

# The Coat of Arms

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# THE COAT OF ARMS

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# THE TINCTURE RULE'S ALCHEMICAL TINGE

STEPHEN HUMPHREYS PH.D., DIP.H.S.

## Abstract

*The tincture rule was not intended to ensure that arms could be distinguished on the battlefield but was instead an accommodation of a contemporary worldview which recognised that beyond the experienced physical world existed a heavenly ideal which was to be taken as a guide for structuring earthly systems. The tincture rule attempted to institute what appeared to be the likely heavenly arrangement of relevant matters as revealed by neo-Platonism and coloured by alchemy. Heim uncovered accounts which attempted to explain these influences on the tincture rule but, like others, dismissed the notions he was encountering as expressions of 'childish' thinking. Greek philosophies, and theories which were based on them, and particularly humoralism and alchemy, were much studied by the educated members of society, including the heralds. They proved widely influential throughout the high Middle Ages, and into the Renaissance, before fading away when confronted by the intellectual approaches of the Enlightenment.*

The so-called tincture rule of heraldry, which invokes a near categorical imperative against placing a metal upon a metal or one colour on another, is a puzzle. Few, if any, introductory heraldic texts published in the last century or so have failed to discuss this elemental rule, the consensus view being that the rule was established to ensure that arms would be distinguishable upon the battlefield. This seems to be a common-sense, commonly held, rationale but it is a rationale which fails to stand up to serious scrutiny.

The rule is often claimed to have been a very early one, with Pastoureau suggesting that the "[tincture] rules have existed since the origin of arms and have almost always been respected – it is rare to find one per cent of infringements in a given body of arms."<sup>1</sup> Against this though, Woodward finds that "exceptions ... may be counted by the hundred"<sup>2</sup> and Heim indicated that the rules were so frequently flouted as to have been almost as honoured in their breach as in their observation. For Fox-Davies the rule's status was clear: "one of the earliest rules one learns in the study of armory is that colour cannot be placed on colour, nor metal upon metal. Now *this is a definite rule which must practically always be rigidly observed.*"<sup>3</sup>

## Origins

Heim attempted to identify who invented the rule and who first mentioned it, but found no earlier reference to it than the late fourteenth century when an unfavourable aesthetic opinion was offered about the gold crosses on an argent field of the arms of Jerusalem

<sup>1</sup> Michel Pastoureau, *Heraldry: an introduction to a noble tradition* (London, 1997) p. 47.

<sup>2</sup> John Woodward and George Burnett, *Woodward's A Treatise on Heraldry* (Rutland, VT, 1969) p. 103.

<sup>3</sup> Arthur C Fox-Davies, *A Complete Guide to Heraldry* (London, 1985) p. 67 emphasis added.

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Figure 1: The earliest known depiction of the arms of Jerusalem, *Argent a cross or*, dating c.1188. It was commissioned by the Holy Roman Emperor Frederic Barbarossa (d.1190), who participated in the Second and Third Crusades. Source: Robert the Monk, *Historia Hierosolymitana*, Vatican Library Ms Lat. 2001 f.1r. Wikimedia Commons.



## THE TINCTURE RULE

(Figure 1).<sup>4</sup> This however was several centuries after Godfrey of Bouillon, according to legend, took the arms as king of Jerusalem (c.1099/1100). The relevant text reads, “one must know that arms with metal on metal or colour on colour are false... thereby, arms of people of low rank and non-nobles who without discretion take arms arbitrarily are often recognised.”<sup>5</sup> No mention was made about visual distinctness. Rather, the rationale seemed to be of an advisory nature, cautioning that such a combination of tinctures acted as something of a shibboleth, enabling those ‘in the know’ to spot a suspicious parvenu in their midst.<sup>6</sup>

No really satisfactory account about *why* the tincture rule came about currently exists. The leading suggestion – that it was necessary to ensure arms were capable of being distinguishable in battle – is unsatisfactory because in the early period of heraldry the bearer could decide that issue for himself. So long as unique to him, the knight could adopt such arms as he was satisfied with, and could modify the shades of his chosen colours to ensure that they were sufficiently distinctive for his purposes. In Japan at about the same time, Samurai warriors did not complain that the black/red, black/blue, or blue/red colour combinations on their military flags or armour hindered distinguishability in battle,<sup>7</sup> and today’s race horse owners voluntarily adopt colour combinations for their jockeys which may contravene the tincture rule without obviously making field identification impractical.

If the overriding need to ensure individuals could be distinguished in a muddy, bloody, battlefield, really was the reason for the rule, one would not expect that the rule could be ‘bent’ to permit partitioned colour-only shields, let alone find so many other permissible waivers. Permitted exemptions include that the rule does not apply where the chief or bordure are involved in the purported breach (because then the tinctures are ‘adjacent to’ rather than ‘on’ – suggesting semantics can trump any common-sense rationale); that the rule is said not to be transgressed if due to the involvement of furs (so permitting potentially indistinct combinations of, for example, argent/ermine or sable/pean); when occasioned by charges applied over composite fields; or if the charges are blazoned as ‘proper’.

Bedingfield, in discussing the tincture rule, explains to his readers that “a red field with a black fess is not possible... for the simple reason that from a distance ... [the arms] would not be noticed.”<sup>8</sup> Yet those ‘impossible’ arms were taken, according to usual sources, by Henry de Waleis (Wales).<sup>9</sup> Whether or not *Gules, a fess sable* was actually used – perhaps before any pressure to take an ermine fess in order to conform to

<sup>4</sup> Bruno Bernard Heim, *Or & argent* (Gerrards Cross, 1994) p. 9. The earliest English heraldic author John de Bado Aureo (c.1394) makes no mention of the rule, *ibid* pp. 39–40.

<sup>5</sup> Cited in Heim, p. 32.

<sup>6</sup> We still recognise amateur efforts in this way when we spot the execrable ‘heraldic’ efforts made by, it so often seems, headteachers and football clubs.

<sup>7</sup> Emmanuel Valerio ‘Japanese heraldry, battle flags and standards in the age of the Samurai’ in David F. Phillips (ed.) *Japanese Heraldry and Heraldic Flags* (Danvers MA, 2018) pp. 109–136.

<sup>8</sup> Henry Paston-Bedingfield and Peter Gwynn-Jones *Heraldry* (London, 1993) p. 44.

<sup>9</sup> *DBA* vol 3 p. 295, Papworth, p. 706.

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convention – it surely remains the case that a black/scarlet combination can attain a very good degree of clarity, as the ladybird (*Coccinellidae*) demonstrates.<sup>10</sup>

Although colour-blindness, or Daltonism, was not discovered until 1794, and so could not have been the direct rationale for the rule's origin, it may well have been noticed that some colour combinations appeared less satisfactory than others, even if the reasons were not known. Similarly, it is likely that the inconsistent lighting levels experienced in indoor settings during the pre-electric period may have rendered any relatively darker colours less distinct than arms which had metal/colour contrasts. It has always been the case that colour combinations can occasionally 'trick' the eye under particular conditions, and in the medieval world perhaps the resulting colour confusions would have been considered 'witchery', 'devilish' or due to some other supernatural influence. In fact, it was only in 1825 that what is now termed the Purkinje effect was identified, and began to explain how ambient lighting could interact with the way hues are perceived. Under candlelight yellow will appear as white and blue shifts to green, and as conditions darken so reds become harder to see. Further, the Bezold-Brucke effect, discovered in the 1870s, explained how under other ambient lighting conditions reds and greens could appear, respectively, more like yellows and blues. About this time too some of the impressionist painters, but notably Seurat, began experimenting with recent discoveries in colour theory, placing complementary colours on their canvases so that they would mix optically (and in a sense, subjectively) to create more realistic effects. Ewald Hering's opponent process colour theory of the 1890s additionally suggested how different individuals may see colours 'opposite' to those intended. But such frames of reference were not accessible in earlier centuries, and the medieval mind, which could not be expected to understand these sorts of accountings, approached matters through their own traditions.

For Woodward and others there may have been less interest in *why* the tincture rule existed than in seeing it as having been an opportunity for some to create 'special' arms designed to encourage those who noticed them to question their heterodox nature.<sup>11</sup> There are few examples though, and other than the gold on silver Jerusalem arms, perhaps the best known instance is the Codrington augmentation of 1441 which converted a *fess gules* to a *fess embattled counter-embattled sable fretty gules* in recognition of John Codrington's military services.<sup>12</sup> Certainly too, when Edmund Spenser in his *Faerie Queene* (1596) blazons his pretend knight Braggadochio's shield as *Or; a sun* ('the Sunne brode blazed in a golden field'<sup>13</sup>), it was not to cause the reader to begin to wonder about the origins of such 'special' arms but to plainly reveal him as the false knight he is.

It would also be a challenge to credulity to suppose that the rule may have been devised solely so that it might be broken in order to create 'special' arms. However, one may accept that this sort of motivation may have tempted the inspiration for some bearings once such a rule had been adopted – as with the Codrington augmentation. Just possibly it may also lie behind a tradition whereby the colours of symbols of cadency

<sup>10</sup> Waleys is accorded *Gules a fess ermine* in *DBA* vol.3 p. 308.

<sup>11</sup> Woodward and Burnett op.cit.

<sup>12</sup> J.F.Huxford, *Honour and arms* (London,1984), p. 25.

<sup>13</sup> Book V, canto iii, stanza 14.

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will often deliberately contravene the tincture rule in order to distinguish themselves as non-charge brisures. Against all this though it should be recalled that heraldry was little regulated until at least the early fifteenth century, and prior to regulation no such ‘rule of heraldry’ could have existed to be broken, let alone mythologised.

But the tincture rule clearly arose at some point, and so must have had an origin. If there was a need for a rule of this kind it would thus appear not to have been needed before about the mid to late fourteenth century when some call for regulation had begun. Whilst this dating fits in nicely with Heim’s findings, such a time is also subsequent to the demise of use of shields in battle,<sup>14</sup> and so again reinforces the improbability of the rule being about ensuring arms remained distinct on the battlefield;<sup>15</sup> in fact, it suggests that the rule had its origins with those who professed to regulate armory.

It should also be recognised, before proceeding, that an unquantifiable number of examples of purported rule breaking may prove not to be instances of the presumed transgression after all. And this for the rather mundane reason that sometimes tinctures have become confused. Old pigments have been prone to atmospheric degradation with some argents transmuting to sable, and occasionally an instance of a colour may have faded to appear as argent. Confusion may also have arisen when, in producing a roll of arms, the painter approached his task by colouring say, all the blue parts first, and then, after waiting for them all to dry, turned his attention to another colour and so forth, and in this process inadvertently omitted to paint a component of one set of arms. That which went unpainted may later have been understood as argent. This certainly appears to account for some of the arms in Heim’s work. For instance, he gives a family named Baes the remarkable blazon “*d’argent a trois estoils d’or; & un poisson d’argent.*”<sup>16</sup> A white fish on a white field would clearly fail to meet the distinctiveness test on a battlefield. What has happened here is that a field that should be azure has mistakenly come to be blazoned argent. In similar vein, Matthew Paris blazoned the Earl of Huntingdon’s arms as *scutum aureum tres pali aurei*, seemingly placing three golden pallets on a golden shield.<sup>17</sup> Mistakes of this sort are easily made, and lead to misinterpretations including suggesting rule infraction.

### The medieval worldview

Despite then that some instances of apparent rule-breaking may prove to be no such breach at all, the existence of the rule itself by the later middle ages is undeniable. And to understand it properly, it is necessary to understand the modes of thought prevalent amongst those who introduced it. Medieval thought was coloured by prevailing ‘scientific’ understandings which were generally the products of classical traditions synthesised, on occasion, by biblical insights. As Dennys put it: “Medieval heralds and the writers of heraldic treatises were influenced by the Bible and the classical authors.”<sup>18</sup>

<sup>14</sup> The shield was decommissioned from battlefield deployment c.1350: N. Denholm-Young, *The Country Gentry in the Fourteenth Century* (Oxford, 1969).

<sup>15</sup> This theory appears to date from no earlier than the nineteenth century.

<sup>16</sup> Heim, p. 27.

<sup>17</sup> Alex Maxwell Findlater, ‘The arms of Fife – and others’ *The Double Tressure* No. 43 (2020), pp. 40–52.

<sup>18</sup> Rodney Dennys, *The Heraldic Imagination* (London, 1975), p. 113.

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Two of the most influential of the prevalent notions were the macrocosm-microcosm understanding, and the theory of the four elements. The former believed there was a heavenly realm (the ‘macrocosm’) where everything was perfectly ordered, and which offered itself as a model for the earthly realm (the ‘microcosm’). This belief interlinked with the four elements theory, usually attributed to Empedocles, which held that *all matter* was composed – in unique combinations – of the four elements of fire, air, earth, and water; these same elements were also understood to animate mysterious forces which acted on absolutely everything. These interwoven theories reigned large in the medieval world, persisted throughout the Renaissance, and continued strong until at least the late seventeenth century, when enlightened thought began to make in-roads.

Evidence for the influence of these theories on the tincture rule in heraldry can be readily seen when looked for. These influences were almost perceived by Heim in his exploration of historical explanations given for the tincture rule, including those offered by Silvanus Morgan in his *Armilogia sive Ars Chromatica* of 1666. This source seemingly purported to explain the rule by reference to “God Almighty, Jove, Neptune, David, Aristotle, Virgil, Horace, Ovid, Plato and the Apostles.”<sup>19</sup> Notwithstanding such luminary testimony, and despite trying, Heim concluded that the notions he was encountering in this and many other works dealing with the colour theory on which the rule was based – were all too confused, irrelevant, and nonsensical. None of them mentioned an aim for distinctiveness, and as they did not seem to offer any sensible rationale they caused him to deem them unhelpful and inapposite: “in the past *many have presented*, and even copied from each other, a colour-philosophy which we, today, can only consider as far-fetched and often (not to be too unkind) rather infantile.”<sup>20</sup>

The fact that he found so many works attempting similar explanations ought perhaps to have cautioned him about being too dismissive but, nevertheless, unable to make sense of the ideas his translations revealed, he discounted them. One such essential insight he failed to understand was in *De Studio Militari*, Nicolas Upton’s fifteenth century text, which he dismissed as:

*“For a heraldist of our time it is a curiosity rather than of really pertinent interest that he [Upton] sees the origins of colours founded on different proportions of humidity, dryness, warmth and cold.*

*It is rather useless to follow his lengthy trend of thought.”*<sup>21</sup>

Far from being ‘useless’ though, this text offers the key with which to understand the tincture rule. One does, however, have to sympathise with Heim’s exasperation (“I cannot see any logical connection”<sup>22</sup>) and certainly he was not alone in his inability to understand what can appear – without understanding the necessary context – to be an array of rather convoluted nonsense. Dennys similarly overlooked an allied set of ideas when he noted, but otherwise disregarded as an affectation of the time, “The curious system of blazoning arms in terms of precious stones [which] became quite popular in

<sup>19</sup> Heim, p. 21.

<sup>20</sup> Heim, p. 10 emphasis added.

<sup>21</sup> Heim, p. 30.

<sup>22</sup> Heim, p. 25.



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the fifteenth century and lingered on into Tudor times, but fortunately ... then fell into disfavour.”<sup>23</sup> Fox-Davies too was amongst those critical of these alternative approaches to blazoning – based on planets, jewels, or numbers for example – which he saw as an “aberration of the intellect.”<sup>24</sup>

Heim and others though were seeing the past anachronistically. Or rather, they were not seeing, because it is only when the Greek influence, the climatic conditions (the ‘humidity, dryness, warmth and cold’), and the relevance of the jewels are understood in their contemporary context that we can properly understand the tincture rule.

The four elements were believed to be constituents of everything physical, and much that was not: their balance was crucial for the normal functioning of humans and all else in the universe. In medicine,<sup>25</sup> for example, the four elements were met in the four humours: black bile (melancholy), phlegm, blood, and yellow bile (choler). Too much or too little of one would put one ‘out of humour’ and the physician would advise a suitable restorative treatment – often involving bloodletting, a change of diet or climate, or the application or ingestion of waters or metals – in an attempt at rebalancing the humours. The elements, which were essentially of a qualitative rather than a quantitative nature, were also each associated with other natural phenomena: a season (spring, summer, autumn, winter); a life-stage (childhood, youth, maturity, old age); a climatic condition (hot/moist, hot/dry; cold/dry, cold/moist); flowers; jewels; planets; zodiac signs; and – not least – colour. Edmund Bolton in his heraldic text of 1610, for example, refers to the colours chosen for a coat of arms as being its ‘humours’ and suggests the properties associated with particular charges could transfer to its possessor if made under the appropriate constellations.<sup>26</sup> Other contemporary heraldists also suggested that the design of a coat of arms should reflect the inner man for whom the patent of arms was being devised, and that the design could be expected to influence the armiger’s lineage in some vague and undisclosed way.<sup>27</sup>

It is in this context that one should recall how the so-called ‘Duke of Clarence’s ordinances of 1417’ – which are now considered to be the ordinances of Richard, duke of Gloucester, and to date from between 1469 and 1483<sup>28</sup> – which were intended to underpin a project to better regulate coat armour in England in the fifteenth century, instructed officers of arms to study books dealing with ‘the properties of colours, herbs, and stones, so that they may be able to justly and suitably to assign to each person the arms that belong to him.’<sup>29</sup> Whilst it is not clear how this was to be achieved, the ‘doctrine of similars’ was prevalent at the time and would suggest that attributes which could be associated with particular heraldic charges might impart similar qualities to

<sup>23</sup> Dennys, p. 48.

<sup>24</sup> Fox-Davies, p. 61.

<sup>25</sup> There are as few general texts on the history of medicine which fail to mention the significance of the four humours as there are modern texts on heraldry which fail to mention the tincture rule.

<sup>26</sup> Edmund Bolton *Elements of Armories* (London, 1610).

<sup>27</sup> For example, David Carlson “The Writings and Manuscript Collections of the Elizabethan Alchemist, Antiquary, and Herald Francis Thynne” *Huntington Library Quarterly* Vol. 52 No. 2 (Spring 1989) pp. 203–272.

<sup>28</sup> Adrian Ailes ‘Ancient Precedent or Tudor Fiction?’ in Katie Stevenson (ed.) *The Herald in Late Medieval Europe* (Woodbridge, 2009) pp. 29–39.

<sup>29</sup> Anthony R Wagner *Heralds & Heraldry in the Middle Ages* (2nd ed) (Oxford, 1956) pp. 61, 138.

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those connected with such devices. Alchemy also favoured this way of thinking. Hughes, for example, has argued that the white hart device was chosen by Richard II because that king's own studies of alchemy had suggested to him how it was a particularly appropriate symbol for him.<sup>30</sup> However the ordinances were to be realised, the heralds of the time appear to have complied with them and, indeed, so engaged themselves in their studies that heralds became regarded as amongst the leading intellectuals of the later fifteenth century<sup>31</sup> and “arguably the most significant intellectuals in sixteenth- and seventeenth century England.”<sup>32</sup> They were certainly knowledgeable about genealogy, antiquarianism and state precedent, they were well-connected, and often too possessed the enhanced language skills of diplomats and messengers – all of which suggests that they would have been highly literate and likely to be familiar with many of the important ideas and influential texts of their day.

If modern-day heraldists have not comprehended the significance of certain aspects of medieval heraldic texts, it must be acknowledged that: “although the theory of the four elements is well known, the concept of a theory of four colours is virtually unknown and [it] refers to the use of *quattuor colores*: black, white, yellow and red.”<sup>33</sup> While the ‘quattour’ colours are of particular significance to understanding the tincture rule, it should also be noted that many aspects of the colour theory had proven controversial even amongst the classical, ancient Greek, writers, several of whom confessed their struggle to produce secondary colours from the base palette. Despite this, and “from the mid fourth century BC ... [the colour theory] has continued ever since to exercise a powerful though subliminal influence over western art and culture.”<sup>34</sup>

The colour theory derives from the theory of the four elements, and recognises that white (water/the moon/winter) opposes yellow (fire/the sun/summer) just as red (air/Mars/the spring) confronts black (earth/autumn) [**Figure 2**]. These four elemental colours were recognised by the Pythagoreans and, although Plato substituted ‘bright’ for yellow, otherwise there was much consistency, at least as regards the four-part palette (sometimes termed ‘the tetrachromikon of Apelles’).<sup>35</sup> That the Greeks rarely mentioned blue or green – preferring terms that referenced lightness or darkness – was a difficulty for some medieval scholars,<sup>36</sup> but there it was. Just because something was inadequately understood did not necessarily disprove it. Indeed, imperfect man could hardly expect to understand perfection – for that would be to have comprehension of the mind of God, an absurd notion.

Heim experienced much doubt when he came close to discovering the four elements theory as that which underpins the rationale for the tincture rule. He struggled over the

<sup>30</sup> Jonathan Hughes *The Rise of Alchemy in fourteenth-century England: Plantagenet kings and the search for the philosopher's stone* (London, 2012).

<sup>31</sup> Jonathan Hughes *Arthurian Myths and Alchemy: the kingship of Edward IV* (Stroud, 2002).

<sup>32</sup> Michael Hunter *Science and the Shape of Orthodoxy: intellectual change in late seventeenth century Britain* (Woodbridge, 1995) p. 31.

<sup>33</sup> J L Benson *Greek Colour Theory and the Four Elements* (Amhurst, MA., 2000), p. 20.

<sup>34</sup> Bensen, op.cit., p. 33.

<sup>35</sup> In 1599 Brooke, York Herald, likened the College of Arms to Apelles' workshop and suggested that heralds were unassailable in matters of colour, see Isaac Disraeli, *Miscellanies of Literature Vol. II* (Paris, 1840), p. 237.

<sup>36</sup> It remains a puzzle, but see also fn. 53 below.

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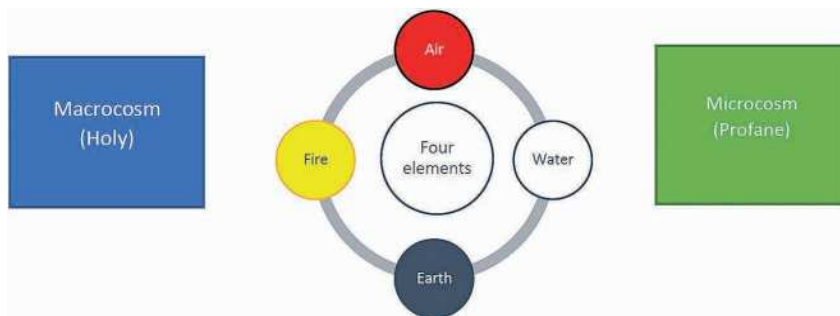


Figure 2: Stylized representation of the medieval oppositional colour scheme: the four elements, the holy and the profane.

more controversial, rather arcane, notions about Greek colour theory, and could not make headway. He acknowledged his confusion when he observed, for example, that at least two medieval authors had claimed that all colours are different mixtures of white and black. He considered if both were colour blind and concluded that he could not agree with that because his experience had always been that mixing black and white only produces grey.<sup>37</sup> In fact, Heim had already alluded to the solution to this problem when he reported a text which explained that “colour is nothing else but light mingled with darkness’... [and] light ‘in this art is called argent.”<sup>38</sup> What Heim did not know was that Aristotle had claimed that there were just two primary colours – black and white – and that all other colours could be derived from them, at least in certain circumstances. Aristotle’s circumstances – which were not to be met again until at least Newton’s time – could, he had claimed, be created by substituting mist for white and smoke for black. By interfering with the emanation of the white (mist) by the introduction of black (smoke) he had seemed to suggest an ability to block certain rays and thereby momentarily isolate particular colours. This was a difficult experiment to reproduce, and the results were inconsistent at best. Other classical writers certainly struggled to replicate the experiment; most appear to have pursued other enquiries and, when discussing colours, simply satisfied themselves with their four basic ones. These four colours could clearly represent the four humours and other quadratic systems of thought, and they did so throughout the medieval world. Thus it is at least of interest that we find in Saracenic heraldry the same tetrachromatic palette: “colours are very rare and where they do appear they are confined to white and red ... [with a] very welcome exception ... where black and gold inlay appears as well.”<sup>39</sup>

These sorts of ideas, which were essentially of Ancient Greek thought, filtered back into Europe throughout the later medieval period as Arabic textual copies of Greek works were translated into Latin and studied in the developing universities.<sup>40</sup> Medieval Europeans, and increasingly from the thirteenth century, were catching up on middle

<sup>37</sup> Heim, p. 24.

<sup>38</sup> Heim, p. 21.

<sup>39</sup> L. A. Meyer, *Saracenic Heraldry* (Oxford, 1933) p. 28.

<sup>40</sup> See for instance, Violet Moller, *The Map of Knowledge* (London, 2019).

## THE COAT OF ARMS



Figure 3: Arms of the art (of alchemy). Frontis from the alchemical treatise *Splendor Solis* (*Splendour of the sun*) written c.1410 and attributed to Salomon Trismosin. This German language version was created in 1582, BL Ms Harley 3469 f.2. © British Library Board. A version of the book was owned by King Charles II.



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eastern scholarship and discovering new ideas which could be adopted pending further discoveries that might explain the logic underpinning them. After all, “in the ages of intense faith ... if there is a God in heaven, there must be a reason for everything.”<sup>41</sup> Certainly there were biblical admonitions which no one really understood, but, many reasoned, if they were the word of God they should not be ignored. Thus, the prohibitions against mixing materials, such as were to be found in Leviticus 19:19 or Deuteronomy 22:11, might have been thought relevant for at least suggesting something like the tincture rule. There must have been some basis for such commands, and although humanity might not always understand the mind of God, ignorance of the reasoning which had occasioned such rules should not permit disobedience. It was thought that the classical Greek writers had understood how things were with the world, and so studying their works would surely be of benefit. Pending the discovery of the particular texts which would offer the explicit answers sought, it was considered only sensible to adopt good practices. Some individuals and groups however were more proactive than others in seeking the ultimate answers: chief amongst these were the alchemists.

Attracted probably by the alchemical promise of converting base metals in to gold, and what they thought this might mean for them, alchemy became a popular interest amongst the elite throughout Europe from the thirteenth century onwards. Individuals such as Robert of Ketton (aka Robert of Chester, fl.1144–50),<sup>42</sup> Robert Grosseteste (1170–1253),<sup>43</sup> St.Thomas Aquinas (1225–1274),<sup>44</sup> Roger Bacon (1220–1292),<sup>45</sup> and numerous others, engaged deeply in alchemical studies and ensured the spread of its ideas. Almost all English kings from Richard II until at least the Stuarts had an interest in alchemical possibilities, and many joined their courtiers in becoming active patrons of the mysterious science (**Figure 3**).<sup>46</sup> As one historian notes, the fifteenth century was an age when the realms of science and superstition largely overlapped, alchemy was popular in educated circles, and when the phenomena of witchcraft, alchemy, astrology and sorcery were all taken very seriously.<sup>47</sup>

### Transmutation<sup>48</sup>

In the theory of the four elements everything is assigned a place in a universe of opposites. Yellow/ gold opposes white/silver and these are the colours of, in particular, fire and water. Just as fire can be extinguished by water, it is also the case that water can be evaporated by fire. The mysterious relationships involved depended on the balance

<sup>41</sup> Dennys, p. 51.

<sup>42</sup> Charles Burnett, Robert of Ketton (fl. 1141–57), New DNB.

<sup>43</sup> Nicola Polloni, ‘Early Robert Grosseteste on matter’, *Notes and Records, the Royal Society journal of the history of Science*, 2020.

<sup>44</sup> Aquinas alludes to alchemy in his *Summa Theologica* II.II.77.2 and III.66.4. According to the *Catholic Encyclopedia* several treatises on alchemy were attributed to him.

<sup>45</sup> *Encyclopaedia Britannica*: Roger Bacon.

<sup>46</sup> Hughes 2002 and 2012, op.cit.

<sup>47</sup> Dan Jones, *The Hollow Crown: the war of the roses and the rise of the Tudors* (London, 2015) pp. 22, 84, 274.

<sup>48</sup> For alchemy and its history see M. M. Pattison Muir, *The Story of Alchemy and the Beginnings of Chemistry* (Washington, D.C., 2018) and P.G. Maxwell-Stuart *The Chemical Choir: a history of alchemy* (London, 2008).

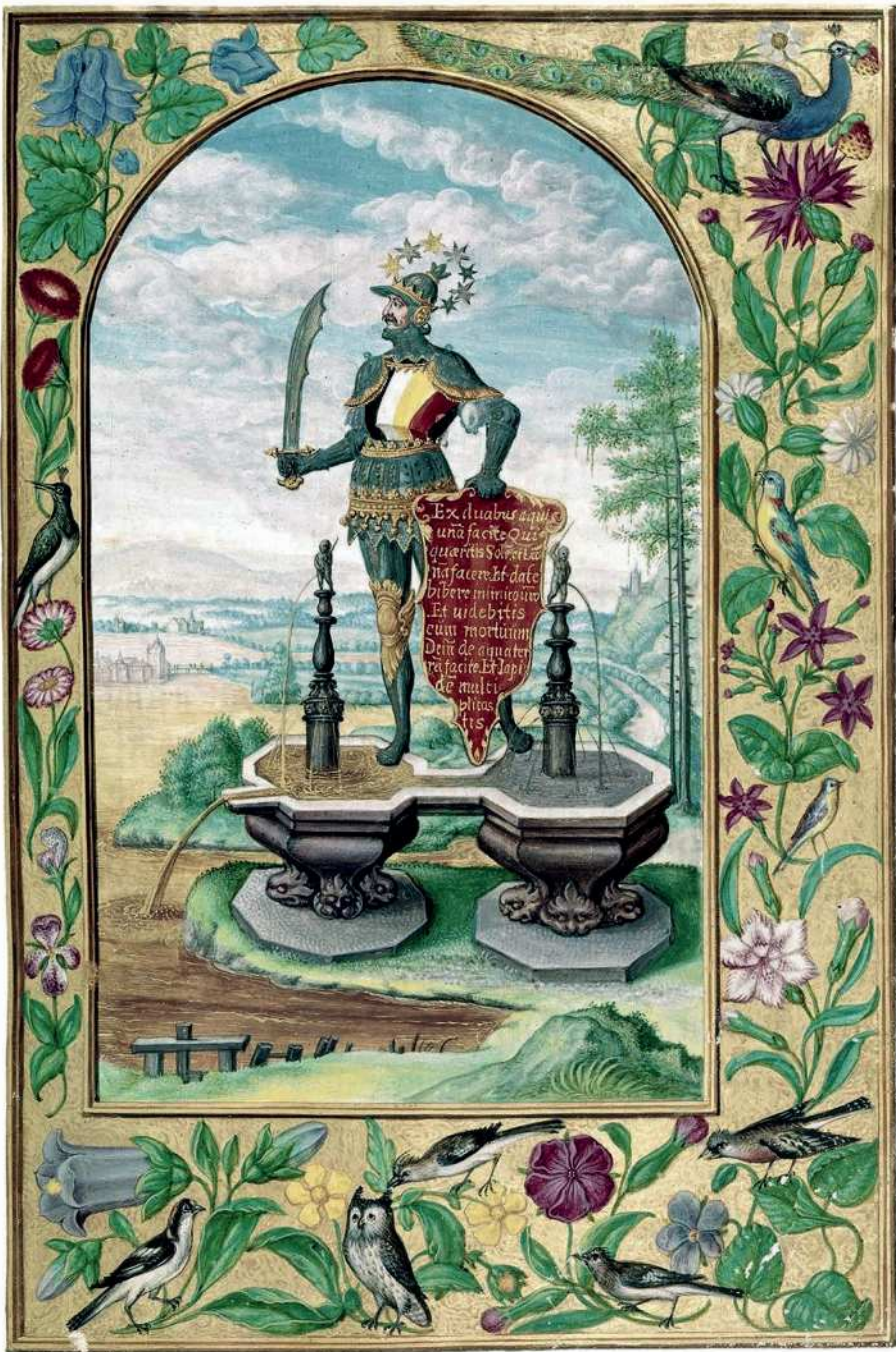


Figure 4: A knight wearing the colours representative of alchemy's *Magnum Opus* from *Splendor Solis* BL Harley MS 3469 f.7. © British Library Board.

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of elements, and it was accepted that opposing elements could also play key roles in transmutation processes: fire and water were necessary in the production of gold and silver (or their mental counterparts, for alchemy was not just about manipulating metal ores). Alchemy took its influence from the macrocosm-microcosm theory and sought to attain the perfect state, as typified by the creation of gold. How the transmutation could be made operative though was a secret frequently transmitted under the guise of the obscure and the allegoric: it was deliberately intended that literal interpretations of the instructions would appear foolish to the uninitiated.

Heim, of course, had never been an initiate into the dark arts of alchemy, yet this did not prevent him from undertaking the necessary translations from Latin, German and French, and of recognising the key arguments within relevant texts. Albeit unknowingly, he thus uncovered the alchemical involvement when he reported the ‘nonsensical’ ways by which Renaissance and earlier writers were attempting to explain the tincture rule:

*“If the humidity is less and heat great, great blackness can be produced (nigredo magna potest generari) ... Sometimes however heat produces whiteness in humidity... as one can be seen in the whiteness of a boiled egg.”*<sup>49</sup>

What Heim had found here is an explanation of the philosopher’s egg.<sup>50</sup> This was a way of trying to illustrate the alchemical process by which to produce the philosopher’s stone. The process, known as the magnum opus (**Figure 4**), shifts between four phases, which were always distinguished by the four colours, in the transmutation to gold (**Figure 5**). The egg shell represents the quality earth (represented by black or, as alchemy preferred to render terms in the Latin, *nigredo*, and immediately inside it can be found a membrane of skin representing air (red, *rubedo*), which separates the shell from the albumin (water, white, *albedo*), whilst itself protecting the yolk (fire, yellow, *citrinitas*). The process can move in one of two directions – a wet-led one or along the dry path. The former route being longer but more reliable whilst the latter path was quicker but more volatile, and so more dangerous.

Alchemy offered to manipulate an entity’s properties – an activity that could have unforeseen consequences for the uninitiated – and amongst such properties was the fact that “yellow, visually the stronger of the two colours, will go to water, the denser element, leaving white ... [The latter] is passive, lacking specific expression...”<sup>51</sup> Clearly, in the properly ordained arrangements of the world, as there was a danger that opposing noble

<sup>49</sup> Heim, p. 30, citing Nicolas Upton.

<sup>50</sup> The heraldic cockatrice’s life-cycle recounted by some bestiaries references alchemical stages: it was hatched on a dunghill from a cock’s egg by a serpent over nine years, after which it would then lay its own egg for a toad to hatch in order to create a basilisk (supposedly the king of serpents). The toad represented lead, the basest of metals. Other ‘heraldic’ bestiary creatures, especially those that can rejuvenate or survive in more than one element (such as reptiles, and especially the dragon as it could flourish in all four elements – earth, air, fire and water) are also allusions to alchemical processes. See Laurence A. Breiner ‘The career of the cockatrice’ *Isis* 1979, vol. 70(1), pp. 30–47; Arthur Greenberg *From Alchemy to Chemistry in picture and story* (Hoboken, N.J., 2007). Note that virtually all heraldic charges can be put to alchemical interpretations as “heraldry and alchemy borrow much of their nonsense from the same sources”: Arthur H Nason *Heralds and Heraldry in Ben Jonson’s plays, masques and entertainments* (New York, 1907) p. 116.

<sup>51</sup> Benson, p. 35.



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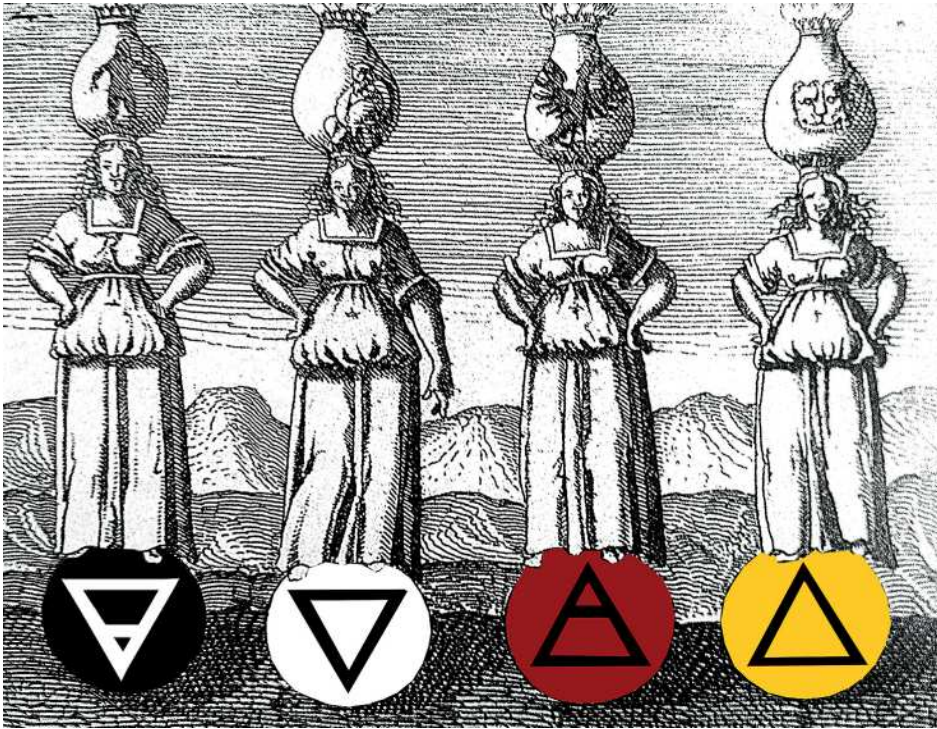


Figure 5: the four elements and the four stages of alchemy. The roundles from left to right carry the alchemical symbols for earth, water, air and fire. The flasks represent the four alchemical processes of blackening-*nigredo* (a putrefying man); whitening-*albedo* (a whitening man); reddening-*rubedo* (a bird taking flight) the Philosopher's stone which turned base metal into gold was usually stated to be red in colour; yellowing-*citrinitas* (a lion, the living gold). Artwork by Paul A Fox based on a woodcut from Daniel Stolz von Stolzenburg, *Viridarium chymicum* (Frankfurt am Main, 1624).

elements would tend towards cancelling each other out, they should not be allowed to intermix unrestrainedly. Again, one did not necessarily have to understand all the logic underlying this fact; but one had to accept it and abide by it.<sup>52</sup>

It was via this thinking, derived largely from the theory of four elements as shaped by alchemy, that the texts Heim translated accounted for the tincture rule, a rule needed to protect tinctures from transmuting. This was more of a danger with metals, but could affect the enamels too. Unlike the metals, the colours taken to represent the elements of *earth* and *air* seemed not always to be agreed consistently amongst the various

<sup>52</sup> Chaucer's *Canon's Yeoman's Tale* cautions against such studies.



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authorities.<sup>53</sup> It was still the case that whatever the specific colours were, they must be in opposition one to another, and so colours as a class should not be mixed.<sup>54</sup>

Even those medieval contemporaries unfamiliar with either Greek philosophy or alchemy knew from their own aesthetic sensibilities that some colour combinations were simply less attractive than others. This was not something people found easy ‘to put their finger on’ in order to explain. Some writers might simply settle for generalities such as, “metal and colour make a perfect coat of armour”<sup>55</sup> or “armory cannot be good, that hath not in it either gold or silver,”<sup>56</sup> as it was always easier to provide advice rather than explanation.

Understandings of the significance of colour by heraldic authors evolved with time. They had much to say about the colour gold, described by Bartolo di Sasso Ferrato in the fourteenth century as being “the noblest [colour] in the world, because gold, of its nature, is bright and shining and full of virtue, and so comforting that the doctors give it as a sovereign cordial to the man who is sick unto death.”<sup>57</sup> John de Bado Aureo later in the same century described white as the noblest tincture, since “white and black are the primary colours from which all other colours are derived”.<sup>58</sup> He placed gold in a lesser position. As Dennys also observed, “it must have been very confusing for the late fourteenth century heralds ... to find the significance of the colours and their degree of importance altered [by different authorities].”

As different authors expressed different ideas so their books became more individual and, with time, some met more acceptance than others, but in this process the ‘rules’ of heraldry were consensually settled. By the late Tudor period following a period of turmoil when many notions in the science of heraldry were explored, colours came to be associated with specific flowers, elements, numbers, metals, precious stones, planets and virtues, as delineated in Sir John Ferne’s *The Glory of Generositie* (1586).<sup>59</sup> The state of the art had rather settled down by the eighteenth century, by which time any ideas based on medieval philosophies were laid aside.

<sup>53</sup> Mars, which might be represented by red (or black), was occasionally replaced by Mercury in the planetary system, yet Mercury was usually represented by the colour white. Sulphur was yellow, but could sometimes be red or white. The apparent confusion – often intended to misdirect the uninitiated – would resolve if one knew what stage of the alchemical process was under discussion. Thus, whilst pure sulphur was yellow, it was usually found in an impure state (as cinnabar) and this might be represented by red; the alchemical stages – of separation, re-joining, reduction and dissolving on the way to gold – which invariably involved both sulphur and mercury, were indicated by associated colours which would vary depending on the path and process involved. The paths and processes themselves were often referenced allegorically. With appropriate training one might understand all this, but without an appropriate level of knowledge the instructions purposefully appeared as nonsensical.

<sup>54</sup> There were two colours which were not normally associated with alchemy: blue was usually regarded as representing the holy or ‘macrocosm’, whilst green stood for the ‘microcosm’: clearly it would be inappropriate to attempt to mix these colours.

<sup>55</sup> Silvanus Morgan, cited by Heim, p. 21.

<sup>56</sup> Guillim, cited by Heim, p. 24.

<sup>57</sup> Dennys, p46.

<sup>58</sup> Dennis, p. 68. See also fn.52 supra.

<sup>59</sup> Thomas Woodcock and John M Robinson *The Oxford Guide to Heraldry* (Oxford, 1990) pp. 53–54.

## Conclusion

The tincture rule arose not because it was necessary in order to distinguish friend from foe on the battlefield – that notion, which appealed to ‘common sense’, arose only in relatively recent times – but because it accorded with other ideas which informed the medieval world view. Neo-Platonism, the theory of the four elements, and alchemy were significant factors which all indicated that aesthetics should be governed by objective rules. Those rules warned against inappropriate mixings. Alchemy, for example, observed that opposites attracted and, because uncontrolled mixing could have unintended consequences, it sought to manage the dangers involved. The rules were there to be respected, even if they were only imperfectly understood, and heraldry could hardly regard itself a science if it did not adhere to such basic scientific understandings as were widely respected throughout the medieval and Renaissance worlds. Heim’s enquiries disclosed evidence for this. His published work *Or & Argent*, which can only provide a partial account of what his translations must have revealed, can be seen to point to alchemical influences at work in the creation of the tincture rule as well as to other factors which may also have had an influence, such as ‘God Almighty, Jove, Neptune, David, Aristotle, Virgil, Horace, Ovid, Plato and the Apostles’. The authorities explored by Heim may have offered further explanatory accounts for the wider understandings of the time which accorded particular colours their referent meanings (such as blue representing heaven, and green indicating profane earth). Alchemy’s influence will have been to provide a basis for managing colour combinations. The unimpeded intermixing of opposing tinctures – metal on metal or colour on colour – could not be seen as ‘right’ from within contemporary worldviews: it followed that heraldic design should aim, amongst other things, at balance – metal *and* colour – just as the medical science of the time sought to achieve humoral balance.