Images and Meaning-Making in a World of Resemblance: The Bavarian-Saxon Kidney Stone Affair of 1580

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Abstract
This article de-constructs and re-constructs the dynamic of a sixteenth-century political dispute between the Catholic Bavarian Duke Wilhelm V and the Protestant Saxon Elector August I. By focusing on the visual imagery which ignited the dispute, the paper explores sixteenth-century 'ways of seeing' and the epistemic role realistic images played in the production of knowledge about the natural world. While the peculiar dynamic of the affair is based on a specific understanding of the evidential role of images, the paper also argues that the wider socio-cultural context, in particular certain strategies of truth-telling, provide further clues as to the dynamic and closure of the affair.

Keywords
Anatomy, Albrecht V of Bavaria, August I of Saxony, German Reformation, Jesuit Order, Michel Foucault, Rudolf Virchow, visual culture

In 1884 the Saxon military surgeon Carl Benno Credé and the archivist Theodor Distel announced an exciting discovery they had made in the Dresden state archive.1 In the Archiv für pathologische Anatomie und Physiologie und für klinische Medicin, one of the leading medical journals of the time, they reproduced a watercolour drawing of a large kidney stone that had been executed by an anonymous draftsman in 1580.2 The stone had belonged to the Bavarian duke Albrecht V (1528–1579), and Credé and Distel were proud to present the watercolour as the earliest naturalistic depiction of a kidney stone in Western medicine.

By the late nineteenth century visual representations of body parts and substances in the form of drawings or photographs were a common feature in the
Archiv, which had been founded in 1848 by Germany’s foremost medical scientist, the anatomical pathologist Rudolf Virchow (1821–1902). Their familiarity and increasing popularity reflects a fundamental change in the understanding of the epistemological function of images in the production of scientific medical knowledge. At the centre of this shift stood the new ideal of scientific ‘objectivity’ that began to guide and dominate scientific practice from the second half of the nineteenth century. At its base was the belief that the nature of any natural phenomena could be analysed and represented without the investigator’s personality playing any role whatsoever in the proceedings. The ‘objective’ scientific account was impartial, and ideally could be accepted by anyone because it did not draw on the assumptions, prejudices, or values of the scientist involved. Virchow was one of the paragons of this ideal, as well as a foremost advocate of a new way of ‘seeing’ that accompanied this new enthusiasm for objectivity. Increasingly scientists like him believed that their perception could be trained so as to control and tame all ‘subjective’ disturbances that might cloud it, and hitherto had hindered scientists from unveiling the hidden laws of nature. In the new science of pathological anatomy, ‘to see’ pathological conditions in the human body was ‘to know’ them. The unmediated pure scientific act of seeing, so Virchow and his peers believed, was represented most faithfully through photography and photographic-like realistic images. These kinds of visual representations therefore became central to the making, propagation and popularization of scientific knowledge; they were used to present and prove new theories, announce breakthroughs, and settle controversies. The many illustrated articles in Virchow’s famous Archiv are testimony to this new belief in the epistemological power of the objective ‘medical gaze’ and its visual representations.

Articles on historical topics in the Archiv, such as that by Crede and Distel on the kidney stone, were frequent and themselves often offer historical explanations for the emergence of the objective scientific gaze: new optical theories and practices in the natural sciences since the Renaissance (alongside the introduction of linear perspective in painting) ‘finally’ put vision on a secure and logical basis, they maintain. According to this positivist narrative, these developments made it increasingly possible to separate and represent ‘true’ natural phenomena from visual illusions or outright fakery. It was the Renaissance and its humanistic and scientific culture, according to these accounts, that began to redefine visual cognition so as (‘eventually’) to match the reality of the objects perceived. Symbolic mysticism was finally stripped away and the laws of nature revealed for all to see. In the area of medicine, anatomical publications such as Andreas Vesalius’s De Fabrica (1543), which presented the human body in a realistic way for the first time in Western medicine, were identified as exemplars of this new unmediated way of seeing. Ever-more illustrated anatomical works demonstrated the triumphal victory of a hands-on empirical medicine over a hitherto predominantly theoretically-based one that relied heavily on the texts of the Ancients. Finally, according to this narrative, physicians could separate scientific ‘facts’ from vulgar errors, superstition and popular belief.
Credé and Distel in their interpretation of the archival material that accompanied the kidney stone picture were very much within this master narrative. The realism of the image was so powerful, they thought, that it brought to a final conclusion a dispute between two important political players in Reformation Germany: Duke Wilhelm V (1548–1628) of Bavaria, and the Saxon Elector August I (1526–1584). The controversy between them of 1580 was ignited by a letter August sent to Wilhelm on 21 March 1580.10 In the letter August asked Wilhelm to clarify certain rumours at the court in Dresden regarding a kidney stone that had allegedly been extracted from his father’s body after his death on 24 October 1579. August reported that rumour-mongers were claiming that the stone found in Albrecht V’s body was of an enormous size and wondrous shape, and that parts of it resembled a Jesuit’s head. The allegation was based on a watercolour, which August enclosed with his letter. He asked Wilhelm to report to him confidentially whether the stone resembled in form the one in the picture. Wilhelm wrote back on 13 April 1580 confirming that while a large stone had indeed been extracted, it did not resemble the head of a Jesuit. However, he was not at all astonished that Dresden courtiers ‘against our religion’ were spreading such rumours. In his letter, he enclosed an image (Figure 1), which is the one Credé and Distel discovered and published in the Archiv in 1884. Wilhelm assured August that this was the only true counterfeit (wahre conterfeyt) of his father’s stone. To further assuage August’s anxieties Wilhelm offered to send him the actual stone extracted from the princely body. But this proved unnecessary: in a letter dated 5 May 1580 August accepted Wilhelm’s assurances and remarked apologetically that he himself had never really believed the rumour but as the story had reached him from ‘esteemed places’, he felt obliged to inquire into its truthfulness. He assured Wilhelm that he considered the issue resolved and bemoaned the sad fact that in

*Figure 1.* Image of Albrecht V’s kidney stone as discovered in the Dresden archive by Credé and Distel in 1884 and reprinted in their article in the *Archiv.* (Source: Sächsisches Staatsarchiv Dresden, Geheimer Rat (Geheimes Archiv), Bestand 10024, Loc. 8506/2, fol. 185).
‘this disorderly world of ours’ nobody ‘whatever Estate he may be, not even in his 
grave, is safe from malicious gossip’.

For Credé and Distel this correspondence illustrated a widespread ‘superstition 
of the time’. They had no doubt that the realistic picture, sent by Wilhelm to 
August (Figure 1), cut through the mists of superstition. The image permitted 
August to identify the fraudulent nature of the Jesuit-headed watercolour. 
Having Wilhelm’s true counterfeit in hand (Figure 1) August could see with his 
own eyes – Credé and Distel maintained – that his Jesuit-headed Dresden image 
(which, perhaps significantly, was not reproduced in the Archiv article) was in truth 
a caricature (Spottgemälde). The false image was strategically aimed at discrediting 
Albrecht V who had been widely known as one of Germany’s foremost supporters 
of the Jesuit order, the intellectual spearhead of the Counter-Reformation. 
Albrecht’s (and his son Wilhelm’s) enemies at the Protestant court in Dresden, 
Credé and Distel argued, had drawn up a picture of the stone and intentionally 
altered its morphological shape by wilfully adding in the features of a face, head-
gear and hat. By claiming that the picture resembled the head of a Jesuit these anti-
Bavarian elements at the Dresden court sought to draw attention to (and hence 
criticize) the strong position of the religious order at the Bavarian court. They also 
wanted maliciously to suggest that the spiritual influence of Jesuits had triggered 
real physical effects: it had inflicted disease on Albrecht, and eventually caused his 
death.

Credé and Distel’s interpretation of August’s and Wilhelm’s encounter has 
been reiterated by subsequent historians. It has also been reinforced empirically 
through the discovery of another ink drawing (Figure 2), one executed by Albrecht 
V’s personal physician, Dr Thomas Mermann (1547–1612). Mermann’s drawing 
depicts an anatomical object in realistic fashion and is accompanied by an autopsy 
report, written by himself beneath the image. Although Mermann’s image was

Figure 2. Dr Thomas Mermann’s autopsy report on Albrecht V with a drawing of the 
kidney stone. (Source: Bayerisches Hauptstaatsarchiv (Geheimes Hausarchiv), 
Korr. Akten 609/V).
never mentioned in the surviving archival correspondence between the two rulers (and it is therefore unclear whether either of them ever actually saw it), historians of Bavaria have readily interpreted it as further visual proof that the Dresden Jesuit-headed image was a fake. The realistic drawing by Mermann – the physician hailed by historians as Bavaria’s Vesalius – accompanied by an autopsy report, surely must represent the original natural object. How could it be other than a one-to-one representation of Mermann’s investigative mind and scientific rational gaze? Ergo, the Dresden Jesuit-headed image had to be a caricature.

It is significant that in all the subsequent historical discussions of the affair the alleged Jesuit-headed Dresden image has never been reproduced. By introducing it here as a new piece of evidence in the discussion, I want to suggest that it might help us cast light on questions that historians have been unable to answer: Why was it that August became so worried about the Dresden images (Figure 3) which claimed to represent the Jesuit-headed kidney stone of one of Germany’s most powerful Catholic rulers? Why did he not immediately identify it as fraudulent and discard it as a politically motivated caricature (as historians since the discovery of the archival material have tended to do)? Why did he feel the urge to inform Wilhelm about a painting that to our eyes is manifestly a fake? These questions are informed by and refer to recent literature on early modern visual culture and visual perception, and the history of science and medicine. Such works investigate, amongst other things, the epistemological and evidential function that was attributed to realistic images of natural objects in sixteenth-century culture. Drawing on this literature, I want to argue that neither the naturalistic image sent to August by Wilhelm (Figure 1) nor the anatomical drawing by Thomas Mermann (Figure 2) possessed the immediate evidential and persuasive power conventionally attributed to them since the late nineteenth century. In their context, it was impossible for these images to end the dispute in and of themselves, by virtue of being more

**Figure 3.** Image of Albrecht V’s ‘Jesuit-headed’ kidney stone as sent to Wilhelm V by August I, 21 March 1580. (Source: Bayerisches Hauptstaatsarchiv (Geheimes Hausarchiv), Korr. Akten 609/V).
‘realistic’ and more ‘objective’ and thus closer to the original natural object than the Jesuit-headed image from Dresden (Figure 3).

How, then, might we understand the epistemic function of the images within the dispute and how was this function couched within more general sixteenth-century ideas about vision and perception? I want to explore this in the first part of my discussion. Yet, in order to grasp what Wilhelm and August and their courtiers ‘saw’ in the different images of Albrecht’s kidney stone, and more importantly, how the two rulers agreed on their respective meanings, I need to do more than merely investigate the evidential function of early modern images of natural objects. The wider socio-cultural context in which the affair took place also shaped its dynamic and the meaning of the images involved. Stuart Clark has recently argued that cultural anxieties over the meaning of images, and the veracity of sight more generally, substantially increased during the Reformation, which was marked by deep distrust of all kinds of visual representations.16 Contrary to what historians have previously argued – that the sixteenth century gave birth to a rational scientific gaze – Clark contends the exact opposite: that the period experienced a ‘de-rationalization’ of vision and perception. Sixteenth-century contemporaries did not feel in control of the external world, he argues, but rather, increasingly doubted what they ‘saw’; they suffered from what he calls ‘ocularphobia’. It was within this context, fuelled by the delicate political situation that August faced in the spring of 1580, that there was good reason to be worried about the circulation of an image allegedly presenting a Jesuit-headed kidney stone. I shall investigate these issues in the second part of this article. The third and final section explores the closure of the affair in more detail. I suggest that particular strategies of truth-telling were also necessary to allow both parties to agree that the Dresden Jesuit-headed image (Figure 3) was nothing more than a politically motivated caricature. In short, by de-constructing and re-constructing the dynamic of the sixteenth-century kidney stone affair, this article explores how sixteenth-century ways of seeing natural objects played a part in the production of knowledge about the natural world.

‘Seeing’ in the Sixteenth Century

A closer look at the ‘stepping-stone’ to the affair, the water colour image that was sent to Wilhelm by August, shows a large two-piece stone that floats on a black background (Figure 3). On the upper convexity of the larger piece one can identify a head and a face wearing some kind of headgear (albeit with a degree of interpretive latitude). This must be the face of the ‘Jesuit’ that the Dresden courtiers allegedly ‘saw’, and which August was referring to in his letter to Wilhelm. Odd, or even infantile, as it might seem to us, the act of ‘seeing things into something else’ was a widespread and far from trivial phenomenon in the sixteenth century.17 As many scholars of early modern art and science have demonstrated, human faces and characteristics were commonly ‘seen’ in natural objects and animals. The widespread art and practice of physiognomy was entirely based on such resemblances and analogies.18 But early modern contemporaries also commonly perceived faces
of demons and witches in the morphology of rock formations or clouds, and artists drew such features naturalistically, believing them to be real.\textsuperscript{19} This ‘seeing things into something else’ could often provoke public debate, particularly during the Reformation, as many surviving tracts and prints demonstrate. The art historian Svetlana Alpers cites a telling example of a controversy over a mass-produced Dutch print, in which some Protestant viewers perceived the figure of Catholic priests in the bark of an old apple tree.\textsuperscript{20} In a country still at war with Catholic Spain, this perception immediately triggered an anxious and excited debate over the meaning of the image.

Although today we can still relate to this way of seeing – of not discriminating between things or showing differences, but rather of searching instead for resemblance – the early modern belief in the reality of such visual resemblances was based on a radically different logic pertaining to the workings of the natural world. Nature was not ordered by discrete laws, but by ancient philosophical notions of causality, of matter and form, correspondences, analogies, similitude and verisimilitudes.\textsuperscript{21} Based on the notion and practices of resemblance this order of the natural world allowed for the entanglement of the experience and practice of medicine, faith and politics, things that today we perceive as separate and distinct. Central to this worldview was the ancient idea of the existence of two worlds, the micro- and macrocosm, which provided investigations into the realm of nature with the assurance that all earthly matter would find its mirror and its macroscopic justification in the heavens. It indicated that there indeed existed a greater world, and that its parameters defined the limits of God-created things. Nature here, as Foucault perceived, ‘is closed upon itself in conformity with the duplicated form of the cosmos’.\textsuperscript{22} The physical environment was believed to be morally sensitive and responsive to human fortunes and transgressions, a mirror and cipher of the spiritual sphere. The whole of the natural world was thus considered one large emblem and hieroglyph of celestial wisdom, a revelatory text whose individual signs needed to be deciphered so that the pious observer could come to understand the Almighty’s intentions and thus act accordingly.

The macrocosm was also mirrored in the human body; in it ‘the Almighty has imprinted its own image’, the medical historian Mary Lindemann has pointed out.\textsuperscript{23} Malfunctioning bodies were thus the result of correspondences ‘out of joint’. In this analogical reasoning the human body was always part and parcel of the God-created and controlled cosmos; it was at once natural and spiritual, animated and sustained by the mechanisms of what another historian of the period has called a ‘spiritual physiology’.\textsuperscript{24} Marks and objects found on bodies or excreted from them were subject to this logic. While, most of the time, physical signs were interpreted as having natural causes (and thus fell into the domain of medicine), the most celebrated and often controversial of all bodily signs were those allegedly bearing explicitly holy significance. Famously, the objects found in the exhumed heart of Clare of Montefalco (1268–1308) were claimed to look like symbols of Christ’s passion, a crucifix and scourge, and were thus taken to be conclusive evidence of her holy life.\textsuperscript{25} Another example, discussed in detail by Katharine
Park, is that of the visionary Margaret of Città di Castello (1287–1320), whose heart contained three stones upon its opening by Dominican friars. These were immediately ‘seen’ as images of the Virgin Mary, the cradled infant Jesus, and that of Margaret herself. Again, they were accepted as materialized physical evidence of Margaret’s exemplary spiritual life.26 Men, too (if less so than women) revealed through their physical signs their inner spiritual struggles and the experiences of divine inspiration during their lifetimes. St Francis of Assisi’s miraculous body transformation through the stigmata of Christ is but one example.27 As Park reminds us, contemporaries understood such objects and bodily transformations, not as mere ‘representations’ of a personal miraculous experience but as one-to-one ‘reproduction’ of it.28

An organ or body part that resembled a Jesuit-head in 1580 was wholly within this realm of conception, and, it is not at all surprising that such a bodily sign provoked debate. The Reformation, although repudiating the existence of Catholic miracles, changed thinking little in this respect; indeed controversy over godly or devilish signs intensified over the period.29 The belief in demonic spirits expressed in sensible signs in or on the body, for example, fuelled and shaped prosecutions during the witch hunts in the second half of the century in Catholic and Protestant territories alike.30 Sixteenth-century contemporaries of all denominations were fascinated with human malformations and monstrosities and other anomalies of nature. They were seen as signs of imminent crisis, and were invested with religious significance.31 Perceived as oracular tokens, any of these God-sent phenomena required urgent interpretation within their web of correspondences. The ignorance of such signs, so contemporaries believed, could attract God’s anger and consequently trigger disaster in all areas of human life.

And, yet, as one scholar of Reformation Germany has recently reminded us, it is not enough to see such discourses as mere expressions of a fearful theocratic society; they were also strategic elements in political discourse around power and legitimacy within the deeply divided Holy Roman Empire.32 Within such a worldview of resemblance, an image claiming to represent a Jesuit-headed kidney stone, taken from the body of one of the most powerful rulers of the time was not easily dismissed. As a possible godly sign it demanded further investigation. I shall return to the historical context and reveal how it shaped the affair in the second part of this paper. First though, we need to consider the epistemological function of realistic images of natural objects, as well as their perpetrators.

A Collector’s Item: Thomas Mermann’s Drawing

It is easy to be persuaded that Thomas Mermann’s naturalistic image of Albrecht’s kidney stone (Figure 2) provides evidence for the emergence of a modern scientific gaze in sixteenth-century Bavaria. Surely it proves, as late nineteenth-century historians believed, that educated and forward-looking men of science and medicine of the time were beginning to discern the laws of nature and separate them from what would come to be called ‘superstition’. Did not such men begin to ‘see’ like
Virchow? In short, the image without the Jesuit head (Figure 2) can only lend support to the contention that Mermann was not part of the world of resemblance described above, but rather he was a precursor to the practices and epistemological values of nineteenth-century medicine. Surely, what Mermann ‘saw’ and drew was what he actually identified as the seat of Albrecht’s disease and cause of his death.

But such an interpretation of Mermann’s drawing (Figure 2) is, I think, misleading. In the sixteenth century ‘seeing’ a destroyed organ taken from a dead body did not (yet) automatically mean ‘knowing’ the workings of disease in the living body. In Mermann’s understanding no direct and constant correlation existed between the ‘seeing’ of an altered organ made visible through post-mortem dissection and the workings of disease in the living body.33 Unlike in nineteenth-century anatomical pathology, altered organs were not considered the necessary material and visible location of disease. Moreover, images of such organs did not permit the drawing of definite conclusions about the workings of disease in the living body. In Mermann’s universe, dead and living bodies were separated by a gulf that perception could not easily bridge. Once the vital spirit – believed to be seated in the heart so as to regulate its vital signs, maintaining heartbeat, pulse and respiration – had left the dead body, it was regarded as an altogether different object of nature.34 Mermann could have learned little for his daily medical practice from the observation of dead tissue and the tracing of anatomical lesions and their visual representations.35 For sixteenth-century academic physicians like him the knowledge of ‘life’ was still fundamentally based on the largely invisible essence of living.

We can gain some idea of how Mermann, educated at the university of Pisa, understood these matters from the collection of consultation letters to his patients.36 These were published posthumously in 1678 by one of his successors and ardent admirers at the Munich court.37 The Consultationes ac responses reveal Mermann’s deep admiration for, and strict adherence to, the ancient medical authorities, above all Hippocrates and Galen.38 Chapter V of the Consultationes is dedicated to diseases of the kidneys, bladder and genitals and contains 30 such cases. The 18 cases that deal directly with illnesses related to kidney stones allow us to reconstruct Mermann’s diagnostic perception.

Mermann considered the natural causation of kidney stones as intrinsically related to each patient’s innate mixture of the four humours (her ‘complexion’ or ‘temperament’). Every person, he believed, was born with an idiosyncratic mixture of the four humours – blood, yellow and black bile, and phlegm – which were thought to be ‘cooked’ from the daily intake of foodstuff in the stomach and liver. As long as one kept a regular regimen, which comprised a careful control of the so-called six non-naturals – air, food and drink, rest and exercise, sleeping and waking, excretion and repletion of fluids, and a governance of the passions – the four humours would be kept in their innate and healthy balance. Disease occurred, Mermann warned his patients, when the innate balance of the humoral mixture got into disorder. As such, disorders of the humours were also unique to each person; kidney stones had multifarious causes, which differed from patient to patient.39 Nevertheless, Mermann offered his suffering clients a general definition of the most
commonly identified material cause of such stones, namely, ‘thick fluid, mucous
and viscous, which leads to excess heat in the kidneys that consumes whatever is
thin in this humour, and breathes upon them and dries out the rest, boiling it down
to sand and calculi’.  

Although kidney stones caused excruciating pain to their bearers, they posed a
particularly vexing problem for medical diagnosticians. Unlike bladder stones,
kidney stones could not be sensed by the practitioner. Their existence could
only be inferred from the many symptoms and signs felt by the patient, such as
mictions of blood in the urine, pains in the stomach or in the lower back region.
The matter was complicated by the fact that, even if a patient reported these
symptoms, an academic physician could not base a definite diagnostic verdict on
the empirical collection of physical signs alone. Throughout the Consultationes
Mermann is always careful not to offer a rushed judgement. For example, his
response to a noble woman is typically vague: ‘I cannot say for certain whether
one of several calculi are hiding, but I do not dare to say it is not the case’.  

In order to gain ‘certain’ knowledge in such cases, Mermann needed to match
his empirical findings with the testimony given by ancient physicians in their writ-
ings on the subject of kidney stones. Empirical evidence always required approval
by the wise, as this response demonstrates:

Having carefully weighed what has been written about the kidney pain which My
Lord has endured earlier and still experiences until today, and also about the sandy
deposits which appear, I do not doubt that it can be affirmed that a small stone is
underlying – an angular one, a rough one, through whose friction the substance of the
kidneys has been led to exculpate, and the veins to open.  

Mermann was aware of the challenges to the infallibility of ancient authority
emerging among his contemporary medical peers at the time. Indeed, he symp-
thathized with parts of their critique. However, he also objected to the ways some of
his colleagues legitimized their critical stance vis-à-vis the Ancients:

Currently, there is no small number of physicians who believe that the causes of
kidney calculi...have not been sufficiently observed and understood by the ancient
and other classical authors of our time. Personally I would most willingly subscribe to
this, if I could say that they have found ingenious solutions and if they would confirm
the remedies, which they keep quoting by experiments in which patients have been
restored to good health, by case studies and examples.  

For any university-trained physician like Mermann, medical treatments that were
solely based on successfully administered cures (‘experiments’) could not possibly
count as ‘truthful’ or ‘certain’ evidence. Knowledge gained by ‘experimentation’
which was then defined as ‘knowledge of one thing without rational examination’,
was considered only a preliminary stage of knowledge production in the
Aristotelian tradition of scientia in which Mermann was trained. Scientia’s
overarching goal was the formulation of statements of universal truth, which were to be reached by explaining the particulars of observation by deduction from final and principle causes. In the case of medicine, Mermann reminded his colleagues in the quotation above, that this universal truth was reached through the deductive usage of particular ‘case studies and examples’. In other words, the specific condition of a patient served as a means to make these universal truths concrete; it did not hold in itself universal truth. For Mermann, medical efficiency, which was demonstrated by a successful treatment, always needed to be legitimized by ancient medical doctrine.

Mermann thus tied his medical empirical experience closely together with his knowledge of texts. The sensible symptoms and signs on a patient’s body and the reasoned descriptions of symptoms in classical authoritative texts penned by his long-dead medical peers needed to resemble each other. Mermann deciphered the god-created human body through the scriptures of the Ancients, and, simultaneously, unlocked the secrets of the ancient scripts through the bodies of his patients. Their respective truth had to be revealed through their resemblances and affinities. ‘To know’ was for Mermann to interpret, or (as Foucault would have it) to ‘find a way from the visible mark to that which is said by it and which, without that mark, would lie dormant within things’.47 In all of his consultation letters Mermann establishes as many correspondences as possible between ancient text and physical bodies, between what he calls reason and experience. A master at this erudite divination, he was in fact hailed by contemporaries as the ‘Bavarian Galen’.48 Important for my purposes is that Mermann’s intellectual approach to the human body generally dispensed with visual aids as techniques in proving arguments: significantly, nowhere in the Consultationes do visual illustrations appear.49

Recent research in the area of visual culture and early modern medicine tends to confirm the prevalence of Mermann’s episteme. Even when images were deployed, their epistemological function and meaning were ambivalent. According to Sachiko Kusukawa, this was also the case in the famous naturalistic representations of the human body in Andreas Vesalius’s De Fabrica.50 The key to understanding Vesalius’s use of images, she argues, resides in the term historia, which Vesalius repeatedly employed to characterize his ambitious visual project. Within the Aristotelian scheme of knowledge, which aimed at the discovery of causal first principles, historia denoted a particular type of knowledge. Compared to ‘true’ and ‘certain’ philosophical knowledge, historia was considered only a preliminary stage of inquiry. It denoted a descriptive knowledge, preparatory to the investigation of final causes.51 By describing his project as historia, Vesalius made clear that the demonstration of final causes was not what he was after. Instead, the text and the pictures in De Fabrica formed integral parts of his unique humanistic enterprise of reviving – not overturning – the practice of ancient Galenic medicine.52 His naturalistic images of the body had a didactic function directed at a predominantly academically-trained audience; they aimed at communicating something specific that the humanist Vesalius wished to argue about ancient medical theory.53
From this it follows that the tying of visual imagery to such individual humanist projects had important epistemological consequences: it inhibited a general agreement on what these images meant. As Kusukawa concludes, realistic pictures of natural objects did not ‘show’ the same thing to everybody, and did not imply a theoretical commitment to an unmediated observation of nature for its own sake.

Why then did Mermann draw his picture of Duke Albrecht’s kidney stone if not for purposes of studying and explaining kidney stone related diseases? I want to suggest that the drawing of the kidney stone was a further instance of Mermann’s humanistic passion for everything rare and wondrous to be found in the natural world, rather than some early testimony to ‘the rational gaze’ in medicine. During his lifetime Mermann was widely known as an expert collector of fine arts and natural curiosities – an amor et corculum musarum (a lover and darling of the muses), as friends nicknamed him. It was a passion he shared with his patrons Albrecht V and his son Wilhelm V. Unfortunately, Mermann’s extensive collection, housed together with an alchemical laboratory at his large town house in the immediate vicinity of the ducal palace, has been lost. However the content of the much larger cabinet of curiosity (Kunstkammer) of the Bavarian dukes can be reconstructed through surviving inventories. These reveal that, in common with most early modern cabinets of curiosity, the Munich collection also juxtaposed objects of nature and artifice (naturalia and artificialia) and displayed many hybrid objects, in which the two realms were intertwined or put ‘at play’ with each other. The choice of objects was not left to chance. As a historian of the cabinets of curiosities has explained, the production, collecting and ordering of such rare and strange things in the cabinet was ‘subjected to the idea of a combinatory web of relationships consisting of resemblances and differences, affinities, sympathies and analogies’. The surviving reports of visitors to such cabinets describe the often visually dazzling effect these juxtaposed, combined and fused rarities of nature and art produced on them, and how they were drawn into, and marvelled upon the game of resemblances and affinities within the wider micro-macrocosmic order of the natural world outside the cabinet.

Central to the Munich display of miraculum naturae, as they were called in the surviving inventories, were human body parts, and among these was a collection of bladder stones. The most precious among these stones was object number 2108 in the inventory of 1598, which had once belonged to Albrecht V’s own brother, Duke Ernst of Bavaria (1500–1560). It had been extracted from his body in September 1550 by an Augsburg surgeon who had received the inordinate amount of 1000 fl. for the operation (Ernst had apparently behaved ‘bravely and manly’ throughout).

Mermann’s own collection of curiosities probably contained even more examples of extraordinary body parts. In my opinion, his drawing of Albrecht’s kidney stone was a depiction of one such miraculum naturae. The original might well have been in Mermann’s possession since it was not at all unusual for local court physicians to keep interesting and unusual corporeal objects extracted from their noble patients. Such objects added to the record of nature’s strange and wondrous
ways, and could be displayed in private collections. Stones, natural and human, were also sought after as matters of exchange between sixteenth-century scholars interested in the natural world. Not only the stones themselves, but also the drawings of them, or even copies made from gypsum, were sent back and forth between collectors. One such stone enthusiast was Mermann’s Saxon colleague, the court physician Johannes Kentmann (1518–1574), a well-known naturalist who also published a book on human stones, which was shelved in the ducal Munich library during the period of Mermann’s court appointment. Dedicated to a fellow stone-enthusiast, friend and correspondent, the Swiss natural philosopher and physician Konrad Gesner (1516–1565), Kentmann’s *Calculorum qui in Corpore ac Membris Hominum Innascuntur* (Torgau, 1565), contained 12 chapters on wondrous stones found in various body parts and, significantly here, included 32 illustrations of them. The choice of these stones and their visual depiction was partly related to the dramatic suffering of the persons from whom the stones were extracted, and partly to the social status of the sufferer. The chapter on kidney and bladder stones, for example, centred on the story of the kidney stone of the Saxon elector Friedrich III (1463–1525), who, according to Kentmann, endured an exemplary Christian death, bearing heroically the excruciating pains caused by the stone. For Kentmann, Friedrich’s ability to act in such an exemplary way in the face of death was a sign of God’s favour regarding the Protestant reform movement, and he took the opportunity to remind the reader at great length of Friedrich’s support of Luther after his excommunication and his founding of Wittenberg University as one of the centres of Protestant teaching and learning.

In view of this, I want to suggest that Mermann’s naturalistic representation of the kidney stone tells us in fact little about new rational practices of medicine or about the emergence of a new form of medical perception. It tells us more, I think, about a world of humanistic values, logic and rhetoric, and the importance of natural philosophical principles in the daily practice of medicine. Further, it amplifies a world of patronage and court medicine with a passion for collecting and displaying wondrous bodily objects. Indeed, there seems to have been a European-wide market for the exchange of such objects. A telling passage in Kentmann’s book on human stones reports on the exchange network of Elector Friedrich’s personal surgeon Johannes Trautmann, who had discovered the stone in May 1525 when he had prepared his patron’s body for the public laying out.

The heirs of Trautmann, of which four are surviving, good men, gave me this stone upon my request, as I promised to faithfully return it. I have meticulously crafted a gypsum cast of it, dear Gesner, as a true image for most acute study, and I am sending it along together with the other calculi’s copies, which may enable you to consider more accurately the wondrous form of this stone, which slew such a great ruler.

It is impossible to know whether Albrecht V’s kidney stone or Mermann’s image of it (Figure 2) had been part of such a scholarly exchange network connecting the two courts in Munich and Dresden. But the close resemblance between the Jesuit-
headed watercolour from Dresden (Figure 3) and Mermann’s own drawing (Figure 2) suggests that the Dresden artist had at least seen Mermann’s images. While both images adopt the same perspective, it is only in the Dresden Jesuit-headed image (Figure 3) that the onlooker can perhaps identify facial features and a head in the upper convection of the stone. Whether these features would be universally identified as belonging to a Jesuit head is of course another matter. Why August was inclined to ‘see’ a Jesuit head in the image (Figure 3) and why this perception was a source of concern to him, leads us to the wider socio-political context in which such a perception took place.

A Devilish Friend?

It was no secret to Protestants in the Holy Roman Empire that Albrecht V of Bavaria strongly supported the cause of the Catholic Counter-Reformation. His uncompromising course of action against the spread of reformed ideas in his territory culminated in the expulsion in the early 1570s of all subjects of the Lutheran faith. Moreover, Albrecht generously supported Rome’s militant Counter-Reformation spearhead, the Society of Jesus. Jesuits were invited into the duchy in the late 1540s and soon established themselves as the country’s spiritual and intellectual leaders. Lavishly sponsored, Jesuit colleges and churches mushroomed and the universities of Ingolstadt and Dillingen fell under their control. The Society’s increasingly influential role at the Munich court did not go unnoticed. Local courtiers and foreign diplomats and visitors wondered, worried and remarked upon the intimate relationship between the dukes and the Jesuits, who were also the principal spiritual advisers of the ruling family. A frequent visitor to the Munich court, the Protestant merchant and art dealer Philip Hainhofer (1578–1647) from nearby Augsburg, reported that Wilhelm V even had a secret underground tunnel built to connect the nearby Jesuit college to his private rooms. At a time when a country’s politics and the faith of its ruler were inseparable, such close relations were bound to raise eyebrows and generate loud Protestant protest. And so they did.

Since the second half of the sixteenth-century, Protestant propaganda had aggressively targeted Catholic territories such as Bavaria, especially in connection with their dealings with the Jesuit order. In books and broadsheets propagandists denounced the Jesuits’ missionary work as evil and diabolic sorcery, accusing its members of being the personifications of Satan or the ‘devil’s shit’, as one author put it. There was no crime so heinous or bizarre that could not be attributed to them. Although on the outside Jesuits appeared to be the very model of well-ordered piety, readers were encouraged to view their private lives as conducted in the greatest luxury and sensuality. Stories of Jesuits siring demoniac progeny were told all over the German lands, fed by contemporary fascination with strange and horrific births. Due to the Jesuits’ evil nature and black magic, it was not enough merely to expel them from the country, the propagandist proclaimed, but it was also necessary to burn them at the stake.
Despite such propaganda, the Protestant Elector August of Saxony remained friendly with Albrecht of Bavaria until the latter’s death in 1579. Albrecht had even been invited to Dresden several times. The Munich Kunstkammer inventories list many gifts August had offered to Albrecht on these occasions, among them exquisite pieces of ivory turnery, which the Saxon Elector, a skilled artisan, had crafted himself. However, it would be naïve to assume that friendship between these sixteenth-century rulers was built entirely on personal affection and mutual interests. August and Albrecht both pursued wider political interests through their friendship. The continuation and smooth functioning of the political machinery of the Holy Roman Empire stood at the top of August of Saxony’s political agenda, and in pursuit of this he was always ready to accept compromises, even over issues of religion. His tolerance allowed him personal dealings and, as we have seen, even friendship, with major Catholic political players such as the Bavarian dukes. Thereby, August was able to exercise considerable influence over the politics of the Empire and its Catholic emperor. The downside, however, was that until the mid-1570s his tolerant stance inhibited the formation of a united political position of all Protestant princes.

Albrecht of Bavaria largely shared August’s efforts at preserving the Holy Roman Empire. But he also maintained the friendship to achieve other goals, which was a worry to August’s Dresden councillors. The papal Curia in Rome interpreted August’s religious ‘ambivalence’ not as a political strategy, but as a sign of indecision in his choice of faith, and nourished the hope that he might be persuaded to re-convert. As the Curia did not wish to entertain any diplomatic relations with Protestant rulers, one of its most noble defenders on German soil, Albrecht of Bavaria, was approached to act as a broker. Although Albrecht was sceptical about the success of such a mission, he agreed to collaborate. In the 1570s he had several conversations with August, the final one taking place on the occasion of his last visit to Saxony in 1576. Yet, his efforts were to no avail; August remained a devoted Lutheran. In fact, by the time of Albrecht’s death in 1579, August’s position vis-à-vis other denominations had considerably hardened, not least as a consequence of the inter-Protestant political struggles dating from the mid-1570s. Until then August’s religious ambivalence had not only served him well in high political places, but had guided the governance of his Electorate where various Protestant groups competed with each other. In order to minimize religious confrontation, August strategically avoided championing one side over another, and had even chosen as his closest political advisers followers of Philipp Melanchton (1497–1560) who traded in humanistic ideas of religious reform. August’s non-confrontational policy worked well until 1574, when the same group of advisers went public with their versions of the Lord’s supper, which reflected a strong Calvinist influence. August became alarmed, suddenly fearing the undermining of the tenets of his own Lutheran faith. He also worried about potential upheaval and political unrest in his country. His reaction was swift and merciless: all of his advisers were arrested, executed or imprisoned for life.
Although the attempted coup d'état (as August interpreted it) was successfully quashed, it compelled August to change direction in his confessional politics. Ambivalence was now replaced by an explicit and unambiguous support of the Lutheran faith along with the suppression of other denominations. August was doing more than merely purging his country from Philippism (as this Melanchton-inspired type of Protestantism became to be known), he was also actively seeking confederates for his vision of a unified Lutheran faith among his noble Protestant peers. Thus, in April 1580, when the images of the Jesuit-headed kidney stone (Figure 3) circulated at his court, August was only a step away from finally collecting the fruits of his relentless diplomatic pursuit: the publication of the Lutheran doctrinal faith (or Concordia formula) in the Book of Concord.

At one of the most difficult but potentially most celebratory and rewarding moments of his reign, the rumours about Albrecht’s kidney stone began to circulate at August’s Dresden court. The appearance of an image allegedly depicting the Jesuit-headed stone (Figure 3) belonging to his Bavarian ‘friend’, a powerful Catholic ruler and most generous patron of the Jesuit order, became problematic for the Elector. How should he understand it? It could be a political caricature, aiming at attacking and ridiculing Albrecht and indirectly criticizing August’s continuous relations with him. This interpretation could potentially damage August’s relations with his Protestant peers. But what if the image harboured a hidden message? What if the image faithfully represented one of God’s wondrous portents? If so, what exactly did God wish to tell August, who, as we know, took the appearance of heavenly signs sufficiently seriously to allow them to shape his daily political decision-making? Like any ruler at the time, August knew that not to heed such signs from the Almighty could result in disaster. He needed immediately to know whether or not the strange image represented a divine portent. And if it did, what did God have in mind by sending it to him at precisely this auspicious moment?

Truth-Making Strategies

How could the meaning of the Jesuit-headed image be established in a world governed by resemblances? What were the strategies and techniques of credulity that affected the process of truth finding? How could an image move from a statement of fact to a politically motivated fraud? A clue, I submit, is to be found in Wilhelm’s letter to August, sent on 18 April 1580. As we know, it contained the watercolour (Figure 1), which, according to Wilhelm, was the only true representation of his father’s extracted kidney stone. Wilhelm’s use of the German term *conterfeyt* in this context was, I think, deliberate and it needs to be understood in a contextually specific way. The art historian Peter Parshall in his investigation of German/Latin lexica offers us guidance as to the understanding of the sixteenth-century meaning of the term. The German word *conterfeyt*, Parshall explains, had no classical counterpart and only came into use in German during the period we are discussing. Most frequently, it meant simply an image or portrait, though it
could also be used in the sense of the Latin terms effigie or imitatio. This use of conterfeyt Parshall argues, was intended as a substitute for the thing itself, as much as or instead of a mere portrayal or re-presentation of it.

If sixteenth-century ‘seeing’ was not simultaneously knowing, and contemporary onlookers did not necessarily ‘see’ the same thing when they were ‘seeing’, Wilhelm’s use of the term conterfeyt was arguably very pregnant. In the sense of effigie or imitatio, Wilhelm was asking August to accept his watercolour (Figure 1) as ‘the thing itself’, as a substitute for the real kidney stone kept in Munich. And the watercolour itself (Figure 1) supported Wilhelm’s statement. In contrast both to the drawing by the physician Mermann (Figure 2), and the Jesuit-headed watercolour from Dresden (Figure 3), the stone in Wilhelm’s drawing (Figure 1) now no longer appeared as floating in a black space, the anonymous artist having grounded the object on a flat surface. A completely different perspective had been deliberately chosen and shadows had been carefully added to provide a three-dimensional impression. The stone tilted forward towards the onlooker, and in this perspective the convexity – represented as a head-like shape in the Mermann drawing and in the Dresden watercolour – was revealed as two convexities positioned behind one another. Wilhelm’s image (Figure 1) could thus be seen to break the endless game of resemblance by visually unmasking the Dresden image (Figure 3) as representing an illusion of the eye, or as a product of ‘untruthful seeing’.88 The same applies to Mermann’s image (Figure 2), which might have been used, as suggested above, as a template by the Dresden artist. Wilhelm’s wahre conterfeyt (true counterfeit) revealed the visual trick of the other two images, and exposed the Jesuit-headed stone image (Figure 3) as a fake.

Nevertheless, we must be careful not to fall back into positivist modes of thinking and assume that the visual evidence provided was self-explanatory. As I have indicated, within the world of resemblance, things (including images of objects such as body parts) could not provide ‘truthful’ and authoritative evidence. As Ian Hacking puts it, ‘[t]estimony and authority were primary and things could count as evidence only insofar as they resembled the witness of observers and the authority of books’.89 We need, therefore, to add a further and final dimension to our investigation into the dynamics of the kidney stone affair, namely sixteenth-century courtly behaviour and social hierarchy, and the special relationship that existed between the idea of a person of noble rank and that of truth-telling. Recognition of aristocratic honour and noble rank, that is to say, were additional necessary features in establishing the credibility of Wilhelm’s watercolour (Figure 1) over that of the Jesuit-headed image (Figure 3). The epistemology of visual evidence needs to be embedded within concrete socio-cultural practices, above all those connecting credibility and trust in relation to honour and social rank.90

August’s letter of 23 April 1580 reveals that he had received the Jesuit-headed watercolour image (Figure 3) from ‘esteemed places’, that is to say a courtier (or courtiers) whose social standing he respected. What August was looking for in order to refute the image (Figure 3) as a fake was direct testimony from a peer of similarly high or higher rank than the person who had first placed the image into
his hands. Albrecht’s own son Wilhelm would have perfectly suited this requirement, allowing August to disregard all utterances and images to the contrary by those of lesser rank. By receiving Wilhelm’s watercolour (Figure 1), which unmasked the Dresden image (Figure 3) (as well as Mermann’s drawing (Figure 2)) as a visual illusion, and the Duke’s assurance that only this was the true counterfeit of his father’s stone, August would have been able to settle the affair and put his worries aside. The image of the Jesuit-headed kidney stone could thus shift from the realm of a possible God-sent portent requiring decipherment, to the domain of fakery and intentional political critique. Thus, within the world of resemblance, the kidney stone affair could be closed.

**Conclusion**

How can we look anew at a historical event that was first written about in the late nineteenth century without having any substantially new archival material to hand?91 This paper has suggested a re-interpretation of the three key objects at the centre of this visually-loaded incident. Previous historians understood the images involved to be self-evident, stable and universal in their meaning. By doing so, they were unwittingly applying concepts of the epistemological function of anatomical images to these sixteenth-century pictures that only developed after the mid-nineteenth century. On the basis of this retrospective ‘viewing’, the Jesuit-headed image (Figure 3) has been confidently identified as a fake, while the other two (Figures 1 and 2) have been considered ‘truthful’ and ‘objective’ representations of Albrecht V’s original kidney stone. What this confident interpretation fails to solve, however, is the question of why a powerful and well-educated ruler would be concerned about the Dresden Jesuit-headed image (Figure 3) in the first place? Why did August not unmask it immediately? Why was he inclined to ask Wilhelm for clarification? To continue to answer this question by referring to the widespread superstition of the Reformation period – as previous, more positivistically inclined historians have done – is methodologically unacceptable. This article has therefore focused on recent work in the history of vision, visual culture and art, historical epistemology, and the history of science and medicine to reconstruct the dynamic of the affair.

While I do not wish to subscribe to Stuart Clark’s idea that during the Reformation vision was de-rationalized,92 I do follow works that argue that in the sixteenth century, vision and perception (including that of naturalistic images) was anything but secured in its supposed relationship to external objects. The kidney stone affair demonstrates that, in conflict situations, realistic images did not possess the power to convince and unite all of the participants involved in the struggle over their meaning. In a world of seeing that did not yet predominantly discriminate between things, or that aimed at showing differences, but searched instead for resemblances, images alone could not provide enough truthful evidence to resolve controversies such as the kidney stone affair once and for all.
Recent scholarship in the history of science, medicine and art has amply demonstrated that the understanding of the sixteenth-century natural world was not arranged around immovable categories, and that nature did not function according to laws. And yet, how images fitted into this fluid world of meaning-making has been little explored and not resolved. Much scholarship continues to investigate naturalistic images and their epistemological function in and of themselves (and/or in relation to text), and, thus, tends to separate them from the wider socio-cultural and political context in which they circulated and were consumed and comprehended. Recent work on representations of natural prodigies often follow the opposite route of analysis: while providing thick description of the socio-cultural context of such images, they focus little on the epistemological and evidential function of such illustrations within the argument of the text. Conflict situations, such as the Bavarian-Saxon kidney stone affair, I argue, permit us to bring the epistemological function of naturalistic images alongside the specific historical context and the socio-cultural strategies that helped to fix their meaning. They show realistic images of natural objects ‘in action’. Hence, controversies, situated at the intersection of different cultural practices and experiences, which we have come to consider as separate, can contribute to exploring the limits of nature and the natural in the early modern period. They show that ‘seeing’ realistic images in the sixteenth century did not separate vision and interpretation. August’s initial reaction to the Dresden Jesuit-headed watercolour (Figure 3) reveals that such images had the potential to inspire and guide the viewer’s imagination and were able to suggest meanings that by today’s standards today can only appear magical. The early modern way of seeing images corresponded to subtle political strategies of persuasion, and the debates over their meaning demonstrate that sixteenth-century knowledge production not only relied on classical natural philosophical texts and humanist rhetoric and logic, but also responded to social hierarchies and conventions of the time. The unity of early modern culture was a conflicting system of rhetoric, cultural practices and interpretations. Realistic images of natural objects did not escape this fluid system of meaning-making but were integral to it.

My interpretation of the archival material is, however, in the final analysis only suggestive; I do not claim a final say in this matter. New material might be discovered that could highlight different aspects of the story; historical methodology, too, may change. My interpretation of the material was inspired by recent scholarship on the visual turn. But on the horizon new ‘turnings’ seem to be emerging, ones that move away from postmodern concepts such as ‘representation’ and ‘fluidity of meaning’ to embrace (once again) beliefs in ‘certainty’ and the conviction that the truth of the past can be ‘discovered’ through empirical practice. The neurosciences with their promise to ‘solve’ the problem of human perception once and for all, have begun seriously to attract historians. How such new empirical methods based on the natural sciences will change the way we understand images and perceptions in the past will be interesting to see. I predict that they will remind us much of the ways in which late nineteenth-century historians interpreted the visual evidence of the ‘kidney stone affair’. Whether these new
approaches will bring us closer to the truth of perception in the past is of course debatable. But like the story of the kidney stone affair itself, we can be sure that new historical interpretations of the affair will be a product of the episteme of the historians’ own times.

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Notes

1. The article does not mention the authors’ first names and refers only to their academic titles and positions. After some research I am convinced that the two authors were the military surgeon Carl Benno Crede´ (1848–1929) and the lawyer and royal archivist Theodor Distel (1849–1912). Both worked in Dresden at the time the article was published.

2. Dr. Crede´/Dr. Distel, ‘Ueber den Nierenstein Herzog Albrecht V., des Grossmu¨thigen, von Bayern (+ 1579)’, Archiv für pathologische Anatomie und Physiologie und für klinische Medicin, Vol. 96 (1884), 501–2.

3. The co-founder of the journal was Benno Reinhardt. After Reinhardt’s death in 1852 Virchow continued on his own. After his death in 1902 the journal was re-named Virchows Archiv (in 1903). For Virchow see Constantin Goschler, Rudolf Virchow. Mediziner – Anthropologe – Politiker (Cologne 2002), 150–203.

4. For this shift in the nineteenth century and the characteristics of this specific form of ‘objectivity’ see Lorraine Daston and Peter Galison, Objectivity (New York 2007).

5. For his ideas on the visual education of medical students and the public see Angela Matyssek, Rudolf Virchow. Das pathologische Museum. Geschichte einer wissenschaftlichen Sammlung um 1900 (Darmstadt 2002).

6. According to Virchow ‘truth’ was only be called, that ‘which the five senses of a human being – following the methods of observation and induction, set up by the exact sciences – have allowed [him] to perceive as truly existent’. The quote is taken from his Glaubensbekenntnisse eines modernen Naturforschers [1873], 2nd ed. (Berlin 1878), quoted in Goschler, op. cit., 204. The English translations from German or Latin in paper are all my own.

7. For Virchow’s lifelong battle against the dangerously ‘subjective’ aspects of scientific work see Daston and Galison, op. cit., 189–90. The overall pedagogical aim of his anthropological museum at the Charité was to teach medical students and visitors ‘how to see’ scientifically ‘correctly’. See Matyssek, op. cit., 25. Unfortunately his collection and museum, a magnet for visitors over the recent decades, is currently under threat of closure to the public. See Der Spiegel from 26 August 2011, http://www.spiegel.de/international/germany/0,1518,782599,00.html (accessed 10 October 2011).
8. This article cannot do justice to the many works in this important area in the history of medicine and science that have emerged over recent years. See, for example, Thomas Schlich’s work on the representational methods of the German physician Robert Koch “Wichtiger als der Gegenstand selbst”. Die Bedeutung des fotografischen Bildes in der Begründung der bakteriologischen Krankheitsauffassung durch Robert Koch’, in Martin Dinges and Thomas Schlich, eds, Neue Wege in der Seuchengeschichte (Stuttgart 1995), 143–74. For the development of visual evidence in medicine between the mid-eighteenth and late nineteenth century see Jutta Schickore, The Microscope and the Eye: a History of Reflections, 1740–1870 (Chicago, IL 2007).

9. Since the publication of Michel Foucault’s study on late eighteenth- and early nineteenth-century French medicine, The Birth of the Clinic, anatomical pathology and its ‘medical gaze’ has attracted much attention from historians. Foucault later criticized his own use of the term as misleading. It suggested, he argued, that it relates to perception only and to the activities of a unifying subject. But he wanted ‘the gaze’ to be understood more broadly, to identify a new type of medical knowledge that was heavily based on visual perception and shaped by specific institutional structures and wider historically-specific socio-cultural events. Michel Foucault, Birth of the Clinic: An Archaeology of Medical Perception [1963] (London 1973). For a general overview of the development of pathology, see Russell C. Maulitz, ‘The Pathological Tradition’, in William E. Bynum and Roy Porter, eds, Companion Encyclopedia of the History of Medicine (London and New York 1993) vol. 1, 169–91.

10. For this letter and Figure 1 see Sächsisches Staatsarchiv Dresden, Geheimer Rat (Geheimes Archiv), Bestand 10024, Loc. 8506/2, fol. 185. Crede and Distel were using copies of the original letters. The original correspondence is held at the Bayerisches Hauptstaatsarchiv (Geheimes Hausarchiv), Korr. Akten 609/V. In the following I use the correspondence held at Munich.

11. For this and the following, Crede and Distel, op. cit., 501.

12. Most of them were predominantly interested in the history of Bavaria. See, e.g., Herwig Ebner, ‘Eine Bericht über die Sektion der Leiche Herzog Albrecht V. von Bayern’, Jahresbericht des historischen Vereins für Straubing und Umgebung, Vol. 4 (1901), 35–7; Bernhard Duhr, Geschichte der Jesuiten in den Ländern der deutschen Zunge im XVI. Jahrhundert, Vol.1 (Freiburg 1907), 696–7; Hubert Glaser, ‘‘Nadie sine fructo’’. Die bayerischen Herzöge und die Jesuiten im 16. Jahrhundert’, in Reinhold Baumstark, ed., Rom und Bayern. Kunst und Spiritualität der ersten Jesuiten in Bayern (Munich 1997), 55–82; Helga Czerny, Der Tod der Bayerischen Herzöge im Spätmittelelter und in der frühen Neuzeit 1347–1579: Vorbereitungen, Sterben, Trauerfeierlichkeiten, Grablegen, Memoria (Munich 2005), 309–45.

13. The image was first published in 1901 in Ebner, op. cit., 37.

14. For the image see Bayerisches Hauptstaatsarchiv (Geheimes Hausarchiv), Korr. Akten 609/V. The translation of the Latin text reads: ’Both kidneys of Duke Albrecht who died on 24 October of the year [15]79 were completely wasted, and besides the skin, which covered both, nothing healthy was left of them. In the left skin, in a small bag, we found a stone of extraordinary size; its two pieces weighted 5 ½ ounces (162 grams)’. Next to the smaller piece of the stone Mermann wrote: ‘This piece belongs to the other’.

15. See Sachiko Kusukawa, Picturing the Book of Nature: Image, Text and Argument in Sixteenth-Century Human Anatomy and Medical Botany (Chicago, IL 2012). Her book was published only after this article was submitted. I have used her earlier articles on the
same topic. See also Brian Ogilvie, *The Science of Describing: Natural History in Renaissance Europe* (Chicago, IL 2006); from an art historical perspective, see Svetlana Alpers, *The Art of Describing: Dutch Art in the Seventeenth Century* (Chicago, IL 1983).

16. Stuart Clark has argued that the reformed ideas supported a virtual ‘ocularphobia’: See Stuart Clark, *Vanities of the Eye: Vision in Early Modern European Culture* (Oxford 2007).

17. For more detail on this way of seeing, see Alpers, op. cit., 76.

18. For a comprehensive history of physiognomy see Martin Porter, *Windows of the Soul: Physiognomy in European Culture, 1470–1780* (Oxford 2005).

19. The art historian Claudia Swan brings this out well in her study on the Dutch artist Jacques de Gheyn II (1565–1629), who is celebrated in art history as one of the ‘inventors’ of the naturalistic style in Dutch art. See Swan, *Art, Science, and Witchcraft in Early Modern Holland* (Cambridge 2005), 126–54. See there also plate VII.

20. Alpers, op. cit., 76–82; example quoted on 80–2.

21. The literature on this topic is enormous. I found the following helpful: Catharine Wilson, ‘From Limits to Laws: The Construction of the Nomological Image of Nature in Early Modern Philosophy’, in Lorraine Daston and Michael Stolleis, eds, *Natural Law and Laws of Nature in Early Modern Europe: Jurisprudence, Theology, Moral and Natural Philosophy* (Aldershot 2008), 13–28.

22. Michel Foucault, *Order of Things: an Archaeology of the Human Sciences* (London 1974), 34.

23. Mary Lindemann, *Medicine and Society in Early Modern Germany* (Baltimore 1999), 20.

24. Nancy Caciola coined this term in order to explain the physical workings of demonic and spiritual possessions in the late Middle Ages. See her *Discerning Spirits: Divine and Demonic Possession in the Middle Ages* (Ithaca, NY 2003), 176–222.

25. Caciola, op. cit., 176–9; see Katharine Park, *Secrets of Women: Gender, Generation, and the Origins of Human Dissection* (New York 2006), 39–52.

26. Park, op. cit., 49–51, 68–76.

27. Arnold Davidson, ‘Miracles of Bodily Transformation, or How St. Francis Received the Stigmata’, in Caroline A. Jones and Peter Galison, eds, *Picturing Science, Producing Art* (New York and London 1998), 101–24; for bodily signs and processes of saint-making see also Fernando Vidal, ‘Miracles, Science, and Testimony in Post-Tridentine Saint-Making’, *Science in Context*, Vol. 20, No. 3 (2007), 481–508; Nancy G. Siraisi, ‘Signs and Evidence: Autopsy and Sanctity in Late Sixteenth-Century Italy’, in Nancy G. Siraisi, ed., *Medicine and the Italian Universities 1250–1600* (Leiden 2001), 356–80; Andrew Keitt, ‘The Miraculous Body of Evidence: Visionary Experience, Medical Discourse, and the Inquisition in Seventeenth-Century Spain’, *Sixteenth Century Journal*, Vol. 36 (2005), 77–96; Gianna Pomata, ‘Malpighi and the Holy Body: Medical Experts and Miraculous Evidence in Seventeenth-Century Italy’, *Renaissance Studies*, Vol. 21, No. 4 (2007), 568–86.

28. Katharine Park, ‘Impressed Images: Reproducing Wonders’, in Jones and Galison, op. cit., 264.

29. Protestants insisted that prodigies were marvellous and not miraculous, *miranda* not *miracula*. For the changing meaning of wonders see Lorraine Daston, ‘The Nature of Nature in the Early Modern Europe’, *Configurations*, Vol. 6 (1998), 149–72. The literature on prodigies is legion. For an example, which deals with an event similar
to mine, see Alexandra Walsham, ‘Vox Piscis: or The Book-Fish: Providence and the Uses of the Reformation Past in Caroline Cambridge’, English Historical Review, Vol. 2 (1999), 574–606.

30. The secondary literature on witchcraft is enormous. See, e.g., the ‘classic’ by Stuart Clark, Thinking with Demons: the Idea of Witchcraft in Early Modern Europe (Oxford 1997), 489–508; on demonology, Reformation and the power of sight see his Vanities of the Eye, 161–203; for witch hunts in Bavaria see Wolfgang Behringer, Hexenverfolgung in Bayern: Volksmagie, Glaubenseifer und Staatsräson in der Frühen Neuzeit (Munich 1987); for magic and witches in sixteenth-century Saxony, see Manfred Wilde, Zauberei und Hexenverfolgung in Kursachsen (Cologne 2003).

31. There is a huge literature on early modern monsters. Path-breaking in many was the article by Katharine Park and Lorraine Daston, ‘Unnatural Conceptions: The Study of Monsters in Sixteenth- and Seventeenth Century France and England’, Past and Present, xcii (1981), 20–54; for more recent work see Peter C. Platt, ed., Wonders, Marvels, and Monsters in Early Modern Culture (Newark, NJ 2000); and Anthony W. Bates, Emblematic Monsters: Unnatural Conceptions and Deformed Births in Early Modern Europe (Amsterdam 2005).

32. Ronald Po-Chia Hsia, ‘Antichrist, the Babylon, the Great Dragon’, in Laura Lunger Knoppers and Joan B. Landes, eds, Monstrous Bodies/Political Monstrosities in Early Modern Europe (Ithaca 2004), 92; for a similar argument and more German examples, see also Hartmut Lehmann, ‘Miracles within Catastrophes: Some Examples from Early Modern Germany’, in Kate Cooper and Jeremy Gregory, eds, Signs, Wonders, Miracles: Presentations of Divine Power in the Life of the Church (Woodbridge 2005), 321–34.

33. This accounted for an enormous flexibility of sixteenth-century diagnosis and disease definition. For a comprehensive analysis see Claudia Stein, Negotiating the French Pox (Aldershot 2009), 52–6. See also Nancy Siraisi, ‘Disease and Symptom as Problematic Concepts in Renaissance Medicine’, in Eckhard Kessler and Ian Maclean, eds, Res et Verba in der Renaissance (Wiesbaden 2002), 217–40.

34. On the spirits and their physiological functions see Caciola, op. cit., 183–9; also useful is James Bono, ‘Medical Spirits and the Medieval Language of Life’, Traditio, Vol. 40 (1984), 91–130, and Ruth Harvey, The Inward Wits: Psychological Theory in the Middle Ages and in the Renaissance (London 1975).

35. On the subject of early modern autopsies and what could be learned from them for the daily practice of medicine see Nancy G. Siraisi, History, Medicine, and the Traditions of Learning (Ann Arbor, MI 2008), 69–72.

36. For medical case studies and the value of studying sixteenth-century consultation letters to understand the daily medical practice of academic physicians, see Brian Nance, Turquet de Mayerne as Baroque Physician: the Art of Medical Portraiture (Amsterdam 2001); see also Peter Murray Jones, ‘Consilium, narratio, memorandum: Types of Medieval Case History’, paper presented at ‘The History of the Case History’, conference at the Robert Bosch Institut für die Geschichte der Medizin, Stuttgart, June 1991; for biographical information on Thomas Mermann and his education at the university of Pisa see Gustav Falk, ‘Dr. Thomas Mermann von Schönberg, Herzöglicher Bayerischer Arzt und Leibmedikus (1547–1612)’, Bayerland, Vol. 19 (1905), 558–60, 571–4, 585–6.

37. The admirer was the court physician Franz Ignaz Thiermayer. His Latin publication is based on Mermann’s original letters, written in German, Latin or Italian, which are
addressed to a predominantly noble clientele. The original letters are held at the Bayerische Staatsbibliothek in Munich. The publication of Mermann’s letters was part of a larger project that Thiermayer had begun in 1673. His first publication, *Scholia medica ad consultationes et responsiones*, was based on the collection of letters and medical reports of several Bavarian physicians, whom he considered outstanding practitioners. Both projects, which published the consultation letters of southern German physicians, aimed at celebrating the ‘fatherland’ Bavaria. For more biographical information on Thiermayer and his projects see Gustav Falk, ‘Dr Thomas und Dr. Franziskus Ignatius Thiermayer. Ein Münchner Ärztebild aus dem 17. Jahrhundert’, *Bayerland*, Vol. 19 (1908), 159–60, 171–5, 185–8, 201–2.

38. Thomas Mermann, *Consultationes ac responsiones medicæ* (Ingolstadt 1675).

39. Mermann’s discussion of disease causality, which cannot be dealt with in detail here, was couched within Aristotelian natural philosophy and its four causes – the final, efficient, material, and formal cause. For a detailed analysis of the logic and rhetoric of learned medicine, see Ian McLean, *Nature, Logic, Signs and Nature in the Renaissance* (Cambridge 2002).

40. Mermann, op. cit., 349–50.

41. See Johanna Blecker, *Geschichte der Nierenkrankheiten* (Mannheim 1972); Michael Stolberg, *Die Harnschau – eine Kultur- und Alltagsgeschichte* (Cologne 2009); Jürgen Konert, *Vom Steinschnitt zur Nierentransplantation: ein medizinhistorischer Rückblick auf die Entwicklung der Urologie* (Stuttgart 2002).

42. Mermann, op. cit., 381. To support his judgement, Mermann referred to Hippocrates, the ‘most ancient author’, who, according to him, was convinced that the diagnosis of kidney stones was one of the most difficult tasks for a physician. See ibid., 381.

43. Ibid., 384.

44. Mermann is most probably referring to practitioners such as the Swiss practitioner Paracelsus or the anatomist Andreas Vesalius who began to openly criticize the over-reliance of academic medicine on ancient texts and who argued for a more practical approach. For an overview of the changing ideas and practices in sixteenth-century medicine see Andrew Wear, Roger K. French and Ian M. Lonie, eds, *The Medical Renaissance of the Sixteenth Century* (Cambridge 1985).

45. Mermann, op. cit., 356, emphasis added.

46. For the definition of *experimentum* and *exemplum* see Gianna Pomata, ‘Praxis Historialis: The Uses of Historia in Early Modern Medicine’, in Gianna Pomata and Nancy G. Siraisi, eds, *Historia: Empiricism and Erudition in Early Modern Europe* (Cambridge 2005), 144–15; for the structuring of arguments in sixteenth-century medicine see Ian Maclean, *Le monde et les hommes selon les médecins de la Renaissance*, Préface de Ian Hacking (Paris 2006).

47. Foucault, *Order of Things*, 36–7.

48. Thiermayer uses this praise in his foreword to Mermann’s book. The Roman physician Galen had advocated a balanced approach of empiricism and intellectual reasoning. See Luis Garcia-Ballester, *Galen and Galenism: Theory and Medical Practice from Antiquity to the European Renaissance*, trans. Jon Arrizabalaga et al. (Aldershot 2002).

49. This observation applies not only to sixteenth-century medicine. See the collection of articles in Sachiko Kusukawa and Ian Maclean, eds, *Transmitting Knowledge: Words, Images, and Instruments in Early Modern Europe* (Oxford 2006).
50. See Kusukawa, ‘The Uses of Pictures in the Formation of Learned Knowledge: The Cases of Leonhard Fuchs and Andreas Vesalius’, in Kusukawa and Maclean, op. cit., 73–96, 76; see also her recent article ‘Patron’s Review: The Role of Images in the Development of Renaissance Natural History’, Archives of Natural History, Vol. 38, No. 2 (2011), 189–213. According to Nancy Siraisi, Vesalius called his project ‘the historia of the perfect man’: ‘Vesalius and Human Diversity in De humani corporis fabrica’, Journal of the Warburg and Courtauld Institute, Vol. 57 (1994), 68. For the difference between scientia and historia see Arno Seifert, Cognito historia. Die Geschichte als Namensgeberin der frühneuzeitlichen Empirie (Berlin 1976). See also Gianna Pomata and Nancy Siraisi, ‘Introduction’ in Pomata and Siraisi, op. cit., 1–38.

51. See Kusukawa, ‘The Uses of Pictures’ in Kusukawa and Maclean, op. cit., 76. Gianna Pomata has recently shown that there was a considerable shift in the meaning of ‘historia’ in the course of the sixteenth century. The meaning moved away from ‘knowledge without causes’ to ‘knowledge preparatory to the investigation of causes’. See Pomata, ‘Praxis Historialis’, in Pomata and Siraisi, eds, op. cit., 111.

52. Kusukawa, ‘The Uses of Pictures’, 91–2. There is an enormous literature on early modern anatomy. See, e.g., Andrew Cunningham, The Anatomical Renaissance: The Resurrection of the Anatomical Projects of the Ancients (Aldershot 1997), 88–142; see also Park, Secrets of Women.

53. See Kusukawa, ‘The Uses of Pictures’, 76–7; see also James S. Ackermann, ‘Early Renaissance “Naturalism” and Scientific Illustration’, in A. Ellenius, ed., The Natural Sciences and the Arts (Uppsala 1985); Martin Kemp, ‘Taking it on Trust: Form and Meaning in Naturalistic Representation’, Archive of Natural History, Vol. 17 (1990), 127–88.

54. Kusukawa also investigated the images of the physician and botanist Leonhard Fuchs. See Sachiko Kusukawa, ‘Leonhart Fuchs on the importance of pictures’, Journal of the History of Ideas, Vol. 58, No. 3 (1997), 403–27.

55. Ibid., 427.

56. Falk, ‘Dr. Thomas Mermann von Schönberg’, 585.

57. For the Munich Kunstkammer see Lorenz Seelig, ‘The Munich Kunstkammer, 1565–1807’, in Oliver Impey and Arthur MacGregor, eds, The Origins of Museums: the Cabinet of Curiosities in Sixteenth-and Seventeenth Century Europe (Oxford 1986), 101–19; Mark A. Meadow, ‘Merchants and Marvels: Hans Jacob Fugger and the Origins of the Wunderkammer’, in Paula Findlen and Pamela Smith, eds, Merchants and Marvels: Commerce, Science, and Art in Early Modern Europe (New York 2002), 182–200.

58. Often cited examples of such hybrid objects are nautilus or coconut shells, which were often turned into drinking vessels. The literature on cabinets of curiosity has grown considerably over the last two decades. A major contribution is Lorraine Daston and Katharine Park, Wonders and the Order of Nature, 1150–1750 (New York 1998), 255–301.

59. Steffen Siegel, ‘Die “gantz accurate” Kunstkammer. Visuelle Konstruktion und Normierung eines Repräsentationsraumes in der Frühen Neuzeit’, in Horst Bredekamp and Pablo Schneider, eds, Visuelle Argumentationen. Die Mysterien der Repräsentation und die Berechenbarkeit der Welt (Munich 2006), 157–82, 158. See also Heiner Wilharm, ‘Wunder der Repräsentation. Zur Ordnung der Wunderkammer’, in
Brigitte Buberl and Michael Düchershoff, eds, _Palast des Wissens. Die Kunst- und Wunderkammer Zar Peter des Grossen_ (Munich 2003), Vol. 2, 267–83.

60. The inventory was put together by the Munich councillor Johann Baptist Fickler (1533–1610). For a recent edition of the inventory see Doretthea Diemer, Peter Diemer, Lorenz Seelig et al., eds, _Die Münchner Kunstkammer, Vols. 1–3_ (Munich 2008). Quoted examples in Vol.1, 50–1 and Vol. 2, 641.

61. The stone was extracted by the Augsburg-based surgeon Benedict Fröschl. See my entry in Diemer et al., op. cit., Vol. 2, 639–40. For other bladder stones in the collection see, e.g., ibid., Vol. 2, 640, 641.

62. It was only after a scandal in 1647, which revealed that the widow of the court physician Ferdinand Schütz had sold such precious objects, that they had to be kept in a locked drawer at the court pharmacy. See Alexander von Hoffmeister, _Das Medizinalwesen im Kurfürstentum Bayern. Wirken und Einfluß der Leib- und Hofärzte auf Gesetzgebung und Organisation_ (Munich 1975), 19.

63. It is interesting to note that in the Munich edition a reader crossed out entire sections in which Kentmann praises the Protestant religion. Kentmann also published beautifully illustrated works on plants, herbs and animals; on Kentmann see Johannes Helm, _Johannes Kentmann, 1518–1574: Ein Sächsischer Arzt und Naturforscher_ (Wiesbaden 1971); for Kentmann’s images and descriptions of plants and fish see Sachiko Kusukawa, ‘Image, Text and Observatio: The Codex Kentmanus’, _Early Science and Medicine_, Vol. 14, No. 4 (2009), 445–75.

64. _Johannes Kentmann, Calculorum qui in Corpore ac Membris Hominum Innascuntur_ (Torgau, 1565), pag. 10r. For Kentmann’s connections to the Saxon court and his relations to other Saxon physicians interested in human stones, see Jürgen Konert, Hermann Hausmann and Holger G. Dietrich, _Johannes Kentmann (1518–1574) und Sigismund Kohlreuter (1534–1599): Zwei sächsische Gelehrte und ihre Beschäftigung mit naturwissenschaftlichen Fragestellungen in der Urologie_ (Berlin and Heidelberg 2009).

65. Kentmann, op. cit., pag. 11v–13r. For Friedrich’s role in the Reformation see Johannes Hofsommer, _Friedrich der Weise und die Reformation_ (Norderstedt 2008).

66. For natural philosophy and medicine at Wittenberg see Sachiko Kusukawa, _The Transformation of Natural Philosophy: The Case of Philip Melanchthon_ (Cambridge 1995).

67. Kentmann, op. cit., pag. 12v–13r.

68. For a brief overview on Albrecht’s relationship to the Catholic Church see Andreas Kraus, _Geschichte Bayerns. Von den Anfängen bis zur Gegenwart_ (Munich 2004), 218–20; for more detail see Dietmar Heil, _Die Reichspolitik Bayerns unter der Regierung Herzog Albrecht V. (1550–1579)_ (Göttingen 1998), 433–80; 515–23; 613–19; Günther von Lojewski, _Bayerns Weg nach Köln. Geschichte der bayerischen Bistumspolitik in der zweiten Hälfte des 16. Jahrhunderts_ (Bonn 1962).

69. For the history of Jesuits in Germany see the older (if sometimes biased) work by Duhr, _Geschichte der Jesuiten_; for more recent research see Jeffrey Chipps Smith, _Sensuous Worship: Jesuits and the Art of the Early Catholic Reformation in Germany_ (Princeton, NJ 2002). For Albrecht’s relationship to the Society see Glaser, op. cit., 55–82; see also the exhibition catalogue, _Die Jesuiten in Bayern 1549–1773_ (Weissenhorn 1991); and the chapters in Baumstark, op. cit. On Bavarian support of Jesuits missions abroad see Claudia von Collani, ‘Die Förderung der Jesuitenmission in China durch die
70. On Jesuit education in Bavaria see Andreas Kraus, *Das Gymnasium der Jesuiten zu München (1559–1773): staatspolitische, sozialgeschichtliche, behördengeschichtliche und kulturgeschichtliche Bedeutung* (Munich 2001); K. Hengst, *Die Jesuiten an den Universitäten und Jesuitenumiversitäten* (Paderborn and Munich 1981); Stadtarchiv Ingolstadt, ed., *Die Jesuiten in Ingolstadt (1549–1773)*, exhibition catalogue (Ingolstadt 1992); Rolf Kiessling, ed., *Die Universität Dillingen und ihre Nachfolger: Stationen und Aspekte einer Hochschule in Schwaben. Festschrift zum 450jährigen Gründungsjubiläum* (Dillingen 1999). On the practice of early modern science at these institutions see Marcus Helleyer, *Catholic Physics: Jesuit Natural Philosophy in Early Modern Germany* (Notre Dame, IN 2005).

71. For the tension this caused among the courtiers see Duhr, op. cit., Vol. 1, 686.

72. Two more tunnels were built, one to a Capuchin cloister outside the city and another to the house of one of Wilhelm’s doctors. See Chr. Häutle, ed., ‘Die Reisen des Augsburgers Philipp Hainhofer nach Eichstätt, München und Regensburg in den Jahren 1611, 1612, und 1613’, *Zeitschrift des Historischen Vereins für Schwaben und Neuburg*, Vol. 8 (1881), 63. Among other things, Hainhofer provided the Bavarian dukes with relics from Protestant nobles who desperately wished to get rid of them. For Hainhofer’s views on this trade with relics see ibid., 142–3. Hainhofer also visited August’s Kunstkammer in Dresden. See his description in Oscar Doering, ed., *Des Augsburger Patriciers Philipp Hainhofer Reisen nach Innsbruck und Dresden* (Vienna 1901), 141–301.

73. Philip M. Soergel, *Wonderous in His Saints: Counter-Reformation Propaganda in Bavaria* (Berkeley, CA 1993), 132–6.

74. Johann von Fischart, *Von Ursprung und wunderlichen Herkommen des Heyl. Ordens der Jesuiten* (Strasbourg 1577), quoted in Soergel, op. cit., 154.

75. Soergel, op. cit., 153–4.

76. Ibid., 152.

77. For such items see Diemer et al., *Münchner Kunstkammer*; for August’s own Kunstkammer see Joachim Menzhausen, ‘Elector Augustus’s Kunstakammer: An Analysis of the Inventory of 1587’, in Oliver Impey and Arthur MacGregor, eds, *The Origins of Museums. The Cabinets of Curiosity in Sixteenth- and Seventeenth-Century Europe* (Oxford 1985), 69–75; Antje Scherner and Dirk Syndram, eds, *Princely Splendor: The Dresden Court 1580–1620*. Exhibition catalogue (New York 2004); Helen Watanabe-O’Kelly, *Court Culture in Dresden: From Renaissance to Baroque* (Basingstoke 2002), 71–99; on August’s interest in natural philosophy, see ibid., 100–20.

78. For their friendship see Reinhard Zimmermann, *Evangelisch-Katholische Fürstenfreundschaft: Korrespondenzen zwischen den Kurfürsten von Sachsen und den Herzögen von Bayern von 1513–1586* (Frankfurt 2004). Zimmermann clearly underestimates the political character of their relationship. For diplomatic relationships between Bavaria and Saxony see *Bayern und Sachsen in der Geschichte: Wege und Begegnungen in archivalischen Dokumenten*. Exhibition catalogue (Munich 1994).

79. Jens Bruning, ‘Die kursächsische Reichspolitik zwischen Augsburger Religionsfrieden und Dreißigjährigem Krieg – nur reichspatriotisch und kaisertreu?’, in Helmar Junghans, ed., *Die sächsischen Kurfürsten während des Religionsfriedens von 1555–1618*
80. See Bettina Scherbaum, *Bayern und der Papst. Politik und Kirche im Spiegel der Nunciaturberichte 1550–1600* (St Uttilien 2002), 63–5; see also Heinrich Lutz, ‘Die Konfessionsproblematik außerhalb des Reiches und in der Politik des Papsttums’, *Archiv für Reformationgeschichte*, Vol. 56 (1965), 218–27, here 222.

81. Melanchton’s ideas aimed at bringing Lutheran and Calvinist positions closer together. See most recently Irene Crusius, ‘“Nicht Calvinistisch, nicht luterisch”: Zu Humanismus, Philippismus und Kryptocalvinismus in Sachsen am Ende des 16. Jahrhunderts’, *Archiv für Reformationgeschichte*, Vol. 99 (2008), 139–73; on the subject of Saxon Philippism see also Ernst Koch, ‘Der kursächsische Philippismus und seine Krise in den 1560er und 1570er Jahren’, in Heinz Schilling, ed., *Der reformierte Konfessionalisierung in Deutschland – Das Problem der Zweiten Reformation* (Gütersloh 1986), 60–77; also Karlheinz Blaschke, ‘Religion und Politik in Kursachsen 1586–1591’, in Schilling, op. cit., 79–97; and Christian Peters, ‘Der Kursächsische Anteil an der Entstehung und Durchsetzung des Konkordienbuches’, in Helmar Junghans, ed., *Die sächsischen Kurfürsten während des Religionsfriedens von 1555–1618* (Stuttgart 2007), 191–208.

82. What exactly happened remains unclear. For one of the members of the ‘complot’, the court physician Casper Peucer, see Claudia Brosseder, *Im Banne der Sterne. Caspar Peucer, Philipp Melanchton und andere Wittenberger Astrologen* (Berlin 2004).

83. Peters, op. cit., 199–200.

84. Serious negotiations had already begun in 1577. On the 50th anniversary of the Augsburg Confession, on 25 June 1580, the Concordia formula was signed by many Lutheran German princes and Imperial cities. It remains today the central document of the Lutheran faith. For these negotiations and August’s leading role see Peters, op. cit., 202–8; also Ernst Koch, ‘Der Weg der Konkordienformel’, in Ernst Koch et al., *Vom Dissensus zum Konsensus: die Formula Concordiae von 1577* (Hamburg 1980), 10–46.

85. For August’s great belief and reliance on such prodigies and his frequent use of number magic to predict the outcome of political events, see Brosseder, op. cit., 53–71.

86. Sächsisches Staatsarchiv Dresden, Geheimer Rat (Geheimes Archiv), Bestand 10024, Loc. 8506/2, fol. 185.

87. Peter Parshall, ‘Images and Facts in the Northern Renaissance’, *Art History*, Vol. 16 (1993), 554–79. For the phenomenon of substitution, see also Christopher Wood, *Forgery, Replica, Fiction: Temporalities of German Renaissance Art* (Chicago, IL 2008), 40–2.

88. On such visual illusions in sixteenth-century art and magic, which became increasingly popular during the sixteenth and seventeenth centuries, see Clark, *Vanities of the Eye*, 78–111, see also the chapters in Alexandro Nova and Klaus Krüger, eds, *Imagination und Wirklichkeit. Zum Verhältnis von mentalen und realen Bildern in der Kunst der frühen Neuzeit* (Mayenne 2000); and Hans Belting, Dietmar Kamper and Martin Schulz, eds, *Quel Corps? Eine Frage der Repräsentation* (Munich 2002).

89. Ian Hacking, *The Emergence of Probability: A Philosophical Study of Early Ideas About Probability, Induction and Statistical Inference* (Cambridge 1975), 33.

90. The literature on the relationship between honour and scientific credibility in the Anglphone world is extensive. It centres predominantly on the seventeenth century and the case of English experimental philosophy. Trendsetting works were Simon Schaffer and Steven Shapin, *Leviathan and the Air Pump: Hobbes, Boyle and the
Experimental Life (Princeton, NJ 1986); Simon Shapin, The Social History of Truth (Chicago, IL 1994); Barbara Shapiro, A Culture of Fact: England, 1550–1720 (Ithaca, NY 2000). For sixteenth-century Germany the subject is less well known. While there are many studies on aristocratic honour, and, since the 1990s, an increasing number on the practice of early modern science and noble patronage, the specific link between honour and scientific credibility and trust remains to be explored in detail. Some recent exceptions are Tara Nummedal, Alchemy and Authority in the Holy Roman Empire (Chicago, IL 2008); Alisha Rankin, ‘Becoming an Expert Practitioner: Court Experimentalism and the Medical Skills of Anna of Saxony (1532–85)’, Isis, Vol. 98 (2007), 23–53; for the practice of sciences at German courts see Bruce Moran, ed., Patronage and Institutions: Science, Technology, and Medicine at the European Court 1500–1700 (Rochester 1991).

91. Intensive research in the relevant archives in Dresden and Munich did not reveal further material.

92. I feel that Clark’s terminology is not helpful. While it directly opposes the older positivistic narrative that argued for a ‘rationalization’ of sight – by arguing for the opposite – a ‘de-rationalization’ of sight does not adequately cover what was going on. Also, it does not do justice to Clark’s own detailed and erudite analysis of textual evidence and wider socio-cultural events. See, Clark, Vanities of the Eye, 1–2.

93. An interesting attempt to overcome this divide is the article by Marco Ruffini, ‘A Dragon For the Pope: Politics and Emblematics at the Court of Gregory XIII’, Memoirs of the American Academy in Rome, Vol. LIV (2009), 83–100.

94. In fact, since I first submitted this article, new images of Albrecht’s kidney stone were discovered in the University Library of Pisa and in the University Library of Basle. Although it was too late to include these into the discussion here, their existence makes it almost certain that images of Albrecht’s kidney stone – and perhaps even the stone itself – were indeed exchanged and discussed among sixteenth-century intellectuals interested in the natural world. I am grateful to Florike Egmont, Lucia Tomasi Tongiorgi and Sachiko Kusukawa for bringing these images to my attention.

95. For this new methodological move in the humanities to the material and empirical see Joan Scott, ‘History-Writing as Critique’, in Keith Jenkins, Sue Morgan and Alun Munslow, eds, Manifestos for History (Abingdon 2007), 19–38; for this move in the history of medicine/science and its consequences, see Sander Gilman, ‘Representing Health and Illness: Thoughts for the Twenty-First Century’, Medical History, Vol. 55, No. 3 (2011), 295–300.

96. Among the neuroscientists who claim this are Semir Zeki, Inner Vision: An Exploration of Art and the Brain (Cambridge 1999); Vilajanur S. Ramanachandran and William Hirstein, ‘The Science of Art: A Neurological Theory of Aesthetic Experience’, in Joseph E. Goughen, ed., ‘Art and the Brain’, special issue of Journal of Consciousness Studies: Controversies in Science and Humanities, Vol. 6, No. 6–7 (1999). For historians working in the area of art and visual culture who adopt such views see Barbara Stafford, Echo Objects: The Cognitive Work of Images (Chicago, IL 2007); John Onians, Neuroarthistory: From Aristotle to Pliny to Baxendale and Zeki (New Haven, CT 2008); for the art historian David Freedberg’s interests and publications in art and neuroscience visit his website http://www.columbia.edu/cu/arthistory/faculty/Freedberg.html; another enthusiast for the possibilities of neuroscience for academic history-writing is the medieval historian Daniel Lord Smail, Deep History and the Brain (Berkeley, CA 2008).
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