – identified by Pascal as 'the worst of evils' – remained a very real peril (L 94/S 128). Henri himself was assassinated in 1610 by a Catholic zealot who disapproved of his tolerant treatment of French Protestants ('Huguenots'), leaving the country in the hands of his 9-year-old son, Louis XIII. This brought

renewed instability. True, Louis XIII eventually secured an outstanding first minister, Cardinal Richelieu, who, during a tenure of almost two decades (1624–42), succeeded in imposing a measure of order and political continuity on France. He demolished the few remaining French Protestant strongholds, most notably La Rochelle; pursued an aggressive foreign policy that took France into the Thirty Years' War; introduced new taxes, extended old ones, and imposed, where necessary, brutal measures to extract them; and clamped down on aristocratic lawlessness. The state he left behind was stronger and more centralised than the one he had inherited. But his policies provoked widespread unrest among a hungry and over-taxed populace and a resentful, much abused aristocracy. France's Protestants – some 5 per cent of the population – while cowed, were far from reconciled to their situation. And the Catholic Church itself harboured deep, perhaps growing, divisions between a cosmopolitan, 'high church' wing, represented at the extreme by the Jesuits, founded by Loyola in 1534 and closely connected to Rome, and a more rigorous, puritanical wing that felt a special loyalty to the French Catholic Church. The Pascal family identified closely with the latter.<sup>3</sup>

Pascal's parents, Antoinette Begon and Etienne Pascal, had married in 1616, when she was around 20 and he 28. Three of their children survived infancy: a daughter, Gilberte (b. 1620), Pascal (b. 1623) and another daughter, Jacqueline (b. 1625). In 1626, however, Antoinette died – Pascal would have had only the haziest memories of her. In her absence a governess, Louise Delfault, helped bring up Pascal and the two girls, but it was their father who exercised by far the greatest influence on them.

Etienne was a prominent member of the class of lawyers and government officials, the *noblesse de robe*, who had traditionally manned the upper echelons of the French state – his father had been one of the highest ranking officials in the Auvergne under Henri III. Trained as a lawyer himself, Etienne served as a tax assessor, then a senior financial magistrate (Président à la Cour des Aides), in the small administrative centre of Clermont, now Clermont-Ferrand, Auvergne's capital and the meeting place for one of France's twelve provincial tax courts.

But Etienne was much more than a civil servant: an accomplished humanist with fluent Greek and Latin, he was also one of the leading mathematicians of his age. In 1631, five years after Antoinette's

death, he resigned from his legal duties, sold his position and moved with his family to Paris, in order to concentrate on his studies. There he became an important figure in the circle of natural philosophers gathered around the Minim friar Père Mersenne, a circle which included such leading mathematicians as Roberval, Desargues and Fermat and which maintained close links with Europe's scholarly elite, including Gassendi, Hobbes and Descartes (then resident in Holland). The Mersenne circle had already made their break with Aristotelian philosophy, which still dominated the universities, and must have viewed Rome's prosecution of Galileo, renewed in 1633, with horror.

Etienne attached great importance to schooling and, free of any official responsibilities, undertook to educate his children himself. Employing what was, even by today's standards, an exceptionally liberal or 'child-centred' approach, he favoured experimentation and discovery over rote learning. The children were encouraged to teach one another, were given household responsibilities and were involved in adult concerns and debates. Pascal showed his genius early on, producing, if his sister is to be believed, a little treatise on sound at the age of 11 and discovering Pythagoras' Theorem by himself at 12. This made him the talk of Paris. Etienne had not originally intended to introduce Pascal to mathematics, the queen of sciences, until 15 or 16, but, seeing his aptitude and enthusiasm, he began to coach him. It was not long before Pascal was contributing on equal terms to the discussions within the Mersenne circle (*La Vie de M. Pascal par Mme Périer*, OC 1, 63–6). It is interesting to note that in 1634 Pascal's father had been appointed by Richelieu to an inquiry into the claims of the astrologer Jean-Baptiste Morin, professor of Mathematics at the Collège Royal, to have discovered a way of establishing longitudes, so putting maritime navigation on to a scientific footing. The method did not prove sound (Morin refused to accept the earth's mobility), but Etienne's work on this problem seems to have stimulated Pascal, whose *Pensées* often use images of disorientation – of drifting, lost at sea – to evoke the predicament of man without God: 'Just as I do not know from where I come, so I do not know where I am going... Such is my state, full of weakness and uncertainty' (L 427/S 681).<sup>4</sup>

Whatever credit Pascal's father gained for his work on this inquiry was jeopardised a year later. Having sold his Clermont presidency

in 1634, Etienne had invested heavily in government bonds. When in 1638 the French state, its finances stretched to breaking point by its entry into the Thirty Years' War, defaulted on these, Etienne took a leading part in the protests. Threatened with the Bastille, he fled to the Auvergne, where he would have had to remain in disgrace had it not been for Jacqueline. Educated, like Pascal, into an appreciation of good writing, she had developed into a talented poet and actress – Blaise was not the only Pascal talked about in the *salons*. After appearing in 1639 in a private performance laid on for Richelieu, she introduced herself to the cardinal, charmed him and made representation on behalf of her father, who was forgiven. The episode reminds us that the Pascals were connected not just to Paris's leading scientific circles, but also to its social ones – Jacqueline, at least, was a not infrequent visitor to the royal court. But it also reminds us that even a good loyalist like Etienne could find himself on the wrong side of the state. Pascal's life would illustrate the point again and again.

## ROUEN

Richelieu, in fact, did more than forgive Etienne. No sooner had he returned to Paris than the cardinal gave him the post of chief tax officer to Rouen, Normandy's capital city, then in the throes of violent unrest provoked by bad harvests, high taxes and an outbreak of the plague. It was a position of great responsibility and Etienne appears to have executed his duties diligently, refusing to enrich himself at the tax-payer's expense. The three Pascal children, who were extremely close to their father, accompanied him to Rouen, where Pascal spent the early years of his adult life. This was the third place in which the young Blaise lived, and it is tempting to suggest that each added a layer to his imagination. If the *Pensées'* frequent evocations of vertiginous drops and dangerous abysses can be traced to the steep hills and volcanic peaks of Pascal's native Auvergne, and that work's many images of urban life to Paris, then perhaps Rouen, an important trading centre on the Seine, represents another source for his recurrent resort to watery and maritime metaphors. Perhaps it was a source, too, for some of Pascal's more graphic evocations of violence; though the worst of the unrest was put down before Blaise's arrival, its embers occasionally burst into flame.

Notwithstanding the presence of Pierre Corneille, whom the Pascals befriended, intellectual life was necessarily more constricted in Rouen than it was in Paris. It was here, however, that Pascal began to establish an international reputation as a mathematician and experimenter. In 1639 Mersenne had written to Descartes telling him about work that Etienne's young son was doing on conic sections. In 1640 he published a short treatise on projective geometry, *Essai pour les coniques*. In 1642 he produced a plan for a calculating machine capable of adding, subtracting, dividing and multiplying sums up to six figures long. Pascal was heavily involved in his father's tax work; the *machine d'arithmétique* was invented, he explained, to help with the tedious calculations it involved, though he also hoped that it could be of help to the public more generally (*Lettre Dédicatoire*, OC I, 331). Over the next few years Pascal worked with an anonymous local craftsman to produce over fifty models of different construction and made from different materials, before arriving at the efficient and hard-wearing model he patented (OC I, 340). The device was costly and Pascal's efforts to market it met with little success, but at least six survive, most of which are in good working order. They provide lasting physical testimony to Pascal's skill as a mathematician and an engineer.

Soon after putting the finishing touches to his adding machine, Pascal heard of the controversy caused by experiments conducted by the Florentine, Torricelli, a disciple of Galileo. When a tube filled with mercury was turned upside down in a basin of the same substance, an apparently empty space appeared at the end of the tube. What was in it? More modern-minded scientists, including Torricelli, contended that space was indeed empty, but orthodox scholastic thinkers taught, as a mainstay of scholastic science, to believe that 'nature abhors a vacuum', disagreed. With the aid of his father and a family friend, Pierre Petit, Richelieu's chief military and naval engineer, Pascal decided to repeat these experiments for himself. This marked the beginning of a series of extraordinarily elaborate and rigorous investigations stretching over four years, by which Pascal attempted to discredit, for once and for all, the scholastic doctrine, while also establishing the fact of atmospheric pressure. Pascal, who advocated the still novel view that scientific disputes should be resolved by appeal to the senses and reason rather than to ancient authority, made a point of involving neutral observers in his



experiments, and reporting his findings in as clear and objective a manner as possible.<sup>5</sup> This helped make his arguments all the more conclusive.

The controversy provoked by these experiments brought Pascal for the first time into open conflict with the Jesuits in the person of Père Noel, rector of the Jesuit Collège de Clermont in Paris and a dedicated upholder of scientific tradition. The two men exchanged a series of letters, Pascal treating the holy father's argument for 'a refined air' that entered the test tube through 'tiny pores' in the glass with an exaggerated respect bordering on mockery, and the Jesuit in turn, twisting and turning in an attempt to find answers to Pascal's objections. By this stage, however, Pascal had other reasons for quarrelling with the Society of Jesus.

When, early in 1646, Etienne Pascal had fallen and broken a leg, two local gentlemen who were expert bone-setters, the Deschamps brothers, moved in to take care of him. These two men turned out to be disciples of Jean Duvergier de Hauranne, the abbé de Saint-Cyran, who, until his death in 1643, had been spiritual director to the nuns of Port-Royal.

There is no need here to go into the history of Port-Royal in detail. It is enough to highlight two turning points. First, in the early years of the seventeenth century, under its formidable abbess, La Mère Angélique, the ancient Cistercian convent had moved from its old premises outside Paris – Port-Royal des Champs – to a large site within the city, gaining a reputation for rigour and extreme devotion in the process. (From 1648 they occupied both sites.) Second, in the course of the 1630s and early 1640s, under Saint-Cyran's direction, Port-Royal had ceased to be merely a convent and had become a centre of the French Augustinian movement, attracting influential friends and supporters. The Princesse de Guéméné and the Marquise de Sablé, for instance, both leading society figures, took lodgings there. At the same time, a number of young, high-born male *solitaires* gathered first around Port-Royal de Paris and then in some buildings adjacent to the old Port-Royal des Champs, where they passed their time in penance, in worship and (much more unconventionally) in manual labour. The Augustinians of Port-Royal defined themselves as much against the optimistic views of the Jesuits as they did against the opposite extreme of the Protestants, and in accordance with what they took to be the teachings of

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St Augustine, emphasised man's corruption and feebleness and his need to find salvation in a self-abnegating love of God. When Pascal wrote

Without Christ man can only be vicious and wretched. With Christ man is free from vice and wretchedness.

In him is all our virtue and all our happiness.

Apart from him there is only vice, wretchedness, error, darkness, death, despair (L 416/S 1)

he was giving expression to characteristically Augustinian sentiments.

At first, under the leadership of Saint-Cyran, Port-Royal was known for the particularly rigorous forms of penitence and devotion it encouraged and for the good works it promoted, including, famously, the establishment of pioneering children's classes, the *petites écoles de Port-Royal*.<sup>6</sup> But, from the mid-1640s the convent became embroiled in the quarrel caused by its refusal to condemn a book, the *Augustinus*, by the Flemish theologian Jansenius, who argued that Augustine himself had taught that all human virtue was false virtue and that an individual's salvation lay entirely in the hands of God.

It would be quite wrong to suggest that the Pascal family were, even prior to the encounter with the Deschamps brothers, in any way religiously sceptical. Etienne was probably a good modern-minded Catholic, who, somewhat in the tradition of Montaigne, combined a devotion to the Bible and the ancient fathers with a strong allergy to speculative theology, especially the scholastic variant. Gilberte reported that he subscribed to the principle that 'anything that was a matter of faith, could not be a matter for reason' (OC I, 68). His children would have been instructed in the Bible, the ancient fathers and the history of the church.

The Deschamps brothers, nevertheless, had a profound effect on the Pascal family. Giving Blaise works of spiritual guidance by Saint-Cyran, Jansenius and Antoine Arnauld – Saint-Cyran's successor as leader of the Augustinian movement, a gifted theologian with close family ties to Port-Royal – they converted first him and then, through him, the rest of the family to a more demanding form of Christian devotion. Jacqueline, perhaps the most bowled over