Old habits die hard, 1901–14

Just before the First World War, it was easy for educated people to become involved with science in some way, using its technology perhaps, or gathering data for analysis by reading and talking about a particular theory. These were the ways Lankester used to inform the educated public about evolution and its consequences. For many of the younger generation, evolution raised the question of whether science could become part of their working lives. If they were attracted to science, what did they have to do to become scientists? From his place at the cutting edge of research and learning in the life sciences, Lankester came across three kinds of response to this question. These responses gave different levels of optimism about the rise of the professional scientist.

The first response was from a group of scientists and artists in their prime who enjoyed a challenge and argued for change. They were men such as Wells and Fry who were still being led by an older generation of people and institutions fixed in old ways of work and resistant to change. The old administrators at the British Museum were examples of this, men who had not been trained as scientists let alone as managers but who found themselves having to cope with the genesis of strange new scientific practices and strong-minded young specialists. It was common for these old regimes to be challenged by the reforming schemes of people such as Lankester and his contemporaries.

Of course, the reluctance to change was felt by the young men themselves, and that kind formed the second group. In families such as the Darwins, the Stephens and the Stracheys, a topic for conversation at their dinner tables was whether science would be something to consider as a career. Few of these men – for they were mostly men – wanted
to break out of the familiar mould made for them by family and society; those who did want to go their own way did not know how. Moreover, professional scientists of this second group were not paid well. Quietly, they did the routine hard work in the back room.

The third and most adaptable group was made up of ambitious outsiders. These were people who found ways to live free from earlier historical customs and to whom science presented no such problems. They had fallen in love with science at an early age, often helped by their parents to learn basic science, and they saw it as an escape from working-class drudgery. In Bloomsbury there were rising stars like Arthur Tansley and Marie Stopes whose families had little money but gave plenty of inspiration and encouragement. They all had inventiveness and plans to implement their new ideas, though their strategies were unclear and some of them met unexpected difficulties and opposition. Most of the pioneers in my story were this kind of person.

Lankester had never found it easy to take orders. It was unsurprising, therefore, that when he served as director of the British Museum (Natural History) from 1898 to 1907, he clashed with the conservative and still-powerful trustees. Lankester and the trustees had many disagreements, including one in particular about the domination of one social class over another. As we shall see, Lankester won some of the battles but lost the war. Significantly, he was a low-salaried employee with no family status or capital. In contrast, the three senior trustees were the Archbishop of Canterbury, the Speaker of the House of Commons and the Lord Chancellor.

In 1898, Sir Edward Maunde Thompson, a distinguished palaeographer, became secretary to the trustees. Thompson planned to govern the whole of the British Museum, despite the move of all the natural-history specimens to the new building in South Kensington. The new building was still called the British Museum (Natural History), and control of the staff remained with Thompson, despite 129 signatures from fellows of the Royal Society supporting Lankester’s appointment as director and the museum’s autonomy. The archbishop was reluctant to support Lankester and told him so. ‘I hear you are a very quarrelsome man’, he said. However, after pressure from the science lobby, he withdrew his objections, and the trustees offered Lankester the job.

At the British Museum in Bloomsbury, changing management styles revealed some cases of corruption that had grown out of old Victorian practices. Lankester found himself to be a victim of this corruption. He knew that the old gentlemen administrators were serious barriers to progress and throughout his eight years as director he was involved in many principled battles with these authorities.
Lankester believed deeply that the role of the museum was to obtain new knowledge of natural history through research. He wanted this research to be of high quality and to be aided by young research assistants. He respected research immensely and wanted to invest more in it than in people. This meant that scholarships were to be awarded to projects rather than people, as was common in Germany, where investment in knowledge was much higher than in any other country in Europe.

An example of Lankester’s struggle with authority is the conflict that took place over the museum’s insect collection. One of the trustees was an amateur entomologist and offered to sell his fine butterfly collection to the museum. There was a strong argument that such favours could prejudice the integrity of collections at the museum. Curators preferred to select the specimens themselves and the museum collections were supposed to reflect the evolution of the whole animal and plant kingdom not just the species that were the most attractive. In evolution, slugs are as important as ostriches. When Lankester refused to buy the butterfly collection, a huge row erupted at the next trustees’ meeting.

After a formal enquiry into affairs such as this, the trustees decided that Lankester was neglecting the administration of the museum to pursue his own research. Once again, this was a clash of principle: the trustees wanted efficient and stable management, whereas the director wanted to educate all visitors in the wonders of evolution by natural selection. The trustees were less interested in the improvement of the exhibits or their increased popularity with the public. For example, they did not care about the gift of the giant Diplodocus from Andrew Carnegie despite the fact that dinosaurs were popular exhibits and new acquisitions attracted record visitors to the museum. On 12 November 1902, Punch magazine carried a cartoon of the Diplodocus saying to Lankester in an American accent, ‘Wal! If he ain’t a daisy!! Quite’n interesting specimen of the British professor! Carnegie’ll just have to send a cast o’ him over to the States right away.’

Another of Lankester’s projects was an attempt to designate parts of Africa as national parkland. The aim was to protect large mammals from hunting and to search for new species. Several new mammals were discovered inside reserves, such as the mountain gorilla and the pygmy chimpanzee, but the most popular was a new species of okapi that Lankester described in 1901 and announced at the museum to great public interest. His Okapi johnstoni was a close relative of an extinct giraffe, with curious outer teeth. They had a chisel-like crown with a deep vertical slit and were on the lower jaw beside the eight front teeth. At
the time of their first display at the museum, the Barnum & Bailey circus was in town, and Lankester asked some of the performers from Africa to come and look at the exhibits. They cried with surprise when they recognised the familiar giraffe-like creatures: ‘Okapi! Okapi!’ *Punch* published another cartoon showing Lankester riding on the creature’s back: ‘A ray of light on darkest Africa.’

This popularisation of science did not go down well with the conservative trustees. They had now been clashing with Lankester for more than five years, and there was no sign of Lankester giving way. It is doubtful whether the differences between the trustees and Lankester were just about the balance of management and science, for the personalities of the trustees’ secretary, Maunde Thompson, and Lankester were very different; the former organised and introspective, the latter spontaneous and open. It is likely there was a deeper cause to the arguments: social class.

In 1906, the year of his presidency of the British Association for the Advancement of Science, Lankester’s problems with the museum trustees got worse. New regulations had brought forward his retirement, and he was offered a pension of £300 a year; a derisory sum. In characteristic style, Lankester wrote a long account of his problems with the trustees in *The Times*, where an editorial strongly supported his case. The Archbishop of Canterbury became involved, as did the prime minister. The king, on advice of the prime minister, gave Lankester a knighthood. Yet, still the trustees held their ground and, in 1907, Lankester resigned from the museum. Some have said that the incident of his arrest in Piccadilly eleven years earlier had stained Lankester’s character beyond redemption. In defence of the trustees, the archbishop wrote to Lankester saying that he knew nothing of a conspiracy: ‘I certainly have never heard of the calumnies which you think must have been somewhere astir to the discredit of your personal character. They have not reached my ears.’

Lankester responded to all the setbacks and delays by searching with even greater tenacity for evidence for the mechanisms of evolution. Realising that there was a lot of public interest in human evolution, he set about writing another popular book called *The Kingdom of Man* in which he suggested that humans emerged during Pliocene or Miocene times, around 10 million years ago, with the mental ability to make tools from material like the flint stones of the Sussex chalk.

Although the class of gentlemen scientists was slowly disappearing, Sir Edward Maunde Thompson’s victory in the battle with Lankester showed the upper middle class were not done for yet. Another gentleman
amateur scientist, Sir Arthur Conan Doyle, was said to have noted a femur and some other bones in a pit at Piltdown in Sussex before 1908. Doyle was a doctor and was always pleased to share his walks with his neighbour Charles Dawson, a local lawyer interested in collecting fossils. Together they visited one of the nearby quarries from which dinosaur bones were occasionally being unearthed. Dawson often found well-preserved specimens and intended to present the best specimens to the keeper of geology at the Natural History Museum, Arthur Woodward. In 1906, another neighbour, Cecil Wray, returned from Borneo with a collection of primate jaws and skulls, including some from the orangutan. Wray joined with Doyle and Dawson in neighbourly talks and expeditions to the quarries.

Doyle, Dawson and Wray were well known and highly respected, but did they have a say about how their discoveries were to be studied and analysed? Or did their finds just disappear into the laboratories of the salaried professional scientists? Lankester, meanwhile, got on with publicising this academic work. There was outstanding interest in the fossils from Piltdown. Some people used them to claim the site of human origin in Britain. If such a thing could be proved, it would be a triumph for nationalists, some of whom thought it would give greater legitimacy to King Edward and the Empire. In any case, Britain could finally match other European records of early human remains. In 1907, German palaeontologists had described *H. heidelbergensis* from Mauer then from Steinheim an der Murr, and the same species was found in France, Italy and Greece. A year later, in France, Professor Boule re-examined Neanderthal man and reclaimed its important place in human evolution.

Lankester was excited. For him, the nationalist argument didn’t matter. The project itself was a good thing for science. He remarked that, in the past 2,000 years, learned men of Europe had debated whether this or that place was the site of ancient Troy, or whether there was ever such a place at all. He thought it was enough to inspire hope and belief in experiment.

Ray Lankester and H. G. Wells became close friends after they met socially in the Majolica Restaurant in South Kensington. Now, nine years later, they were members of the same club and often talked into the small hours of the morning about ‘settling the affairs of heaven and earth’. Wells was Lankester’s guest at the annual dinner of the Royal Society, and Lankester was invited as Wells’s guest to the Omar Khayyam Club at Frascati’s. In 1911, Wells visited the Natural History Museum and Lankester went to the Wells’s home in Essex for weekends. This was when
Wells wrote his novel *Marriage* with its description of Lankester as one of the characters, Sir Roderick Dover.

Marriage continued to elude Lankester. In 1912, he had become friendly with the ballerina Anna Pavlova, whom he admired for the self-discipline and control she imposed on her own daily routine and on her relationships with others. Lankester must have worried about whether he could force himself into such a regime. He used to visit her at home in Hampstead, and he encouraged her to take on several roles for the London ballet seasons, but in 1914 she had to return to Russia. At the farewell dinner given in her honour by the Sadler’s Wells company, Lankester gave the principal tribute: ‘She dances as only a supreme artist can, the creative thought and conception of a mind of the rarest beauty and of the highest poetic quality.’ Pavlova turned and gave him a big hug in front of the whole assembly and was forever fond of her ageing professor. So much had slipped through Lankester’s fingers: the search for agents of heredity, the British Museum, and now Anna Pavlova. At least he kept his scientific integrity.

Pleased to be free from institutional interference, Lankester satisfied his yearning to teach science through his weekly ‘Easy Chair’ column in the *Daily Telegraph*. The articles became an important part of the newspaper. They were lucid and free of jargon, and they always respected the reader’s intelligence. Unlike so much other writing about science, they did not talk down to the readers. Like his lectures, they were both informative and entertaining. They had many clever drawings mixed with a sense of marvel about the beauty of nature and the ability of science to assuage our fears of the unknown.

The social mix of English society was changing, and the new scientists did not fit easily into any of the new structures. For example, many people felt the need for a very different attitude to deal with the challenges of the ethical gaps that evolutionary biology and technology had left unfilled. Was science and scientific development part of this daily need for guidance and do the conversations at the scientists’ dinner tables rehearse some responses? What do the scientists say about the origin of life and the value of altruism? How do we treat our neighbours? Although Bloomsbury was atypical, with its freethinking network of intellectuals and artists, it did have an unusual responsibility to at least attempt to answer these questions.

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In the spring of 1904, Sir Leslie Stephen died. Only a few weeks later, his four children, along with two of their servants from the old house
in Kensington, moved into one of the houses on the east side of Gordon Square. The house served as a kind of laboratory for their own experiments into the future. They had much to look forward to, much to talk about and try out for themselves; they had the confidence and the money to do what they wished. Despite its leafy squares and Georgian terraces, Bloomsbury was not fashionable because its three big railway stations made the streets dirty and the cheap hotels attracted lonely souls. This, mixed with the university and the British Museum, gave the area a strong bohemian character, well suited to the Stephens’s new mission.

The four orphans were excited by what their home had to offer. The house had six storeys, a kitchen and scullery in the basement and servants’ rooms in the attic. The four siblings each had their own bedrooms. The reception room on the first floor was where their guests were entertained. The extra space gave them room to think.

The eldest of the Stephen children was Thoby. He had just left Cambridge to read for the Bar, though all he really wanted was to see more of his college friends. His sisters Vanessa and Virginia were in their early twenties, and their young brother Adrian just twenty-one when they moved into Gordon Square. Thursday evening was visiting time at the house. These occasions soon established themselves as major social and intellectual events in the Stephens’s lives and those of many of their friends. It was ‘at home’ in the Stephen house that Leonard Woolf, John Maynard Keynes, Gwen Darwin, Bertrand Russell and Roger Fry met their London counterparts, the Stephens and the Stracheys. Ray Lankester, Arthur Tansley and Marie Stopes, however, were outside this group and were never invited to join in the parties or other insider meetings at Gordon Square. Although many of their interests and responsibilities overlapped and did bring them together, the Cambridge men and their women friends were separate from those based around UCL and the British Museum. Their art and science interacted in many ways at many times, but something else encouraged them to be separate. One group was inside the high London culture; the other remained outside.

Instead of family portraits hanging on the drawing-room wall there was a big painting by Augustus John. Virginia would ‘talk egotistically and excitedly’ about her own affairs, proving to herself and her friends that nothing was taboo. Scientific talk about the biology of reproduction had made the subject of sex acceptable. On one infamous occasion, the door opened suddenly, and the long and sinister figure of Lytton Strachey
stood on the threshold. He pointed a finger at a stain on Vanessa’s white dress.

‘Semen?’ he said. Can one really say it? I thought & we burst out laughing. With that one word all barriers of reticence and reserve went down. A flood of the sacred fluid seemed to overwhelm us. Sex permeated our conversation. The word bugger was never far from our lips. We discussed copulation with the same excitement and openness that we had discussed the nature of good. It is strange to think how reticent, how reserved we had been for so long.  

True or not, the incident demonstrates a growth out of immaturity among these young men and women, as well as their excitement about breaking taboos. They were beginning to understand that being independent and responsible involved managing their own lives, deciding for themselves how they were going to relate to one another and how they were going to be seen by other people. This realisation had an impact on most of those in the group. Virginia began to write fictional expressions of what she felt about her fellow travellers, and of her own isolation. This became the basis of her first novel *The Voyage Out*, completed in 1913.
Lytton Strachey was one of Virginia’s closest friends. He was also struggling to find a direction for his life and was coming to understand the power of the Victorian conventions with which they were raised: “There are three classes of human being, the rich, the poor and the intelligent. When the poor are serious, they are religious. When the intelligent are serious they are artists, but the rich are never serious at all.” Perhaps, here, Lytton was thinking aloud about which group he fitted into himself. He realised that, despite parental pressure, many of his friends were not going to do the work necessary to join the new professions of science and technology; and he was right, their wealth made serious work unnecessary.

Most of this group were members of the Cambridge Apostles. As such, not only did they expect to behave and live honestly but some had brashly revealed their own feelings about human sexuality. Their eagerness to pursue these instinctual feelings was further encouraged by their conversations about the medical sexologist Havelock Ellis and their speculations about unconscious feelings on sexuality recognised by Freud. Oscar Wilde’s trial and subsequent death had shocked many young gay men and reminded them about the dangers and public scandal of breaking the law. Those who had moved into Gordon Square knew it was best to keep their sexual adventures to themselves.

Roger Fry and Lytton Strachey were among those who asked what light the new discoveries in genetic science could shed on their sexuality. New arguments based on genetic evidence boosted their confidence in the normality of their own homosexuality. With no concrete explanations for the biology of homosexuality, however, they limited themselves to enthusing to their friends about the style and content of Charles Darwin’s books and how they took his use of scientific methods to understand the world.

Young women from the middle classes felt a different kind of restriction. Most were still expected to spend their leisure time at home. On the few occasions when they went out in the evening, they were supposed to be chaperoned, and any kind of familiar exchanges with men of the same age were unusual. No wonder different lifestyles were cherished so much at 46 Gordon Square.

All four of the Stephens and many of their friends were interested in science as well as art, though Roger Fry and David Garnett were the only ones who had received any formal scientific training in biology. Garnett had studied botany and zoology at H. G. Wells’s college in South Kensington and also went on to write novels. Some of the Strachey children had continued the interest in science that their father had tried to
nurture, but their success was hindered in two ways. First, their rebelliousness and confidence that they were different from anyone else meant that they were not going to conform to the civil-service rules that had controlled their father’s life in India, nor were they going to have anything to do with large institutions. Professional scientists usually worked in groups within institutions. They were chosen by a system of selection on merit. The Bloomsbury insiders, by contrast, were proud of their independence and of their difference from all the others. They had enough money and influence to run their own lives. Second, science did not offer them the opportunity to follow the kind of career they had grown to expect. Apart from medicine, few areas in the scientific field offered wealth or social status.

It would have been hard for any of the Stephen children to go into science, and not just because a scientific career was considered something below the elite. Science was a path for the middle classes rather than for those educated at Eton and Oxbridge. There were very few from the Eton–Oxbridge set who went into a salaried scientific career during this period. With the demise of the provincial amateur scientist, how would a passionate young entomologist, for instance, pursue their interest? Would they have been taken seriously in the academic world? Was science closing its mind to the enthusiastic gentleman and lady amateur? If Virginia, for instance, had wanted to devote her life to the study of insects, what would she have done? Where would she have studied? What careers might have been open to her? Would the same opportunities, or lack of them, have applied to her brother Thoby or to Lytton Strachey?

Lytton just stuck to reading Nature magazine every week and to thinking about history in a flexible and open way. The lack of opportunities in evolutionary biology meant that the subject was not attracting curious young people. In the past, the main profession for natural scientists, apart from teaching, was the church. To become a clergyman was out of the question for many. For aristocratic young men, there was not an easy path into the sciences as there used to be. For people such as Julian Huxley, the new institutes led to job opportunities, but Eton and Cambridge did not lead in that direction at all. Also, the force of the changes played a role in turning bright men like Fry and Strachey away from science and towards the arts.

On the other hand, having been brought up in a culture of observing and collecting insects and flowers, Virginia had developed a strong interest in natural history. One of her memories of her mother, who died when Virginia was thirteen, was of being taken to a public house in St Ives
to buy a bottle of rum. On their return home, they used the rum to attract insects and drown them in a dish in the garden. They then pinned the dead animals on trays for identification and classification and thought about how flies and wasps might be related to one another.

While she was still a child, Virginia had been appointed secretary of the Stephen Family Entomological Society, chaired by her father. In this role, she had prepared the agenda and the minutes and learnt how to summarise the confused and confusing comments of the other members. She soon realised that identifying species and observing their behaviour was difficult and controversial and argued that it was important to record the changes and set them within the context of each particular discussion. At the society meetings, she was fascinated by how people at first listened to a subject and then spoke about it. She observed this and wrote accurate minutes of the meetings.

The work inspired Virginia to study entomology and to think about the ways in which people control one another and other species. During her time alone she observed the ants and wasps in the garden, looked closely at the rhythms of their interactions, how they gathered food and defended one another. Soon she was taking time to read about the habits and taxonomy of butterflies and moths, their life cycles and eating habits. She became confident enough to challenge the content of insect books that contained descriptive detail and systems of naming and classifying. Her writing about insects was to be much like it was about people: how they moved and interacted.

The youthful Virginia’s view of insects reflected her own development as an artist and human being. She disliked how men of science objectified nature. Instead, she wrote of the insects’ ‘organs, orifices, excrement; they do, most emphatically, copulate’. She wrote of moths and sparrows from their inside, not knowing or caring where her descriptions might lead. She wondered whether it might be safer for the inexperienced new residents of Gordon Square to stay with what they knew and leave the risks of dabbling in science to others. It was advice that could have come from one of the new neighbours, Ottoline Morrell.

Ottoline was a flamboyant socialite with red hair and a big personality who brought together many Bloomsbury intellectuals, both artists and scientists, when she moved to a house in Bedford Square in 1906. Roger Fry had first met her in Paris in 1904, and she supported him through difficult times, persuading him to use his scientific expertise to give a much-needed injection of vitality to the world of art. He told her that art in France had assumed new methods that involved...
measurement and observation down to the smallest parts, looking to find the atoms.

With Ottoline’s help, Fry realised that post-impressionism was an art form that used scientific discourse to enable new forms of expression. It emphasised colour, texture and substance and encouraged experimentation with feelings. Fry could see that the excitement embodied in post-impressionist art spilled over into music, ballet and poetry, and later into the novel. This excitement, he realised, came from science. Modernist high culture – radical, ground-breaking art – was being informed by science.

Fry fell in love with Ottoline, but the sentiment was not reciprocated as she was already in love with Bertrand Russell. By 1910, the first volume of Russell and Whitehead’s *Principia Mathematica* was taking shape. That was also the year Russell was appointed as a university lecturer at Cambridge. Ottoline’s husband was Philip Morrell, a Liberal MP and one of the few who opposed the forthcoming war with Germany. Ottoline and Philip entertained a great deal at the Bedford Square house and indulged in political and sexual behaviour that was more progressive than most parts of the enlightened London society. They became close friends with the Stephen sisters and, being about ten years older, guided
the residents of 46 Gordon Square in modern living. They also introduced new friends such as D. H. Lawrence and Aldous and Julian Huxley.

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‘On or about December 10th 1910 human character changed.’ Woolf explained why in her own inimitable way: ‘In life one can see the change, if I may use a homely illustration, in the character of one’s cook. The Victorian cook lived like a Leviathan in the lower depths, formidable, silent, obscure, inscrutable; the Georgian cook is a creature of sunshine and fresh air.’ More than that she didn’t explain. Some historians have even suggested that the change was the new government in London, or even the accession of George V. It may be that the change was the opening on 8 November 1910 of Fry’s post-impressionist exhibition at the Grafton Galleries. Whatever the cause or causes, it is sensible to say that the change was an historical shift, a confluence of cultures and interests, a zeitgeist.

It could be argued that major historical events occur randomly, caused by environmental or social change. These changes are often not recognised until some time after they take place. Whatever inspired Woolf’s remark, her December 1910 event was much bigger than she could ever have realised at the time. A new middle class was emerging that savoured the tastes of highbrow and lowbrow alike. The high and the low had been mutually suspicious of the middle for generations. Now science and a little more equal opportunity were making possible stronger links between different classes, but for the Stephens and the Stracheys, the middle would always be a place of vulgarity and ostentation, a money-seeking, tasteless dystopia.

Meanwhile, another kind of split had emerged between the scientists who measured things and the others who were happy to describe them by whichever way they chose. The newly educated class tended to measure, and, as that professional group got bigger, some cautious people thought that society would not be able to accommodate so many technocrats. Vanessa Stephen, for example, warned that science was like sodomy: ‘People are simply blindly prejudiced against it because they think it abnormal.’ As if to prove the point, in February 1910 Vanessa played a part in one of the most infamous hoaxes of the times, an escapade they saw as an experiment but which attracted a lot of amusement in the popular press and caused a lot of embarrassment. She and five others, including her sister and brother, blacked up, dressed as visiting Abyssinian diplomats and got on a train to Weymouth. There, they boarded the new warship _Dreadnought_, called on the captain and asked him to show them...
around. When the hoax was discovered it set off debates challenging many of the national values that people held very dear, the tradition of Empire, race, gender roles and national security. It opened up the ever-present split between control and liberation, between the establishment and culture, modernism and dissent. The group in Gordon Square were fearlessly challenging convention.

In November of that year, Fry’s exhibition ‘Monet and the Post-Impressionists’ at the Grafton Gallery caused another stir. Although he had decided to drop science as a career, he had retained an interest and respect for its methods, especially its rigour in testing new ideas. The Cubists, who featured in the exhibition, were using new ways to record and share their observations, even to measure things like nature and human feelings. Their methods had moved on from the order and precision of photography and offered individualist styles with shocking detail. Familiar images were measured, analysed and dissected so that the bits could be reassembled to give many fresh perspectives of the originals. Unbeknown to any of these artists, at that same time, genes were showing up of the chromosomes in T. H. Morgan’s New York laboratory, also ready for measurement, analysis and dissection before reassembling themselves, bit by bit.

Fry’s exhibition asked the English middle class to replace their favourite picturesque flattery in art with a more challenging aesthetic. This was seen in some of the French impressionist pictures being shown together in London for the first time. Keynes’s response to the exhibition was to be taken over by ‘powerful and valuable springs of feeling’ because it discarded many of the Victorian traditions that he was so eager to replace. Gone was chocolate-box idealism and Bentham, ‘with his over-valuation of economic criteria’. In their place were twenty-one Cezannes, thirty-seven Gauguins and twenty Van Goghs, all of which challenged the social order.

Many of the exhibition’s critics thought it was a step too far. They couldn’t understand where it was leading. Should artists be trusted to take such journeys into the unknown and report back to the public with their own strange experiences? Such untravelled pathways were likely to be dangerous for a society already stripped of its ethics and traditions. Realism was so much safer.

Several years later, Virginia Woolf would say, ‘Let us record the atoms as they fall on the mind in the order in which they fall, let us trace the pattern, however disconnected and incoherent in appearance, which each sight or incident scores upon the consciousness.’ Science was influencing art and the novel.
Fry realised that form itself, colour and line, could be art. Indeed, form was the essence of art. Fry knew enough about biology to understand that, although nature was bounded by the morphology of animals and plants, every species and organism also needed a sense of place within its physiological, ecological and behavioural setting. With the exhibition, Fry used his scientific knowledge to show that the same anatomical structure can adapt to different functions according to changing influences such as the environment. The same idea was being explored in art as well as biology: structure was only part of a much larger world. The two approaches of art and biology were becoming part of a whole. The biology students were taught that ‘structure needs function’, a challenge to them over more than half a century. All the processes needed to be considered at once, a difficult task at the beginning of the twentieth century.

Many of the Grafton Gallery visitors were members of the upper middle class, still dependent on servants and income from invested capital. They were not prepared for the shock that the pictures transmitted. A critic wrote, ‘One great lady asked to have her name taken from the Committee. One gentleman had to be taken out and walked up and down in the fresh air for five minutes. Fine ladies went into silvery trills of artificial laughter.’ The Times was more thoughtful: ‘It professes to simplify and it throws away all that the long-developed skill of past artists had acquired and perpetuated. It begins all over again and stops where a child would stop.’ Fry was praised by those who wanted to see the world from a different perspective and criticised by those who did not. Surprised at the strong reaction to his efforts, Fry went out of his way to thank his friend Ottoline Morrell for her help in making the exhibition happen, though whether as an organiser or a muse was not clear.

By 1911, the social and sexual explorations of the wealthier Bloomsbury intellectuals had settled down. Virginia Stephen married Leonard Woolf the following year. Leonard had a maturing influence on the Gordon Square household. He helped Lytton Strachey realise that his career was to be in writing history. As a role model, Lytton took Virginia Stephen’s father rather than his own and became a writer of historical biography rather than a scientist or a colonial civil servant. By then he must have been aware that the days of the Empire were coming to an end, as were the days of the gentleman scientist. He had not been offered a university fellowship, and his flamboyant lifestyle and expensive habits meant that he could not afford to live on the salary of a professional scientist in a research institute.
Roger Fry followed the success of the post-impressionist exhibition with a second show in 1912, this time with the first London presentation of Picasso and Matisse. He cheekily included some pictures by his friend Duncan Grant. At the same time, the Russian ballet was performing in London where a grand artistic reawakening was taking place. Fry was especially pleased to be able to talk about the artists and dancers in the same way as biologists. With new techniques and materials, new ways of collecting, displaying and analysing data and feelings, both artists and biologists were beginning to support one another and make connections between their fields.

In 1912, H. G. Wells, secretly angry about the success of the art exhibitions, persuaded Fry to contribute to a volume about *Socialism and the Great State*. Authors from different specialisms set out ideas of how their work should be used and financed. Both art and science needed investment before any gain, let alone critical success, and there was much discussion about how that was to be done. Wells painted a picture of what he saw as the direction in which their society was being taken by science, moving towards his own kind of socialism, what he called ‘normal social life’. He saw this as a situation that occurs naturally, one that cannot be created under instruction. To discover new things or ideas is a special gift that is bestowed on artists and scientists alike.

Lankester and Fry would not budge from their belief in an individual’s responsibility. Wells, meanwhile, clung to his more collective socialism. The question of whether humans are organised best as individuals or in groups was taken up by Karl Pearson and Raphael Weldon. Pearson and Weldon’s work signalled the birth of behavioural genetics, which considered the question of altruism leading much later to the concept of the selfish gene. A fear then was that mass production from machines would increase materialism at an unprecedented rate. Some people were afraid that the big state machine should take over from the efficient handiwork of the individual. Was human happiness and pleasure going to be lost in a socialist world of the future?

So, while some scientists were slowly entering new and unusual areas of study, artists were being challenged to create new forms. By 1913, Fry was forty-seven years old and an experienced and talented public speaker. In a lecture at the Queen’s Hall, he argued that art was at a major crossroads. Art, like western civilisation itself, was entering a period of crisis. This was Fry’s message to the new middle class. He was excited about offering them a popular art that they could take into their homes. To do this, he advocated taking art into the commercial realm.
Convinced that the individual artist should sell his own artwork, Fry launched the Omega Workshop in Fitzroy Street in the spring of 1913. In the workshop, Fry designed and made prints, furniture and other objects. It was an exciting project that brought together artists from different backgrounds. They got on well, at first.

The idea of the workshop originated from the English Art and Craft movement. This had become an important agency in the lives of young artists in southern England because it excelled in design and printing, albeit on a small scale. The Fitzroy Street workshop involved several local artists, including Wyndham Lewis, Vanessa Bell and their friends, all of whom were confident that their work brought joy to those who bought it. When Fry was asked to explain this, he gave a very biological explanation: art brought out the human in people, what was left over once they had earned their food and warmth and had sex. As a former Apostle, Fry believed that art was the disinterested love of truth and it required honesty.

The honesty of these Omega Workshop artists was soon to be tested by an incident that exposed the different ethical and social values of the Bloomsbury group. It began in the autumn of 1913 as an apparently trivial argument over the creative rights to be gained from one of the designs at the workshop but subsequently became an important sign of deep divisions in social attitudes. The workshop had been commissioned to decorate a whole room at the Daily Mail Ideal Home Exhibition. Wyndham Lewis and his friends thought the work was for them. Fry thought it was for his other set of friends. It was a common confusion, which could have been resolved by a simple division of labour. But not so this time: ‘C'est trop fort!’ shouted Fry, slamming the door in Lewis’s face. Lewis and Spencer Gore walked out, deserting the Bloomsbury artists forever and moving up the road to Camden Town. Lewis’s group was much more socially aware than Fry’s and took commercialism very seriously, which explained the move away from the highbrow residents of Fitzroy Square.

Similar conflicts were arising in other parts of the cultural scene. Another friend of Lytton Strachey was E. M. Forster. Forster’s 1910 book Howard’s End portrayed an ambitious young office clerk, Leonard Bast, who threatened the stability of the Schlegels, two sisters and a brother. Together, they resembled the Stephen siblings. The book was written in a realist style, with lots of facts and details, something that Virginia Woolf disliked because it kept ‘life’ out of the writing. Without life, she said, nothing was worthwhile. Woolf wanted to shine a light on the dark places of psychology, character, thought, desire and memory.
A similar criticism was often made about H. G. Wells: a lack of human insight. This was not quite fair. With Boon, Wells offered a bitter satire on social convention. He called the novel his ‘age of acquiescence’, but others were outraged by its arrogance and disrespect for the previous generation and its fledgling middle-class artists, particularly its direct attack on his erstwhile friend Henry James. When the Times Literary Supplement asked him to review the book, James used the opportunity to retaliate with scorn and derision. His review ended with his public announcement that he was ending their friendship. In response, Wells boasted that, ‘I bothered him and he bothered me.’ Wells contended that James opposed materialist artistry because it had ‘so much life, so little living’. In turn, James joined Woolf in accusing Wells of not accepting art and beauty as ends in themselves.

Wells did not belong anywhere. He had left his class, both physically and in spirit, and he was now lonely and sad. He mistrusted his new acquaintances and even despised some of them. Often his feelings for his contemporaries were divided between admiration and envy, longing and scorn. Those on the other more privileged side of the fence had different reactions to intruders like Wells. Woolf felt that they were trying to seize as many opportunities as they could. Woolf accused Wells of being interested merely in:

the fabric of things who has given us a house in the hope that we may be able to deduce the human beings who lived there.

The influential critic Edmund Gosse also felt that Wells had cut loose from literature. But Gosse had done well at cutting himself loose too, in 1907 having written Father and Son, a biography of his cruel father (a marine biologist who had described several new species of sea animals).

Similar changes were taking place in the lives of some of the other Bloomsbury artists with humble backgrounds. Wyndham Lewis and Jacob Epstein set up the Rebel Arts Centre at 38 Great Ormond Street. Women played an important role in the centre, although the painters Kate Lechmere and Helen Saunders had to work hard to challenge the common association of creativity and masculinity. They campaigned for the vote and explored such topics as sexology and eugenics. Their discussions were reported by newspapers, adding to the public’s curiosity about their strange new work. The Daily Mirror published a photograph of Lewis at work with the caption: ‘With these revolutionary works it is not always possible to tell “t’other from which’’ and until
the average man can learn to penetrate their meaning he will probably pin his faith on the old schools.’ The Rebel Arts Centre was given an important lift to its morale by a young Frenchman who had come to Bloomsbury in 1911: the twenty-year-old sculptor Henri Gaudier-Brzeska. He admired the primitive statues at the British Museum and wanted to bring temporality, sexual aggression and dynamic animal competition into his art. Ancient sculpture was radical and highly expressive of the time. Ancient sculptors worked from solid lumps of hard rock, ‘direct carving’ as they called it, making virile objects that shocked and offended some tastes. Influenced by this, Gaudier produced aggressive metal objects with names such as Knuckledusters and Doorknocker. He integrated biological observations of behaviour and sexuality into sculpture in works like Duck, Cock, Stags, Bird Swallowing Fish and Torpedo Fish. A thirty-one-year-old American sculptor, Jacob Epstein, meanwhile, made a weird prediction of war in his Rock Drill. Rock Drill was an expression of what humans had become in 1911, and was inspired less by biology than by engineering. The work looked more like an early machine gun than a rock drill, curiously about four years ahead of its time.

Together with some other young French artists, Gaudier had studied biology, was strongly influenced by Henri Bergson and expressed his own energy through a confidence, even a sense of superiority. He epitomised the angry young rebel with plenty of understanding but not much feeling. There was always an inner tension between him and Epstein at the Rebel Arts Centre, on one hand, and Fry’s friends at the Fitzroy Street workshop, on the other. These artists began marketing their art objects in direct competition with one another. Lewis famously rebuked the Omega Group as a party of strayed and dissenting aesthetes.

In 1911, Henri Bergson had given a lecture in Bloomsbury about his book Creative Evolution, published earlier that year. Favouring some of the implications of Lamarck’s linear speciation, Bergson thought Darwin’s adaptation by selection evaded evidence of creativity in early humans. He advocated the idea of l’élan vital, a creative force driving evolution, an idea popular in France but little known in England. Bergson argued that life was a continuous surge of energy, made up of free spirits that underlay nature, not a set of rules leading to a fixed end. Matter was at the bottom of his list of priorities and spiritual emancipation at the top. He thought that living systems rose up this slope.

In 1912, Wyndham Lewis adapted Bergson’s ideas by fusing time and space to make images of geometric order within chaos. This was the
time of vorticism in art, where drab colours were whipped into brain-whirling orgies of confusion. In this art, time had an unseen role. Like other neo-Lamarckians, Bergson thought the origin of an organ such as the eye would not be explained by physics or chemistry but instead by psychology. That was the philosopher’s view, not attempting to analyse or test by experiments.

One of the first students of Bergson’s philosophy was Karin Costello. Costello was born in 1889 in Philadelphia, and at twenty-one she earned a first in moral sciences at Cambridge. She was encouraged to stay on in England by her uncle Bertrand Russell, and she accepted a fellowship at Newnham College. There, she studied Bergson’s philosophy, searching for patterns in the complexity of self-organised systems. She thought pattern was something that may even have been implicit in the work of Russell and his mathematics.

Costello moved into a flat in Great Ormond Street. In 1913, she was introduced to Virginia Woolf’s younger brother Adrian Stephen. They started to see more of one another and soon developed a strong intellectual rapport. They talked incessantly about Bergson’s *Creative Evolution*, particularly the idea that *l’élan vital* might be what Adrian called the ‘psychological cause’. It was a popular idea, one that helped many young people without a religious belief to give some meaning to life. Most observers saw these ideas as incompatible with Darwin’s scientific theories.

However, in August 1914, the people of Europe were overshadowed by events beyond their expectations, let alone their control. Like Karin and Adrian, so many were looking forward to a phase of intellectual breakthroughs and economic growth, using science and technology to spread more comfortable styles of living to more communities. They shared an interest in psychology, and they wanted to make a mark for themselves, something they could accomplish together away from the traditions and constraints of their families. Many ambitions such as theirs were being nurtured with a spirit of fresh optimism. In October 1914, Karen and Adrian were married and eventually became famous for their work together. But events ensured that their interest would be put to an unexpected use. Their optimism was suddenly dashed and twentieth-century world history forced a tragic course for millions of their contemporaries.