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**PROFESSORIAL  
PLATFORMS  
PROFESSOR  
ROB KESSELER**

**THE COCHRANE THEATRE  
SOUTHAMPTON ROW, LONDON WC1B 4AP  
3RD MARCH 2010**

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SCHOOL OF GRAPHIC AND INDUSTRIAL DESIGN  
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**LUSCIOUSNESS**

**FLORA AND THE CRAFTED IMAGE  
IN A DIGITAL ENVIRONMENT**

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# LUSCIOUSNESS

*“If you would draw benefit from the whole,  
You must search for the whole in the smallest part.”*

J. W. Goethe, *Sprache in Reimen*

With its seemingly endless array of colourful forms and structures, the plant world has inspired generations of artisans, artists, designers and illustrators, resulting in a spectacular wealth of images and objects that have served to inform and captivate its many audiences. Styles and forms of representation have evolved in parallel to technological advances in science and industry, from drawing to painting, in the production of utilitarian objects to ornamental extravagances and through photography into digital media, the plant world continues to provide a powerful source for creative exploration. Throughout history, attitudes to representing nature have shifted and the status of the forms of creation subject to theory and fashion. Within my own practice I too draw upon the natural world as an inspirational source, working within the liminal space between fine art, craft and design and more recently science, ignoring unhelpful hierarchies that seem to divide creative practice. This lecture is an opportunity to reflect upon the fertile botanical territory of ideas and knowledge, material and making that have shaped my work and some of the works from history that have inspired it.

At the age of eleven my father in a moment of inspired genius gave me a microscope that was to have a profound effect on my career as an artist. As an engineer I think it appealed to his sense of industrial manufacture, with its finely knurled knobs and smooth rack and pinion action, and I believe he thought it would stimulate my interest in the natural world. It was made around 1860 and sold by Charles Baker of 244 High Holborn, literally around the corner from Central Saint Martins. As a strong advocate for the fusion of art and science, I think William Lethaby, the first principal of the Central School of Arts and Crafts would have approved.

What the microscope gave me was an unprecedented view of nature, a second vision, and awareness that there

existed another world of forms, colours and patterns beyond what I could normally see. Working within another order of magnitude I have always struggled to comprehend how generations of astronomers have been able to predict what should be up in the heavens without being able to see it, but were later confirmed as a result of subsequent technological advances. Looking back now with the benefit of hindsight I like to speculate that my earlier work contained the essence of what could not be seen and anticipated what I have more recently revealed through my work using scanning electron microscopy in collaboration with botanical scientists at the Royal Botanic Gardens Kew.

The pastel drawing, *Spike and Ball*, 1982, was from an extensive series in which simple forms were placed side by side, interpretations drawn from memory, inventions of found objects. The medium was important; chalk pastels

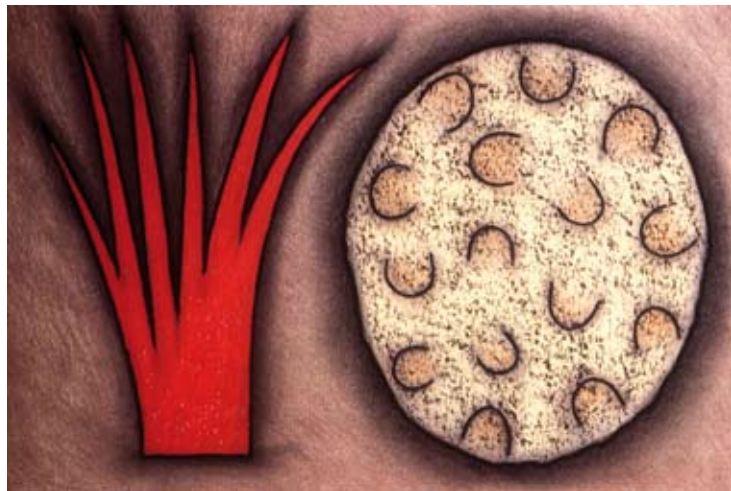


Image 1

demand intimate contact between fingers and paper and exude a richness of chromatic materiality, a constant throughout my work. This is where lusciousness resides. Following my comment on anticipation it is interesting to compare the drawing to these two electron micrographs, a seed from the golden paper daisy and a pollen grain from Nottingham catchfly. The seed is about six millimetres long and the pollen grain fifty microns in diameter, half the thickness of a human hair.

Flora and art is too vast a subject to encompass in this lecture but I would like to site a few key influential examples that I am particularly fascinated by. Painted within three years of each other *The Great Piece of Turf*, (1503) by Albrecht Durer and the *Study for the Star of Bethlehem*, (1506) by Leonardo da Vinci are both remarkable observations and meticulously executed studies of plants. Leonardo was

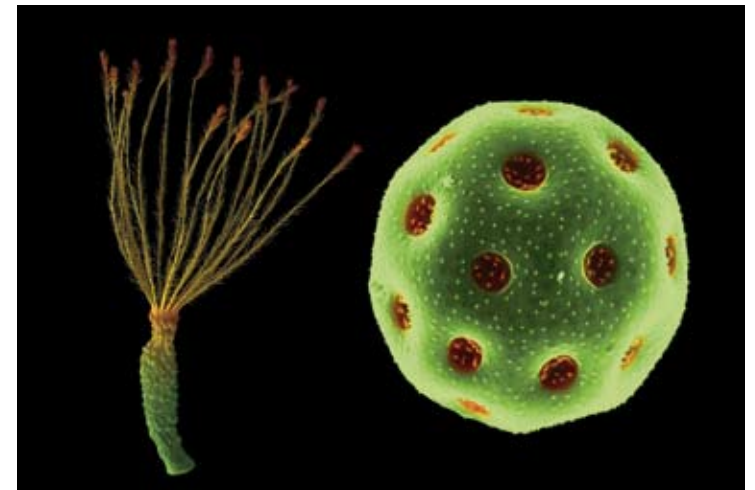


Image 2

seeking to explore the dynamic forces present in the natural world while Durer's study recognised and celebrated the value in the smallest detail of life to an extent where every modest plant was easily identifiable. They signalled a shift in representation from primarily herbal and medicinal identification to one that mirrored the importance within growing scientific and political economies. *Micrographia*, published in 1665 by Robert Hooke the English polymath and pioneer of the microscope, revealed a hidden world with awesome clarity.<sup>1</sup> Amongst the highly detailed images of fleas and fly's eyes was a drawing of a branch from a cork tree along side a microscopic study of the wood. Interesting not only for its use of different scales within the one drawing but also for his likening the structure to that of monks cells in monasteries and from whence the use of the word cell to describe a unit of life originated.

Soon after, in 1682 the botanist Nehemiah Grew examined the sexual reproduction of plants under a microscope, where he recorded his observations of pollen – 'the spermatick globules', drawings created to further

*Mallow*  
*f.14.*  
*The spermatick Glo-*  
*bules in f.13.*

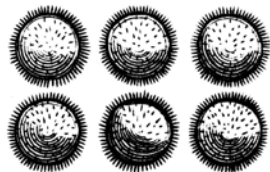


Image 3

Image 5

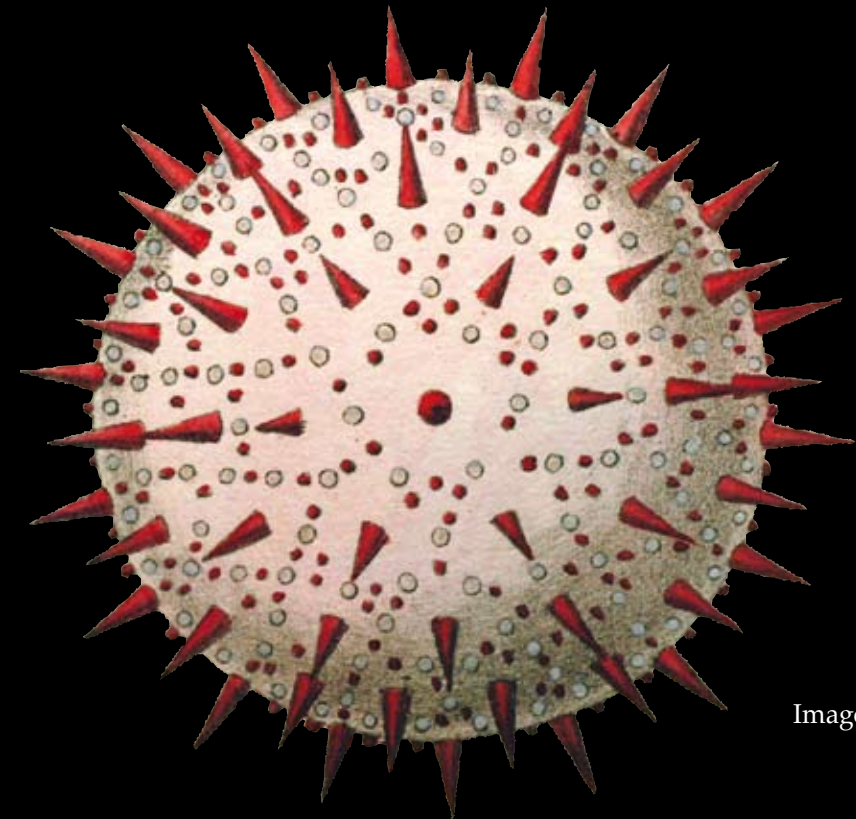
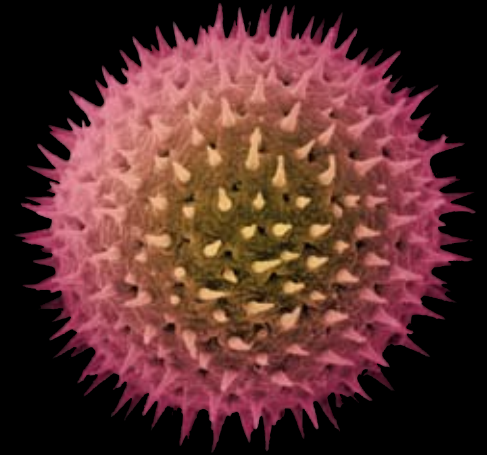


Image 4





Image 6



Image 7

knowledge of plant science.<sup>2</sup> In contrast to this evolving scientific analytical approach, under the patronage of the Medici's in Florence, the painter Bartolomeo Bimbi was tasked with depicting the botanical wealth of the Villa di Castello for Cosimo III the Grand Duke of Tuscany. His oil paintings from 1699 are luxuriant cornucopic displays overflowing with collections of individual varieties, one hundred and sixteen citrus fruits, one hundred and fifteen pears. This was botanical opulence on a grandiose scale with which to impress friends and signify power. The work of Grew and Bimbi marked divergent approaches to the representation of plants, the one expressive and illusionistic, realised to satisfy the ambitions of the patron, the other controlled and representational for the purposes of study and accurate identification. The growth in world trade and an eager generation of plant hunters sparked an explosion of new plants being brought back to Europe. Artists like Ferdinand Bauer were commissioned to accompany botanists on their trips, to record, both the event and the plants collected. Travelling with Joseph Banks the unofficial director of newly created Kew Gardens on his circumnavigation of Australia, he returned home with eleven cases of drawings representing over one and a half thousand plants and three hundred animals. Back at Kew his brother Franz was given a lifetime annuity to record all the newly arrived plants at Kew, where he was also appointed 'Botanick Painter' to King George III.

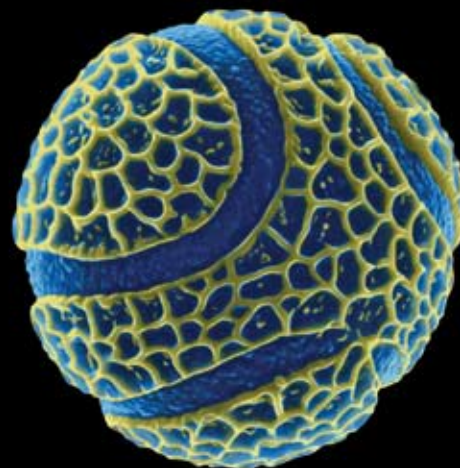
This was a pivotal time for plant imaging, microscopes were becoming more powerful enabling Franz Bauer to make highly detailed studies of pollen and he was also aware of the potential for photography, which was soon to emerge as a vital new tool for capturing every aspect of the world. It did not take long before the two technologies were united and microphotographs started to appear as early as 1840.



Image 8



Image 9





There is a line of thought to which I do not subscribe that would discount the artistic value of botanical illustration, “Botanical illustrations have very little to do with art, but belong rather to the realm of the sciences. Aesthetic considerations are wholly inappropriate, and beauty is a pleasant but also wholly irrelevant side effect. In the ideal world, an anonymous botanical illustration can be neither dated nor attributed to a particular illustrator.”<sup>3</sup>

Apart from doing a great disservice to the artists involved it also seems to imply that the work only has meaning in the immediate community for which it was created, whereas, in reality, these fabulous works are and have been responsible for creating, inspiring and informing new audiences reflecting the ideals and aspirations of the societies in which they were created. The 18th and 19th centuries had also seen developments in improved printing processes, in particular the advance from copperplate etching to the more sophisticated colour lithography, which enabled the publication of collections of botanical prints, these found an eager and receptive audience. During the same period, the growing ceramics and textile industries were quick to capitalise on the popularity of botanical art; this resulted in a proliferation of elaborate dinner services, as well as luxurious fabrics decorated with copies from botanical collections. In this way botanical illustrators had not only made an important contribution to plant identification, they were also instrumental in creating the affectionate place plants hold within society. Exotic or familiar, images of plants quickly became celebrated as signifiers of well being, confirming the role of botanical illustration, not just within the scientific community but also across society at large. Even the proselytizing Victorian writer and artist John Ruskin recognised the value that artists have in engaging with science



Image 10



Image 11

to reveal nature. In one of his Lectures on Art delivered at Oxford University he stated his beliefs:

“for the great scientific men are all so eager in advance that they have no time to popularize their discoveries, and if we can glean after them a little, and make pictures of things which science describes, we shall find the service a worthy one.”<sup>4</sup>

Technology oils the wheels of progress, but it can also be an unintentional gatekeeper. The tradition of artists working closely with botanists and naturalists to record and describe the luxuriant diversity of the living world was about to be interrupted. When cameras became attached to microscopes the process of imaging for scientific purposes was transferred from the artist to the scientist and the potential for collaboration and exchange across disciplines was seriously curtailed. There were of course a few notable exceptions, but as technology advanced and the imaging processes became ever more sophisticated and specialised, the possibility of anyone other than a scientist engaging with it or even getting access to it became unlikely.

Throughout the first half of the twentieth century the photographic visualization of life existed in two parallel universes, the scientific and the artistic, each in their own way reaffirming the views of Lázló Moholy-Nagy that the revolutionizing vision of photography contributed to a dissection and abstracted perception of the world. His vision was shared with fellow Hungarian collaborator, artist, designer and educator György Kepes, who, in line with his ideas on visual perception, sought to reunite the visual strands of life in a pioneering exhibition, *The New Landscape in Art and Science*, at The Massachusetts Institute of Technology (MIT) in 1951. In what became the Institute for Advanced Visual studies at MIT, Kepes was able to

bring together the leading artists, designers, architects and scientists teaching there at that time – Buckminster Fuller, Rudolf Arnheim, Marcel Breuer, Charles Eames, Erik Erikson, Walter Gropius. Images of snowflake crystals, cellular structures and diffraction patterns generated from their laboratories were exhibited alongside images of contemporary painting and sculpture. In the same year the Festival of Britain also celebrated a brave new world of atomic and crystal structures that were reproduced on ceramics and fabrics. But these were short-lived occurrences and it wasn't until the 1990s, that the emergence of digital technologies coincided with a growing belief in the potential benefits for a new dialogue between science and art. Sponsored by organizations like the Wellcome Trust it is not surprising that the lead came from within the field of biomedical sciences, their concerns, hidden within our own bodies are perhaps the most abstract but also the most vital to human existence. In botanical science the raw material is far more appealing, a factor, which surely has contributed to there being less collaborative work in this field.

Meaningful engagement and exchange across disciplines is not easy, the languages within art and science have evolved to a more complex and abstract level but as an artist one must be prepared to engage with the subject beyond the superficial level. The technologies too require high levels of experience; one might even say apprenticeship, to acquire basic skills when operating equipment.

By comparison PhotoShop and PowerPoint are now easily available platforms scientists use for visualization, increasingly to a high level of sophistication. Such is the volume of imagery now being created by scientists that there are a number of high profile competitions for scientific imagery, Nikon Small World, Olympus BioScapes and the



Image 12

Royal Microscopical Society Micrograph Competition. The entries reveal both the staggeringly beautiful complexities of the living world at a micro level and an awesome array of technology to capture it that would have had Robert Hooke spellbound. What are less clear are the criteria by which the competitions are judged and what if any is the relationship to art. At another extreme of scale, images sent back to earth from the Hubble telescope also provide exquisite views of unfathomable space and possible life. Such has been the speed of technological advance in developing these images and their rapid dispersal throughout society that there is a general assumption that the push button age we live in makes anything digitally possible. This is an unhelpful distortion, most of these images require high levels of skill and hours of practice in setting up the right conditions for capturing and translating the visual data. One might even dare to suggest that they are crafted?

For the past ten years I have been fortunate to have the opportunity to collaborate with two very special botanical scientists at The Royal Botanic Gardens, Kew. Dr. Madeline Harley a palynologist (pollen) and Dr. Wolfgang Stuppy a seed morphologist at the Millennium Seed Bank, Wakehurst Place. Working mainly with Scanning Electron Microscopy (SEM) I was able to reveal a world of structures and surfaces of unimaginable detail at orders of magnitude difficult to comprehend. It quickly became apparent that apart from a passion for the plant world we also shared common languages and protocols in preparing and describing the specimens, the surfaces of pollen grains and seeds being described as sculptural, architectural or ornamental.

The images that come from the SEM are black and white to which after careful adjustment of light and shadow I introduce colour. Initially perhaps out of deference to

the science my manipulation of the early pollen images were gentle and restrained but as I became more informed as a botanist as well as an artist my palette became more expressive. When viewing the final image the question is often asked, 'is this the original colour of the specimen?' Well clearly it is not. Terms like false colour, digital colour, and enhanced colour are often used in such cases but these descriptions can be unhelpful, based on uninformed assumptions of easy push-button shortcuts to create visual spectacle. My images are painstakingly crafted plant portraits created through a variety of microscopic, scientific, digital and manual processes, to reveal the full splendour and character of the form, in which colour becomes the agent with which to capture the attention of an audience. My use of colour is not however, arbitrary. Just as plants employ colour-coded messages to attract an audience of insect collaborators, and scientists do when staining specimens to reveal specific characteristic, through artistic intervention and interpretation I use colour to create images that draw the viewer in with a disquieting sense of familiarity and wonder at something so small. I spend many hours in the field looking at recording, smelling and generally enjoying plants and flowers and whilst colour might be used to model the forms of the samples, or to distinguish functional characteristics, the opportunity for intuitive response is always retained.

Throughout this work one is always astounded by the visual complexities of the living world that technology affords us, but perhaps more than anything else however we must not forget that we also possess highly refined lenses of our own.

We see but we must remember to take time to look.

## ENDNOTES

1. Hooke, R., *Micrographia*, The Royal Society, 1665
2. Grew, N., *The Anatomy of Flowers, prosecuted with the bare eye and with microscope*, 1682
3. Lack, H.W.L., *Garden Eden*, Taschen, Koln, p 14, 2001
4. Ruskin, J., *Lectures on Art, delivered before the University of Oxford*, George Allen, 1870

## IMAGES

01. *Spike and Ball*, pastel on paper, 1982. Private collection
02. *Spike and Ball revisited*, Golden paper daisy seed and Nottingham catchfly pollen, coloured micrograph, 2009 [courtesy, Kessler, Harley, Stuppy and Papadakis]
03. Nehemiah Grew (1682) 'spermatoc globulets' – pollen grains of *Malva sylvestris* – Common Mallow (Malvaceae) from, *The Anatomy of Flowers Prosecuted with the bare eye, and with the Microscope*. [Courtesy of the Library, Royal Botanic Gardens, Kew]
04. Carl Julius von Fritzsche – hand-coloured engraving of *Morina persica* from, *Ueber den Pollen* (1837) [Courtesy of the Library, Royal Botanic Gardens, Kew]
05. *Malva sylvestris*, coloured micrograph, 2004
06. Porcelain plate painted with naturalistic flowers and butterflies, Chelsea, 1755.  
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07. *Malva sylvestris plate*, bone china with gold and enamel decals, 2008.  
Collection, Manchester Metropolitan University.



08. *Grandilla*, Maria Sibylla Merian, 1691-99. Watercolour and body colour on vellum.  
© Trustees of the British Museum
09. *Passiflora edulis* passionfruit, cross section of fruit, 2006-08. Coloured micrograph and *Passiflora caerulea*, passion flower pollen, coloured micrograph. [courtesy, Kessler, Stuppy and Papadakis]
10. *Passiflora laurifolia*, Mary Delany, 1777. Collage of coloured papers, with body colour and watercolour on black ink background.  
© Trustees of the British Museum
11. *Passiflora caerulea*, seed, 2009. Coloured micrograph. [courtesy, Kessler, Stuppy and Papadakis]
12. *Pavonia floret*, assembled pollen grains, 2009. Coloured micrograph. [courtesy, Kessler and Papadakis]<sup>12</sup>

