

‘The Best Mnemonical Expedient’: John Beale’s Art of Memory and its Uses

I

The nature, operation and betterment of human memory was of concern to a great many natural philosophers in the middle years of the seventeenth century, particularly within the context of debates on the soul’s immortality. Such is amply attested by the lengthy overview of competing theories of memory given by Joseph Glanvill in *The Vanity of Dogmatizing* (1661), his apologia for the new learning, published on the cusp of the Royal Society’s formation.¹ In the preface to his *Micrographia* (1665), Robert Hooke lamented that ‘*all the uncertainty, and mistakes of humane actions, proceed either from the narrowness and wandering of our Senses, from the slipperiness or delusion of our Memory, [or] from the confinement or rashness of our Understanding*’, in so doing adopting a tone very similar to that of Glanvill’s *Vanity*.² But as Hooke had put it some pages before, it was possible to repair these infirmities by the use of ‘artificial Instruments *and* methods’.³ The senses, for example, could be repaired by telescopes or microscopes, while the failings of the understanding could partially be corrected by redefining scientific methodology along Baconian lines. But Hooke took the memory to be something which demanded its own remedies, the best of which would

*Consist of such Direction as may inform us, what things are best to be stor’d up for our purpose, and which is the best way of so disposing them, that they may not only be kept in safety, but ready and convenient, to be at any time produc’d for use, as occasion shall require.*⁴

Later in his preface, Hooke remarks that writing things down is one of the most effective ways of ensuring their preservation and easy recall, but as we shall see, this is not the idea animating his proposal for a ‘method’, or artificial memory, that would improve the human mnemonic facility.⁵

Such a method was something along the lines of the classical art of memory, and aside from the classical corpus itself, Hooke may have had in mind any

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of a number of mnemonic works published in England in the 1650s and early 1660s. These included Henry Herdson's Latin *Ars Mnemonica*, and his vernacular gloss on this, *Ars Memoriae*, first published in 1651, and then again in 1654.⁶ 1661 saw the publication of the first complete English translation of John Willis's *Mnemonica*. The Latin *Mnemonica* had been published in 1618, and although not a particularly original work, is by far the most comprehensive English treatise on the art of memory published in the seventeenth century.⁷ Another author, the physician Richard Saunders, proposed the development of an artificial memory along the lines laid down by the fourteenth-century Catalan mystic Ramon Lull, an appendix to his *Physiognomie* (1657) describing 'What an Artificiall Memory is, or the Art of *Raymundus Lullius*', and why such should be cultivated.⁸ However, and as the rest of this article is concerned to demonstrate, Hooke and his fellow members of the Royal Society could also have called to mind an ambitious but unpublished scheme for an artificial memory, constructed more or less on classical precepts. This was the work of the clergyman and FRS John Beale, a man of polymathic abilities perhaps best known to posterity for his horticultural enterprises.

II

Before considering Beale's scheme itself, it seems needful to say a word addressing what exactly the classical art of memory was. Classical mnemonics, or the 'art of memory', was predicated on the arrangement of the memory into an ordered scheme of places (*topoi* or *loci* – these might take the form of the rooms in a familiar house or the houses on a familiar street), in which a range of images or other marks would be stored, each of which would accord to a thing or notion; everything one experienced would be accorded its place within a given mnemonic order. Thus, if one wished to recall a fact, one would consider what general heading (or place) it might come under, and search within that place for the particular fact (in the form of an image or mark) that was required.⁹ The practice was first described by Aristotle, who considered it to be a useful dialectical tool.¹⁰ As befits its Aristotelian origins, this was essentially a visual, spatial, practice, as for Aristotle, memory was the image of one's experiences stored in the brain.¹¹ However, by the second century BC it had been adopted as a part of rhetoric, and it is in the architectural version of classical mnemonics as described by the Roman rhetoricians Cicero, pseudo-Cicero and Quintilian that it came to be most influential.¹² In the medieval period, Albertus Magnus and his pupil Thomas Aquinas both made important adaptations to this practice, and artificial memory became a way of structuring – after Aristotelian dialectic – the whole pattern of thought.¹³ But the ascendancy of rhetorical humanism in the renaissance saw the decline of mnemonics, which was relegated to a position as a short-term aid to oratorical fluency, and as something which 'encumbered' rather than enhanced the

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propitious operations of the intellect.¹⁴ An accurate memory was seen as the product of an efficient method of study, though this position is not without its ironies in that the commonplace books in which scholars were encouraged to write up their reading for ready reference based their categorisations on mnemonic places.¹⁵ This hostility was exacerbated by the suspicions of charlatanry, irreligion and magic aroused by the mnemonic schemes of, e.g., Ramon Lull and Giordano Bruno, which claimed to be variously able to unlock the secrets of humankind, nature and God.¹⁶

Towards the end of the sixteenth century in England, Aristotelian elements hitherto absent from the highly rhetorical English form of humanism began to be reintegrated into intellectual life.¹⁷ One of the consequences of this was that memory came to be reconsidered as a part of faculty psychology, and its improvement to be a useful dialectical rather than an obsolete rhetorical tool. That artificial memory began to be seen as a way of augmenting the mind's natural functions in the pursuit of natural philosophical knowledge is amply demonstrated by Bacon's descriptions of mnemonics as a way of overcoming the mind's natural weaknesses. In the 1623 *De Dignitate et Augmentis Scientiarum*, the Latin expansion of his earlier *Advancement of Learning* (1605), Bacon had it that the best 'assistant to Memory is writing', adding that 'diligence and paines in collecting *Common-Places*, is of great use and certainty in studying'. But as methods of commonplacing 'meerly represent the face, rather of a Schoole, than of the world', it should not be forgotten that these compilations do not in 'any way penetrate the Marrow and Pith of things'.¹⁸ A similar thing was true of mnemonics: although 'there is indeed an Art [of memory] extant . . . we are certaine that there may be had both better Precepts for the confirming and increasing Memory, than that Art comprehendeth; and a better Practice of that Art may be set downe, than that which is receiv'd'.¹⁹ Although Bacon held that the art of memory might in fact be useful, mnemonics as generally practised – i.e. for reasons of rhetorical ostentation – was of no benefit, and should be no more esteemed than 'the agilities, and tricks of Tumblers; Buffones, & Iuglers. For they are almost all one thing, seeing these abuse the Powers of the Body, these the Powers of the mind'. Bacon continued that a reformed art of memory would have to be based on '*Prenotion and Emblem*', but his fullest exposition of these came in his *Novum Organum*, the first part of his *Instauratio Magna*, published in 1620.²⁰

With respect to the first of these, Bacon remarks that when attempting to remember something, it is essential to have 'prenotion or perception of what [one] seeks'. He who does not have one 'works himself up, and scuttles about as if in a limitless space'. Bacon proposes three ways in which this infinity might be 'cut off' by a preconception of where to look for a particular bit of information: i) the 'order or distribution' of knowledge; ii) 'artificial places in memory'; iii) 'verse'. The first of these allows one to anticipate 'something according to the pattern', the second, 'an image with some relationship or

aptness to the particular places', and the third 'words matching the metre'.²¹ Of most pertinence here is Bacon's description of the mnemonic places:

artificial places in memory . . . can either be places in the literal sense – a door, a corner, window, and the like – or familiar or famous persons, or whatever you like (provided that they are organised properly) – e.g., animals, herbs, and words, letters, characters, historical personages and so on too; although some of these are more suitable and convenient than others. Such places help the memory mightily, and raise it far above its natural capacity.²²

In other words, *Novum Organum* outlines: i) the usefulness and benefits of a local artificial memory; ii) the wide range of forms that mnemonic images could take; iii) the need to arrange the places within a coherent order. As for emblem, Bacon observes that 'whatever reduces an intellectual object to a sensory one . . . helps the memory', adding that this is 'a principle especially important for artificial memory'.²³ As we shall see, Beale took careful note of Bacon's discussion, and of the fact that Bacon believed that a reformed mnemonic art would be an effectual way of improving the mind in pursuit of knowledge to aid the advancement of learning. Its influence resonates through the entirety of Beale's work on the subject, just as it does through the preface to Hooke's *Micrographia*.

III

John Beale, a clergyman in his native Herefordshire before moving to Somerset in 1660, has received a good deal of attention from recent intellectual historians, in partial redress for earlier historical neglect or misunderstanding. The range of topics in which he was interested is staggering, and rather than being simply seen as a figure whose thought was confused by conflicting utilitarian and religious impulses, or whose ambitions consistently wrote cheques his abilities could not cash, Beale's full role as a member of both the Hartlib circle and early Royal Society has begun to be examined.²⁴ As he said of himself in 1671, 'This, I assume, as my best faculty, y^t I do very heartily concerne my selfe for y^e advancement of learneing, & of those that have the greatest merite towards it, Or are best able to promote it'.²⁵ He espoused a bewildering array of political and religious allegiances, was a prolific correspondent of Samuel Hartlib, Robert Boyle and John Evelyn, and was on good enough terms with Oliver Cromwell for the future Lord Protector to write an endorsement of his character in the late 1640s.²⁶ An at times overwhelming body of manuscript material written by him has been preserved, principally in the British Library, the Sheffield University Hartlib Papers, and in the Royal Society Library. Although his scheme for an art of memory has been referred to in a number of studies, I hope this paper will go some way further towards the task of reconstructing Beale's dauntingly broad intellectual life.²⁷

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Towards the end of December 1656, Beale wrote to Samuel Hartlib outlining what he called a 'Scheme of dispatch' that would 'teach any ordinary dull fellowe that can only in a plaine manner spell comon English to bee so perfect in the interpretation, as to read as faste as any man can pull a bell'.²⁸ Though he did not proceed to expand on these claims, they are notable for more than the colourful language in which they are couched: his work in this direction was, he asserted, 'Like to bring foorth another Treatise of the Art of Memory'.²⁹ Beale considered this to be an idea worth pursuing, for just as age demands 'Spectacles for our eyes, [and] a staffe to guide our feete', so it demands '(most especially) . . . some Artificiall helpe to our Memory'. Noting the general neglect of the subject, Beale pointed to the examples of Marc-Antoine Muret(us) and Sir Hugh Plat as two of the too few moderns to have concerned themselves with undertaking this important task, and concluded by remarking that in considering these matters he had taken his 'best light from Quintilian, the next from Bacon, The rest from very much practice, observation and long experience'. He also asked Hartlib to inform him of any other recently published mnemonic works.³⁰

Hartlib was evidently interested by what Beale had had to say, and responded to this request in a letter dated 8 January 1657, in which he gave notice of 'Caleb Morleys Art of Memory', with which he had become acquainted '25 yeares agoe'. Morley's method aimed at the 'perfection of those . . . Naturall helps' to memory which were neglected in the more general approach to the subject in 'Locall' memories. Hartlib went on to relate the not very salubrious fate which met the proposals and their author: having been the victims of unsympathetic 'Great Courtiers', the former were only (and only partially) rescued for posterity by Hartlib's intervention after Morley's sudden death. Of the documents that he rescued Hartlib added, no doubt to arouse Beale's interest in them further, that 'no man *that hitherto have seen them can be any the wiser for them*'.³¹ About Caleb Morley little is known. He was at Balliol College, Oxford, between 1602 and 1611, practised as a physician and at some point took the cloth. A document dating from 1628–30 in the British Library suggests that a plan of Morley's, analogous to his art of memory, for a 'speedie & certaine course for ye attayning & retayning of Languages and other parts of good Leteratur' was known in scholarly circles, as it notes the support of patrons including the playwright and grammarian Ben Jonson, the bibliophile, lawyer and orientalist John Selden, and the headmasters of both Eton and Winchester Colleges.³² It is also clear that Thomas Goad, chaplain to the Archbishop of Canterbury and delegate at the synod of Dort, considered that Morley's scheme as presented to James I in 1623 was 'profitable to the purpose of the author' and should thus be 'printed and published by his appointment'.³³

But this is by no means Hartlib's only reference to Morley, and an entry in his manuscript diary (the *Ephemerides*) for 1635 makes Morley's mnemonic system somewhat clearer: 'Morlaei Method of Memory by redoubled

Alphabets seems to M^r Dury more easy than that of Local memorie'.³⁴ In other words, through the development of a combinatorial alphabet, Morley sought to replace and improve upon the task generally accorded to the *loci* by classical rhetoric, something of which Hartlib's associate John Dury evidently approved. Hartlib wrote to Beale again on 22 January, copying the title page of Morley's unpublished mnemonic treatise, which was entitled 'The richest jewel that ever was presented unto man under the preaching of the Gospel'. He then related Morley's mostly censorious judgement on conventional mnemonic practice, amongst the faults of which were that though it made reference to 'a Reall part', it did not do so 'in due order, and therein also made an Enumeration of things, rather in the generall et in confuso, then satisfactorily'. In an echo of the attacks made on local artificial memory by Agrippa and Erasmus, he also made clear that the greatest fault of the traditional approach was that '*their Loci et Imagines*' were guilty of '*monstrously encumbring the minde, (whereas unity does fortifye)* when a few Directions . . . might serve their turne'.³⁵

Another marker of Hartlib's enthusiasm for Beale's undertakings is that Beale, reviewing this period in late 1663, noted that Hartlib 'sent me his whole store of mnemonical books'.³⁶ It is not clear exactly what these might have included, but Hartlib's interest in the subject does appear to have been reasonably extensive.³⁷ On 8 April 1657, Beale wrote to Hartlib expressing his thanks for 'your most wellcome packet of Dr Kinners MSS &c'.³⁸ This is of particular importance, as the émigré Silesian educationalist Cyprian Kinner had conceived an artificial botanical character in the late 1640s in which the names of plants might be represented directly by grammatically self-explanatory non-alphabetic characters. This answered the Baconian call for a 'real character' that delivered things and their notions rather than other words, but is of most pertinence here because Kinner believed (on account of the fact that such a character would only be possible after an accurate categorisation of botanical reality) that these would greatly improve the storage and recall of information. Moreover, if this were successful, then it would be possible to extend it beyond botany, for 'there would perhaps be no lack of mnemonic aids with the help of which anything . . . might be remembered and later recited'.³⁹ Certainly, this proposal elicited enough interest in and around the Hartlib circle for two of its brightest lights, William Petty and Seth Ward, to attempt its actualisation.⁴⁰

Later in 1657, Hartlib passed on details to Beale of the universal character scheme being devised by George Dalgarno, an Aberdonian schoolmaster based in Oxford, who would publish his *Ars Signorum* (a scheme for a philosophical-universal language) in 1661, but who was then circulating drafts of his ideas in the hope of attracting support for them.⁴¹ While impressed with what Dalgarno hoped to achieve, Beale shared the general dissatisfaction with the form these early proposals took, going as far as to suggest that were it not for his lack of graphic ability, he would outline his own 'designe of

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broaching a Vniversall Character, without gram[m]er, Lexicon or rule, & intelligible without a Master'.⁴² A letter from early 1658 gives some indication as to why Beale should have been drawn to this: while again suggesting that Dalgarno's proposals fell some way short of his stated aims, Beale approved of the way in which Dalgarno 'claimeth this Art to bee a helpe to Memory, & soe indeed it is by mutuall reciprocation'.⁴³ In other words, a properly conceived and constructed artificial memory might answer the same ends as an artificial language, and *vice versa*. That exposure to the work of Kinner and Dalgarno might have come to exert an influence on Beale's efforts towards his own art of memory will come to seem very plausible indeed.

Beale next took up the subject of artificial memory in early January 1658, when he informed Hartlib that he had completed a 'Map or Table . . . for the perfecting the Memory'. This was based on 'place, figure, & order', but Beale expressed uncertainty as to how it would be received by others.⁴⁴ Perhaps in order to assuage this uncertainty – whether in himself or in others – Beale then went on to explain, in detail, the close relation of his plan to the outline of local memory given in Bacon's *Novum Organum*. The letter is concluded with Beale's first extant, and somewhat cavilling, remarks on Morley's proposals: 'fewe witty & studious persons will have the patience to practise [it] . . . because the head must be filled with the Topiques of a Dictionary'. Although he went on to remark that Morley's ideas were 'not soe long & tedious as a man would imagine', Beale was thus only damning them with the faintest of praise. Following Bacon's lead in interpreting the term broadly, Beale simply considered Morley to have composed a laudable but not very efficacious local artificial memory.⁴⁵

Hartlib was impressed enough with Beale's work to pass details of it on to the mathematician and recently-returned ambassador to the Protestant cantons of Switzerland, John Pell, describing Beale as 'an Vniversal solid and most real schollar', who was 'like to performe more that way that ever Caleb Morley hath vndertaken'.⁴⁶ Pell had been involved with Hartlib since his venture as a Chichester schoolmaster in 1630, and had an active interest in the subject.⁴⁷ He was also familiar with Morley's scheme as communicated to Hartlib and Dury in 1635, and had himself made manuscript notes on mnemonics, expressing his dissatisfaction with 'the vulgar teachers of the art of Memory [who] onely use y^e Phantasy', whereas he considered that 'it is [a] nobler, wiser and safer way, never to use y^e Phantasy where reason will reach it'. What he sought was a method which would at once provide for 'prompting y^e memory, & regulating y^e reason'.⁴⁸ He was, in any case, plainly interested in Beale's undertakings, as through Hartlib's mediation the two men proceeded to correspond extensively; by September 1658 Beale was already acquainted with Pell's friend the Cheshire nobleman William Brereton, noting his 'very great helpe to some schemes of Artificiall memory'.⁴⁹ Pell and Brereton were later to prove the two most influential agents in the fate and transmission of Beale's artificial memory proposals.

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There are no more extant sources relating to Beale's efforts towards an art of memory until late 1661, which – given the political upheaval and Beale's move from Herefordshire to Somerset – is not especially noteworthy. However, one intriguing link to Beale throughout the 1650s, and a likely source for his interest in artificial characters, is provided by Hartlib's *Ephemerides* of 22 June 1660. It reads thus: 'One Mr Cloghe came the first time to me having been Chaplaine to Dr Bedel Bishop of Kilmore, now a Neighbour to M^r Beale'.⁵⁰ This was the Rev. Alexander Clogie, who was ordained by Bishop William Bedell in 1636, married his step-daughter and was attached to him until his death in January 1642. Clogie was, moreover, involved with Bedell's efforts to translate the Old Testament into Irish, so was well versed in linguistic matters. Having left Ireland in 1643, he eventually settled in Wigmore, Herefordshire, in 1647 and remained there until his death in 1698, writing *Speculum Episcoporum* – a biography of Bedell – between 1672 and 1681. This work contains a description of a universal character, well known to Hartlib and his circle, that had been developed at Bedell's behest by one John Johnson. It had been close to completion, but was destroyed in the Irish Rebellion of late 1641 and early 1642.⁵¹ Considering that they both took up their Herefordshire sinecures at about the same time and that Clogie's principal point of recommendation to Hartlib was his acquaintance with Beale, it is reasonable to infer that the two men had been familiar with one another for some years. This being the case, and given Beale's interest in the subject, it would have been striking if Clogie (familiar with it as his later life of Bedell indicates he was) had not discussed the universal character scheme that Johnson had begun to develop in the late 1630s.⁵²

Later in 1661, Hartlib wrote to John Worthington, the former vice-chancellor of Cambridge University, suggesting that Beale was seeking information about 'Punic, Coptic, Samaritan character . . . or any other strange character'.⁵³ Beale's comments later that month apropos the *Dictionarium Minus* (1662) of the Tonbridge schoolmaster Christopher Wase provide a further indication of the linguistic turn his thoughts had taken. Deprecating Wase's 'descent to the care of a Vulgar Dictionary', Beale avowed that he could not 'bow . . . to such Abcderian slav'ry, but only, as it is the best Mnemonicall expedient, to the aquest of languages'.⁵⁴ Any such lexicographical enterprise should be based on some sort of conceptual classification to propitiate the memory, which given the Aristotelian-Baconian assumption that the mental affections of humankind were universal, could then be used to facilitate the easy learning of other languages.⁵⁵

Shortly after he had passed to Hartlib his comments on Wase, Beale's approach to artificial memory hardened: perhaps after having reflected on the potential of non-alphabetic characters in the form of the universal characters of Johnson or Dalgarno, he had decided that the best way of developing an artificial memory scheme was through the development of mnemonic characters.⁵⁶ Writing a letter Hartlib probably passed on to Boyle on 4 October

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1661, Beale stated that he was in a position to 'give . . . a cleerer Modell' of his scheme. As testimony to the credibility of his efforts, Beale suggested that this outline be passed on to his maternal uncle, the former MP and client of Buckingham, Sir Robert Pye for consideration by his former secretary and clerk Richard Sherwyn. On the support of these men Beale pledged his 'reputation, and all that I am worth, for the full performance, according to every article subscribed', laying most emphasis at this stage on its practical use for 'secretaries', *sc.* as an improved form of shorthand. As a further gesture in this direction, Beale suggested that Sir Edward Nicholas, then Secretary of State to Charles II and formerly the holder of the same office under Charles I, had once considered Beale 'fit to bee a Secretary'.⁵⁷

Yet Beale did not expound this model until one month later when, in another letter passed to Hartlib for dissemination to Boyle and entitled 'A Mnemonical probleme', he sketched the seven-point plan on which his scheme would be based.⁵⁸ In this, he proposed 'To devise Millions of Millions of characters, each one soe apparently differing from each other, throughout the whole immense variety, that the eye at first glance shall discerne, & distinguish the Difference[s]' between them. Beale explained that the first action should be to define 'distinct' and 'proper' places within a mnemonical table, after which it would be necessary to 'provide the proper character[s]' to serve as images within them. Each character should be equivalent to 'a whole English worde, a reall matter or businesse'. Moreover, the characters should provide a 'ready apprehension' of their 'proper importance', and be adaptable 'in readinesse for every occasion'. Such a character would, Beale contended, provide ease of recognition 'in the twinkle of an eye', graphic felicity for secretaries, a simplified form of typography, and a ready form of cryptography with which to 'prevent the treachery of discovery, as oft as occasion or care of safety shall require'. He added that all of this could be taught to a 'Learner . . . of ordinary capacity' in one week.⁵⁹ Already then, Beale's ambitions in this direction were vaulting, but it is not a necessary inference that they must therefore have come to overleap themselves. Beale wrote again to Hartlib about Morley's rolls on 23 November, but it was not until 2 December that he expressed firm opinions on Morley's scheme. Beale offered a précis of Morley's objections to local artificial memory, but given his Baconian views on the subject, these were not something which he could endorse. Accordingly, Beale set about separating Morley from his art of memory. Morley, Beale claimed, 'wanted Logic enough to judge of his owne Art', and had failed to realise that his work, far from being a new departure, was based on the 'foure most received parts of Artificiall Memory', identified by Beale as place, order, signature and practice.⁶⁰ Beale himself proposed a 'further, deeper, secrete Art'. This would have a limited number of mnemonic characters, whose comprehensive representative potential was illustrated in a similitude. Ten bells, when rung together 'in regular changes, & only forwards amount to three Million' variations, and when rung 'by irregular and

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repeated changes, backwards & forwards' would result in 'as many millions [of variations] as you please'. While it might appear awkward to keep track of the 'seeming innumerable changes' in such a scheme, it was here that Beale's easily internalised place, order and signature did their duty. Beale did not expound this idea any further here, as he had 'not time to shape or review' it.⁶¹

John Worthington retained an active interest in Beale's activities, and writing to him on 7 December 1661, Hartlib mentioned the long letter on mnemonics that Beale had sent him, noting that Beale was a 'most active soul'.⁶² Worthington responded lamenting 'Beal's dilemma' – the demands on his time of his ecclesiastical duties – and expressed the hope that this would not hinder his mnemonic efforts.⁶³ Beale saw himself as having been 'gently censured' for his slow progress by Worthington, and regretted the fact that the 'serious business' of looking after '7000. souls' was wont to leave him (like the Biblical 'scribes and Pharisees, hypocrites!') 'straining at gnats, and Swallowing Camels'. The mildly irreligious implications of this phraseology aside, Beale hoped that this unavoidable delay would give him more chance of successfully unpacking his thoughts on the mnemonic character.⁶⁴ Hartlib, at any rate, kept the faith, telling Worthington that Beale was 'the likeliest man in the Kingdom' to advance the art of memory.⁶⁵ Accordingly, Hartlib wrote to an anonymous German-speaking acquaintance of his, passing on the intelligence that Beale 'bent new forces to recover Caleb Morley's expedient', and suggesting that Beale wished to 'exchange communications' with the Mainz-based chemist Joachim Becher, whose *Character pro Notitia Linguarum Universali*, a universal character based on the numbering and subsequent characterisation of 10,000 Latin words, had been published in 1661. 'Betweene vs', Hartlib records Beale as remarking, 'wee should produce something extraordinary'.⁶⁶ This would no doubt have been the case had they communicated in some way, but there is no evidence at all to suggest they did. Of greater significance is that this letter indicates that by late 1661, Beale's thoughts were beginning to drift towards the potential his mnemonic character might have as a universal character.

At about this time, Beale wrote to an unidentified correspondent (probably his cousin John Pye) reaffirming his interest in the development of an artificial memory scheme. The letter is largely justificatory in tone, arguing that the mnemonic plans he had outlined to Hartlib were not a 'phantastique affair', comparing them to the invention of the printing press in wondering that for 'more than 5000. yeares' no-one had discovered 'an Art of such holy use for communication of knowledge, Learning & all sorts of humane accommodations'. Beale explained that his scheme consisted of a 'Mnemonically Table of great variety' each place within it 'reserved' for a character, 'every Character differing from other[s] at certainty, & at first glance of y^e eye to be produced in a moment'. Moreover, he claimed that his character would be more efficient than the 'China Characters', as each one signified

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'any foure of their words'.⁶⁷ In addition to its mnemonic facility, Beale reiterated that the character would be of use for 'Secretaryes' as a form of shorthand and, as it would be indecipherable without its accompanying tables, that it might also serve as a form of cryptography. Having dwelt upon the practical benefits that his art of memory would accrue, Beale further attempted to attest his credibility by adducing 'the hint of fesibility' for his character that he had found in the cryptographical works of the Italian Jesuit, scientist and occultist Giovanni Battista della Porta. Beale applauded the aims of this 'witty & industrious Italian', but contended that his invention 'of 400. distinct Characters' was 'gravell'd'. It was problematic both because it was not properly ordered, and because it was too easily deciphered. The tabular foundation of Beale's own method was more compendious and had made more 'fesible & easy' what Porta had taken to be a vast undertaking.⁶⁸

After a long illness, Hartlib died on 10 March 1662, and Beale consequently required new advocates for his scheme. He hoped that John Evelyn would become one of these, and wrote to him entreating his intercession with Henry Oldenburg, by then one of the secretaries to the fledgling Royal Society. Beale hoped that Evelyn would enquire of Oldenburg 'concerning a Character w^{ch} came into my head about a yeare agoe', the outline of which had already been passed to Oldenburg and Boyle by Hartlib. Complaining that he had not had the opportunity to 'explicate' his character fully enough for Oldenburg to understand it, Beale expressed his concern that 'it may seeme . . . to y^t [Royal] Society, as a branch of Mathematic', whereas it should in fact have been seen as a 'Mnemonicall ayde in acqurest of language by words, or sentences, or for y^e draught of a Mother language'. In this 'most obvious use', his character scheme could, moreover, be 'learnt by a prompt Arithmetician in [a] fewe minutes'. As such, Beale considered his character to be 'very pretty, & beyond all characters y^t I have seene'.⁶⁹ It is not clear whether Evelyn considered this worth pursuing, or whether he attempted to further Beale's cause with Oldenburg; if he did, he appears to have been unsuccessful.⁷⁰ In any case, the linguistic utility which Beale considered his proposals to have is plain, as is the likelihood that this would have appealed to the Royal Society.⁷¹

But before continuing, it seems worthwhile to sketch the interest in a universal language in and around the early Royal Society, albeit with the broadest of brush strokes. The genesis of the universal language movement in England is, once again, Bacon's *De Augmentis*, which calls for the construction of a 'real character' that would represent 'things and notions' rather than words, along with a 'philosophical grammar' that would fit language exactly to the nature of thought. If a language could be constructed in which the order of things (mediated through thought) could be properly categorised and replicated, then it would be commonly understood on account of the fact that all of humankind thought alike. If successful, the *confusio linguarum* that followed Babel would thereby be repaired, and it would be possible greatly

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to advance the level of human knowledge.⁷² There were many answers to Bacon's call for an artificial means of communication; most centred on the Hartlib circle, which in turn amplified them for the benefit of a wider audience and the common good. The earliest printed work on the subject in England, published at Hartlib's instigation, was Francis Lodwick's *A Common Writing* (1647). This was followed by the same author's *The Ground-Work . . . for the Framing of a New Perfect Language* (1652), Francis Urquhart's *Ekskubalauron* and *Logopandecteison* (1652 and 1653 respectively), Cave Beck's *Universal Character* (1657), and George Dalgarno's *Ars Signorum* (1661). But the apotheosis of the universal language movement was John Wilkins's massive *An Essay Towards a Real Character and a Philosophical Language*, published with the support – and imprimatur – of the Royal Society in 1668.⁷³ Perhaps most striking in the context of this article is that Bacon's discussion of an artificial language follows immediately after his call for a reformed artificial memory; the idea that the same character could be used for both recollecting and communicating knowledge was one that Beale – and the universal language planners themselves – did not come to forget.⁷⁴

Another advocate sought by Beale was Boyle, whose influence and Hartlibian sympathies could both be counted on. Writing to him in February 1663, Beale explained that his thoughts had again turned to 'the devise of Caleb Morley', and that he could 'interpret every line, title, and blot' of it. Beale went on to state that the basis for his art of memory was a local memory of images, as demonstrated in the mnemonic works of 'Aristotle, Cicero, Quintilian, Aquinas, Muret, [and] Lord Bacon'.⁷⁵ As such, Beale envisaged himself serving as a modern mediator of classical mnemonics, his task necessary because 'Moderne expressions do beste agree with the moderne times'.⁷⁶ Beale also remarked that the 'beautifying letters' found in medieval manuscripts were a great aid to memory, much as coloured inks and emblems aided recollection in printed works. But he did not consider such means proper for 'proletary use', preferring instead the 'Mnemonicall characters' devised by Jacobus Publicius and Johannes Paëpp, to which his own proposals would be analogous.⁷⁷ However, mindful of what he deemed that 'prejudice most learned men have against all discourses of Artificiall Memory', Beale noted that he was not yet ready to 'engage the Royal Society' in his mnemonic activities, preferring to communicate with its members on matters relating to cider production or, as in a letter to them of 16 February 1663 and read at the meeting on 25 February, 'the famous hot Baths and cool springs of Wells'.⁷⁸

Although Oldenburg's thoughts on the subject are lost, Beale was dissatisfied with the response Oldenburg gave to his ideas. Beale's next letter – in which Oldenburg's name appears in the artificial characters Beale had designed – upbraided Oldenburg for not considering Beale's 'Motion and Overtures like a perfect Mnemonicall person', while the Royal Society itself was attacked for not having 'punctually performed' his suggested exercises from Muret (unspecified, but probably the same as those he sent Hartlib in

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1656), and for only embracing his scheme 'in generall'. These oversights meant that the FRS had failed to appreciate the foundation of his plans, and were particularly regrettable given that 'our Saviour, the Apostles, and prophets and the best of old philosophers were perfect Mnemonicall Masters'. Somewhat hyperbolically, Beale thus made plain his irritation at the agnostic way in which Oldenburg had received his proposals.⁷⁹ But he offered Oldenburg the chance to 'expiate the said Omission' by showing the Royal Society the recommended passage from Muret, or 'a like narrative . . . of Sabellicus'. By so doing, the FRS would the better be able to arrange for the 'publication and further prosecution' of the mnemonic scheme Beale was about to send them. If the Royal Society would not cooperate in this, Beale promised to make independent arrangements, so that he could 'performe M^r Hartlib's request, in serving the public to the best of my ability'.⁸⁰

That the Royal Society had become acquainted with Beale's proposals, and that they were held to have a use beyond the simply mnemonic, is demonstrated in a letter written by the FRS Abraham Hill. Hill noted that 'Mr. Beale . . . propounds several considerable things for the help of memory', and that these were 'somewhat useful towards a universal character'.⁸¹ On 21 May William Brereton wrote to Pell saying that he would be passing on the documents Beale had left with him shortly, adding that 'M^r Beale . . . is very glad of your desire to know his contrivances'.⁸² On May 23, Pell recorded that 'M^r Brereton . . . left with me five parchment rolls (heeretofore belonging to Caleb Morley,) sent up a few dayes before by M^r John Beale'. Pell then gave himself three days in an attempt to make sense of them, but ended up as puzzled by these rolls as Hartlib and Beale had suggested anyone uninitiated in their method would be. Rather than analysis or transcription, he offered a descriptive account of the parchment rolls. Pell also attempted to describe the alphabet employed by Morley, and noted that the last two rolls were concerned with the 'combination' of these letters. Nevertheless, these early notes testify to little more than the immediate impenetrability of Morley's proposals, even to one with a mathematical mind as acute as Pell's.⁸³

Fortunately, Pell was able to make rather more of the mnemonic manuscripts he received from Brereton on 11 June 1663. These manuscripts included Beale's commentary on Morley along with his fullest exposition of his own mnemonic scheme; Pell's transcriptions appear to be the only form in which they are extant. Beale began with a manifesto stating the general case that memory should not just be left in its natural, imperfect, state. In support of this, he adduced Bacon's 'Letter to Sir Henry Savile', the argument of Meric Casaubon that custom conditions nature for the better, and finally suggested that his scheme would provide for Pell's own proposal that 'condensed' mathematical 'pandects' should 'be laid up in the mind . . . to fortifye the imagination, to prompt the memorie, [and] to regulate our reason'.⁸⁴ Beale's scheme, he claimed, would be a 'secret Character' for the use of the Royal Society, as well as of use in both inculcating arithmetical skill

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and promoting a ‘Seriousnesse & Fixednesse of Spirit’. However, the most important way in which the character would benefit the Royal Society was in ‘introducing the foundation to the . . . most Perfect Art of Memory’, given that they would only be significant within in his propitiously ordered mnemonical table. His character would also prove ‘an Universall Character to all Languages’, by virtue of the fact that these ‘most easy, Most naturall’ tables would be equally applicable, and comprehensible, to all humankind.⁸⁵

In the manuscript roll from which Pell was working, Beale then reproduced the ‘Mnemonical Probleme’ he had sent to Boyle in late 1661, outlining his plan to devise ‘millions’ of artificial characters to fit within the places of his mnemonic table, along with the benefits that would follow from this. One who was familiar with the character would develop a ‘kinde of habit in y^e practise of the Art of Memory’, and through this would be furnished with ‘an Universall Character, & for y^e acquest of Languages’. Yet while his scheme was useful as the foundation of ‘an Universall Character & Languages’, this could only be achieved ‘by special Directions and by Mnemonical Aydes and by a Concatenation or linking of parts, which doe engage . . . to a habit of the whole practice’.⁸⁶ In other words, Beale was underlining the fact that as far as his scheme was concerned the cart, though it may have been gilded with such desiderata as a more advanced form of cryptography and a universal character, should not have been put in front of the mnemonic horse. Having by now chosen to abandon the presentation of his scheme as an improved sort of shorthand, Beale suggested that his character would: i) provide the best means for the internal arrangement and recollection of knowledge; ii) provide a felicitous means of communicating this.

The next parchment Pell transcribed contained extracts from letters sent by Hartlib to Beale in January 1656, and is discussed above.⁸⁷ The third parchment, however, is addressed to Brereton, and reveals a great deal about Beale’s thinking on the art of memory. It is entitled ‘Notes upon M^r Hartlib’s Accompt of M^r Morleys Art of Memory’. Beale began by deploying Aristotle, Cicero, Quintilian and Aquinas in opposition to Morley’s ‘many objections against Locall Memory’. He then explained that ‘Morleys contrivances’ were in fact an ‘Art supported both [*sic*] by places, order and images’, something Morley had not understood as he ‘had not Art or subtilty enough to make such reflexions upon his owne Processe’. Reiterating his mnemonic credo once more, Beale added that one who ‘learns not his Contrivances Topically and with reference to place, order, and Character . . . He learns them to no Mnemonical improvement’. Lest Brereton should have been left in any doubt as to Beale’s position, he added that ‘we have not so much neede of M^r Morley’s Philosophy, or of his reflexions upon his owne Art, as of the art itself’.⁸⁸ It would thus be a mistake to view Beale’s efforts as simply bringing Morley’s ideas to fruition. Instead, Beale sought to adopt and transform Morley’s ideas in accordance with his own solidly Baconian views on memory. But rather than explain how this was to be realised, he considered that

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the 'Maine Point . . . the Hard Taske' was to hit upon a presentational form that would 'entice' the cognoscenti 'to beare this Burden of Exercise' that the realisation of his mnemonic proposals would require. As we have seen, Beale's approach to this was to emphasise that they would provide for a universal character, a new form of cryptography and a straightforward way of learning any language. The details of how he would deliver these desiderata, other than that they would be the result of an advanced local memory scheme based on place, order and signature, were unforthcoming.⁸⁹ Pell summarised Beale's proposals up to this point thus:

(1) Philosophicall Reservednesse makes us desire a peculiar Cryptography. (2) This suddenly makes us prompt in Mr Morleys Expedient (3) It immediately fits us for an Universall Character and (4) for the aquest of Languages (5) This brings y^e Art of Memory.⁹⁰

It is difficult not to read a little exasperation with Beale's reluctance to explain precisely *how* his scheme would work between these lines.

On 12 June, Pell received Beale's 'grand Roll' (which, Pell records, was '7½ feete long'), entitled '*Proposalls for an Universall Character*'. It begins with another of Beale's avowals that his scheme would be both easy and quick to master. Beale then detailed the qualities of his scheme, and some of the structural principles on which it was based. The isomorphic relation of the character to the tables was underscored, as each character would 'immediately direct' its user to its 'proper place & importance'. Consisting of '160 thousand characters', the tables would 'impart the best & deepest expressions that are now Extant in any Language', ensuring that 'every Extraordinary Person' – no matter what 'peculiar apprehensions . . . [or] style' he might adopt – would not have to become a martyr to copiousness when using them. Contrastingly, the 'Catholique Rule' by which the whole scheme would have to abide, and on which the tables would be built, was 'to avoid all unnecessaries and to affect Brevity and clearness (as farre as we can joine them together) as the two main points of our Philosophicall Elegancy'.⁹¹ Thus, despite the fact that his table would have provided for all semantic and grammatical eventualities, it would have been pared down so much that along with 'all necessary Rules and Helps' it would 'not take above a full sheete in any language'. As an example of the simplification he had in mind, Beale suggested that his grammar would do away with the definite article: 'In the English Table we shall out *The*'. Further detail was not forthcoming, but having noted the way in which Arabic numerals were generally unknown within Europe 400 years previously, yet were now commonly understood, Beale suggested that should the Royal Society elect to 'appeare for a Secret or Universall Character . . . it will in short time prevaile'. His scheme would, he felt certain, 'arrive to maturity, as soone as R.Soc. shall say Fiat'.⁹²

Beale began the 'more particular' account of his proposals with a description of his 'Mnemonical Table, in which 2400 words . . . may be placed Six

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in a row, which makes just *400 Rowes*'. These words would be 'chosen the most useful in all consequences and discourses generally', and one or two characters would be placed at the 'front of each of these Rowes'. The selection criteria for these words were not specified, but as the characters would be circumscribed by 'Place, Order and Signature', the user would 'speedily . . . get a habit in the practice of the aides'. These characters would serve to represent the first word in each line, with the 'second, 3^d, 4th, 5th, and 6th word[s] throughout each row . . . to be distinguished according to their proper Place in the Row' by five diacritical 'remarks' to be placed 'over each proper character'. The diacritics would be identical for each of the second, third, fourth, fifth and sixth words in the four hundred rows of his table. Examples are provided of what these 'remarks' might be, although Beale added that 'any other' series of marks would do just as well. Other than that he proceeded to restate the adaptability of this character for cryptography, its expressiveness, the ease with which it could be learned ('though every man be not a Scaliger, yet the dullest may finde much assistance' from his character), and its equal applicability to speakers of 'any knowen language', this is the sum of Beale's detailed explication of his mnemonic scheme.⁹³

Conscious perhaps of this nebulousness and of the damage that it might do to the reception of his scheme, Beale went on to put and refute a series of objections to his proposals. First, Beale rehearsed Bacon's disregard for artificial memory as it was usually practised, and countered it with Bacon's own argument that, if properly designed, mnemonics might be a 'help to the intellectual Powers'. Next, Beale attempted to explain the discrepancy between the '160,000 Characters & Places' his scheme was supposed to provide for, and the fact that his detailed description of his tables only provided for '400 rowes' with a maximum of '2400 places' therein. Beale referred the reader to his 'Mnemonicall Table', did not address the problem directly, and argued that one who had learned 'a Table of 400 Letters, Words or Things Topically' need only 'repeat the same Art 400 times over to arrive at his 160,000 places & Characters'. Moreover, given that there would be six characters in each of these four hundred rows, one who had done this would in fact have the benefit of '6 times 160 000 places & Characters'. Beale considered that this would be a straightforward matter given the 'Ease & . . . little engagement of the minde' that his mnemonically advantageous tables would demand of their users. Comparing the advantages of artificial memory to those of printing, Beale noted that while a printer's compositor would set up one page at the same time as 'a quick hand will write halfe a dozen sheets . . . afterward the Printer overtakes the writer' by a very considerable margin. Thus, Beale's scheme would, he contended, give an advantage to its users equivalent to that enjoyed by printers over scribes. Still, it was not made clear how this would happen, the explanation given depending on, rather than enhancing, Beale's plausibility in the eyes of both Pell and the Royal Society at large.⁹⁴

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The third and final objection Beale sought to pose and answer is perhaps the most difficult and interesting of all: 'To our purpose of searching Nature, and of Prosecuting all things in their Individualls, we shall soon be at a losse for want of the names of Plants, Birds, Beasts, fishes, Mineralls & c. Our 2400 words will soon be spent in these'.⁹⁵ In other words, Beale had identified two problems facing anyone attempting a fixed categorisation of knowledge on which to base either an artificial memory or language: i) how to make the tables both practical and able to accommodate botanical, biological, geographical and other specialist nomenclature; ii) how to provide the body of knowledge embodied by the classification, and which an artificial memory or language would represent, with the capacity to adapt to new knowledge and factual discoveries. Given that Beale was seeking the support of the Royal Society for his scheme, and that it was concerned with the exploration and development of natural and scientific knowledge (and that it was seeking to develop language as a more propitious tool for so doing), this was a considerable problem indeed. The solutions offered by Beale to these problems were several, but it was not made clear how the place, order and signature that Beale repeatedly made the *sine qua non* of his mnemonic classifications would be maintained.⁹⁶

First, it was proposed that 'the Characters which are so generally received already for Number, Music, Astronomy, Chemistry' be added to those provided for in his tables, with new characters added as new discoveries are made. Likewise new findings of 'Mineralls, Plants, Stars, Comets & other Phaenomena'. Beale gives no indication that he saw this idea as a threat to the principle of order on which his mnemonic scheme to be based. This intellectual confusion is borne out in the remainder of his answers, the second of which envisaged rectifying the problem by simply adding to his table of characters and places 'the best devised Reall & Emblematicall Characters as the Secretary and Printer can well receive', utilising the 'extensive importance' of 'Cryptography & Brachygraphy'. An explanation of how such characters might fit into his tables was again unforthcoming, with Beale content to state that in the representation of 'Persons and Places' within a scheme such as his, 'Cryptography . . . hath many peculiar advantages'.⁹⁷ For the difficulties arising from the variety and discovery of place names, Beale simply suggested making use of 'the names, which the inhabitants doe now assume, or which are already most generally received'. Beale again fails to make clear how these place names would fit into his ordered arrangement of *loci*. Instead of addressing this, however, he concentrated on the benefits that would arise were his characters to be included in works such as 'that small Geographical Dictionary sold by H[enry]. Broome': they would be a 'great helpe to Students of Geography and Travailers'. Similarly, all 'plants, beasts birds, fishes, reptiles, insects, Zoophytes, Mettals, Stones, Mineralls' should be known by the names 'the Natives gave them where they were first discovered', or by those names 'most common in use or Esteeme'. No mention is made of how

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these might be best represented mnemonically, while place, order, and signature are not even alluded to. Nevertheless, in an impressively unblushing *non sequitur*, Beale held that precisely this approach to the representation of natural and geographical names would lay ‘the first corner-stone to an *Universal Language*’.⁹⁸

Unperturbed by his omission of how this might have been brought about, Beale continued to expound the virtues of his scheme, proposing that if realised it would ‘direct the Eyes of Body & minde’ towards the ‘Secrete & Latent Schematisms of all things’. Becoming increasingly rhapsodic, and displaying clearly his religious preoccupations, he went on to claim that his plans would even provide for a simulacrum of prelapsarian linguistic simplicity: they would operate ‘As if we meant to specify their Natures by their names, as . . . Adam did in Paradise’.⁹⁹ Moreover, he contended that

if we will doe any great matter in restoring or illustrating Philosophy: to this remedy we must betake – Let us lay the Foundation in inquiring more diligently the distinct shape & the Operation of all things, however distinguished or Confounded by one or Thousands of names.¹⁰⁰

Which is to say that the tables should be drafted to accord everything its proper place within them, irrespective of their native or common names, in stark contrast to the pragmatic solutions for natural names just suggested. Suffice it to say that Beale’s scheme was teleologically motivated, and in his enthusiasm to see its potentialities realised, he followed the route of least resistance wherever difficulties framing an art of memory around the principles of place, order and signature arose. Despite (or because of) Beale’s manifest attachment to Bacon’s ideas on artificial memory, he failed to develop a method strong enough to deliver what he believed such a scheme able to promise. Beale even seems to have been aware of this himself: ‘In relation to the *Meanes* and my claime, I cannot depress them *too Low*: And I can not raise expectation *too high* for the Ends’.¹⁰¹

One week later, on 19 June, Pell received from Brereton two more parchment rolls, in which Beale outlined ‘The first part of the key’ and ‘The scheme of 400 characters’. Having attempted a description of the ‘Cribrum’, or grid, in which Beale presented his tables, and briefly adumbrated a ‘Key’ to these based on ‘13 Characters’ (representing 10, 50, 100, 150, 200, 500, 1,000, 5,000, 10,000, 50,000, 100,000, 500,000 and 1,000,000), Pell also gave up on these manuscripts, remarking that ‘The rest I omit till this be better considered’. He did, however, attempt to work through Beale’s ‘key’ in more detail, and attacked it on two grounds: i) he found that Beale’s characters were ‘not uniforme & constant in . . . [*their*] pointings’; ii) given that the tables only provided for a ‘scheme of 400 characters’, Pell considered that he ‘neede not’ trouble himself to learn the characters for the numbers beyond this. Of these, the first is by far the most serious: although Beale might plausibly claim that the additional numbers in the key would be necessary when

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he had completed more elaborate tables, the lack of consistency or clarity in the design of his character would have seriously impaired its ability to mirror the tables on which it was based; the smallest change in an individual character would entail a fundamental change in its meaning. Furthermore, this would have negated the hopes Beale had that his character could serve as a form of shorthand or cryptography. Pell went on to attempt a basic key to the character, also essaying that some sort of word 'index' would benefit the scheme.¹⁰² However, it is clear that he was by now doubtful about the merits of the proposal as it stood, which uncertainty effectively concluded any hopes Beale had that the Royal Society might promote and develop his mnemonic table and character. Although Pell preserved copies of these parchments along with his comments upon them, there is no evidence of him or the Royal Society at large having had anything more to do with them.

Nevertheless, Beale continued to discuss the possibilities and potential benefits of an art of memory with other FRS. Writing the first of two long letters reviewing his activities in this area to Boyle on 29 September 1663, he described how his recent burst of interest in advancing his artificial memory and character scheme had been precipitated 'by the Importunity of Mr. Brereton, to explaine those rolls, & to Prosecute that argument', though Hartlib's role in drawing his attention to the subject in the first instance was also acknowledged. Having expressed his hope that mnemonics should be a prominent part of the university curriculum, Beale detailed how he had left Morley's plan, Hartlib's notes upon them and his own mnemonic thoughts with Brereton. This was done in the hope, Beale suggested, that it would be advantageous to get a second opinion of Morley's plans. The better to ensure this, Beale informed Boyle that he had chosen to 'bind' his proposals 'from others eyes'.¹⁰³ Beale next explained how he had 'devised a mnemonical character', isomorphic to mnemonical tables that he had passed onto 'Mr Oldenburgh & other noble friends', and which would also be able to serve as a form of cryptography, a universal character and an improved means of language acquisition. He also made clear that he had no 'zeale for the character, as Cryptographall, or Universall; or yet for the Mnemonicall ayde, Otherwise than complicately, Soe as the one may suborne to aid the other'.¹⁰⁴ This constitutes a slight change in presentational emphasis (it will be recalled that when writing to Pell, the mnemonic function of his scheme had priority), and given the lukewarm reception his plans had met thus far, this seems fairly unremarkable.

The sceptical chemist was not, however, the only other FRS to be familiar with Beale's proposals at this time: writing to Boyle on 2 October, Beale informed him that if he wanted further to examine his plans, he would find them 'in the hand of my honoured friend Mr Evelyne', adding that until he had had more time to finalise his plans they should not 'bee much spread abroade'.¹⁰⁵ However, this claim is not supported by Beale's correspondence with Evelyn himself. In a letter to Evelyn dated 3 February 1664, Beale stated

that the time had come for him to ‘acquainte y^u that I left in my L^d Brereton hands five large rolls containing the best Mnemonical expedient y^t ever was extant’. He also noted that he had given Brereton ‘a key or interpretation of those rolls’ that had met with ‘D^r Pells concurrence’, and that he had sent him an additional ‘key & Scheme of y^e Cryptography & other promises there mentioned’. Beale apprised Evelyn of little more substantive than this, but did express his dissatisfaction with the fact that his ‘Scribbles . . . are scattered in other hands soe y^t I cannot hope to bring them together’.¹⁰⁶ Other than that Pell’s ‘concurrence’ with Beale’s scheme is highly questionable, the outline provided to Evelyn is more in keeping with the extant evidence than the version of events he had offered to Boyle. But perhaps the most revealing aspect of this correspondence is that by the beginning of 1664 Beale’s mnemonic proposals only had a putative audience in Evelyn. While Evelyn was an important member of the early Royal Society, he was not, and would not come to be – notwithstanding the fact that he made notes on ‘Lingua universalis’ in his commonplace book – one of those preoccupied with advancing and improving language as a scientific tool.¹⁰⁷ Perhaps unsurprisingly, the surviving correspondence between Evelyn and Beale makes no more mention of Beale’s plans in this regard, with Beale even informing Evelyn the following year that ‘deeds’ were the language of religion, and that these were ‘y^e uniuersall character for all Nations’.¹⁰⁸ Whether or not Beale himself had given up on his character scheme by early 1664, it is clear that the support he had hoped to receive from the Royal Society had not been forthcoming. Accordingly, not only was his scheme not ‘much spread abroad’, but it was aborted.

No more evidence of Beale’s active interest in artificial memory schemes, or a mnemonic-universal character, is extant. Nevertheless, Beale did retain his regard for the subject. In a letter to Evelyn written in 1669 after the architect John Webb had aired his linguistic sinophilia in his *Historical Essay*, Beale remarked that although Webb’s ideas might have been better able to deliver that which the artificial language planners had sought to achieve, John Wilkins’s *Essay* was ‘y^e most Philosophical, & y^e most Instructive’ work of its kind.¹⁰⁹ Writing to Boyle in the last year of his life, he produced a state-of-the-nation catalogue of all those things that gave him cause for hope in religion, science, politics and beyond. Amongst these were the fact that ‘To persons of . . . docibility, the reall Character may be easily taught in a few dayes’, and that a form of universal character could be realised by making use of ‘the characters, which are vulgarly known for Arithmetick, Chymistry, astronomy, & all partes of Mathematicks . . . with a mixture of Dr. Wilkins’ real character’.¹¹⁰ By now an old man, Beale did not see fit to explain quite how these would be combined to form a universal character; old habits of thought die hard.

As a coda to Beale’s activities, it is worth dwelling on the surprising probability that they exerted some influence on Wilkins’s philosophical language –

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which did, after all, claim mnemonic facility as one of its virtues. In the letter of 19 May 1663 in which Abraham Hill mentioned Beale's proposals 'somewhat useful towards a universal character', he went on to add that on this 'subject, Dr. Wilkins had taken some pains'. Wilkins, he continued, intended 'to put his last hand to it' very shortly.¹¹¹ It is not clear whether the 'subject' Hill was referring to was Beale's mnemonic character or the universal character on which Wilkins had been working since about 1657, but given his interests in the subject, it seems hardly in doubt that Wilkins was cognisant with what Beale had done. Although Wilkins was in Yorkshire on ecclesiastical business from mid-May until 22 June 1663, all the others involved in the examination of Beale's proposals were in regular attendance at Royal Society meetings. Given the wide range of interest in the subject from such virtuosi and FRS as Hooke, William Petty and Samuel Pepys, it is inconceivable that Pell's transcriptions were not discussed on Wilkins's return.¹¹²

IV

So, what is the connection between universal languages and the classical art of memory? Frances Yates believed that seventeenth-century universal languages were 'translating into rational terms efforts such as those of Giordano Bruno to found universal memory systems . . . directly in contact with reality'.¹¹³ Beale's case does bear this out. Writing in 1648, Henry More identified two kinds of memory: the first 'is seated in the Mundane spirit of man, [and is] but a strong impression, or inustion [*sic*] of any phantase, or outward sensible object, upon that spirit. But there is a memory more subtile and abstract in the soul it self, without the help of this spirit, which she also carries away with her having left the body'.¹¹⁴ In short, and unlike Bruno, Beale was concerned with the first of these in his proposals: the arrangement and recollection of knowledge which had entered the mind through experience, and not that which was the product of some (neo-)Platonic innateness.¹¹⁵ Additionally, as there is no reason to impute magical qualities to any of the completed universal language schemes in seventeenth-century England, then it seems safest to say that there is no particular need for Yates's hypothesis in thinking about this question. Paolo Rossi is more careful in his formulation of the relationship between mnemonics and artificial language planning, but even he supposes that universal languages are 'almost identical' (almost?) to 'sixteenth-century encyclopaedias and treatises which, directly or indirectly, dealt with the logical-encyclopaedic themes of Lullism'.¹¹⁶ One sees what he is getting at, but in stating such a bold thesis without adequately explaining how or why he came to hold it, he has both over-egged and under-cooked the interpretative pudding.

I would like to propose three connections between universal language schemes and the art of memory, all somewhat simpler than those given by

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Rossi and Yates. First, given that any artificial universal language would be new and therefore have to be learned and remembered from scratch, it is obvious that the author of such a scheme would claim it to be easy on the memory. Just as obviously, this does not presume a debt to mnemonics in a given universal language. Second, the language of local artificial memory provides an expedient metaphor for the classifications of knowledge on which most universal languages were based. Francis Urquhart, for example, described the lexicon of his language as divided into ‘so many Cities’, themselves subdivided into streets, lanes, houses and rooms, ‘whereof each room standeth for a word’.¹¹⁷ But this resemblance is specious, and is just the attempt to sugar-coat in familiar terms an arrangement of things and notions that his readers might otherwise find difficult to swallow. Finally, and most interestingly, Beale’s Baconian art of memory points to an attempt to categorise the ‘simple notions’ that, in Aristotelian logic, are the first product of the mind before such time as these are translated into *species expressae*, or concepts, by the syllogistic operation of the judgment and reason.¹¹⁸ A Baconian art of memory, just like a Baconian universal language (at least as envisioned by Dalgarno and Wilkins), would bypass the traditional signs of things and access these simples directly, thereby giving access to – and communicating – a more authentic form of knowledge in the service of natural philosophy. That Beale failed in his task should not be the cause of his historical marginalisation or neglect: in a very real sense, his failure was exemplary. It was that of the universal language movement as a whole, along with the whole gamut of cognitive-epistemological belief that held objective reality to be both comprehensible and the only available criterion for judging the value of thought or language.

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Notes

This article would be very much more imperfect than it is but for the intelligence, erudition and good will that Charles Webster and William Poole have shared with me in its gestation. Noel Malcolm kindly read a draft version and made numerous corrective suggestions. I am extremely grateful to them all.

- 1 J. Glanvill, *The Vanity of Dogmatizing* (London, 1661), pp. 32–9. Cf. J. Glanvill, *Scepsis Scientifica* (London, 1665), pp. 24–9. An insightful, if occasionally impenetrable, account of debates on the nature of memory in mid-seventeenth-century England is given in J. Sutton, *Philosophy and Memory Traces* (Cambridge, 1998), pp. 129–48.
- 2 R. Hooke, *Micrographia* (London, 1665), sig. A2r.
- 3 *Ibid.*, sig. A1r.
- 4 *Ibid.*, sig. B1v. The memory, and the best means of improving it, would remain a preoccupation of Hooke’s until the end of his life. See in particular his ‘Memory

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- lecture' in *The Posthumous Works of Robert Hooke*, ed. R. Waller (London, 1705), pp. 138–48; R. T. and A. E. Gunther, *Early Science at Oxford*, 15 vols (Oxford, 1923–67), VII, 588–89; *The Diary of Robert Hooke*, eds H. W. Robinson and W. Adams (London, 1935), p. 7; and Hooke-Leibniz, 12 July 1680 and 15 May 1681, Royal Society Library, Early Letters MS H3, fols 63r-v, 64r-v (hereafter EL MS). See further B. R. Singer, 'Robert Hooke on Memory, Association and Time Perception', *Notes and Records of the Royal Society*, 31 (1976), 115–31; G. Richards, *Mental Machinery* (London, 1992), pp. 66–9. Hooke's 'General Scheme' of natural philosophy proposed a 'philosophical algebra' which would, *inter alia*, cure the failings of the memory: see *Posthumous Works*, esp. pp. 6, 18, 21, 34, and M. B. Hesse, 'Hooke's Philosophical Algebra', *Isis*, 57 (1966), 67–83.
- 5 On the strengths and weaknesses of writing 'Histories', see Hooke, *Micrographia*, sig. D1r; L. Mulligan, 'Robert Hooke's "memoranda": Memory and Natural History', *Annals of Science*, 49 (1992), 47–61. See also K. V. Thomas, 'Literacy in Early Modern England', in G. Baumann (ed.), *The Written Word* (Oxford, 1986), pp. 112–16.
 - 6 H. Herdson, *Ars Mnemonica*, published in one volume with *Ars Memoriae* (London, 1651, 1654). The typesetting and sequential pagination of the two editions are identical, although they have differently designed title pages; the second edition is scarce. (Wing 1546 and 1546a.) The 1654 copy in the British Library (shelfmark 8385 a 9) is lacking the title page to the *Ars Mnemonica*.
 - 7 J. Willis, *Mnemonica*, trans. L. Sowersby (London, 1661). Willis himself had translated book three of his *Mnemonica* (concerned directly with mnemonics), as *The Art of Memory* (London, 1621).
 - 8 R. Saunders, *Physiognomie, and Chiromancie* (London, 1657), pp. 33–9 (i.e. sigs. Eee1r–Eee4r). On Lull, see n. 16 below.
 - 9 Secondary scholarship includes: F. Yates, *The Art of Memory* (London, 1966) (hereafter AM); H. Blum, *Die antike Mnemotechnik* (Hildesheim, 1969); D. Newton-de Molina, 'A Critical Select History of the Classical Arts of Memory and their Interpretation, with Specific Reference to English Arts of Memory 1509–1620', Ph.D. thesis, University of Cambridge, 1971; R. Sorabji, *Aristotle on Memory* (Providence, RI, 1972; 2nd ed., London, 2004); J. Spence, *The Memory Palace of Matteo Ricci* (New York, 1984); M. Carruthers, *The Book of Memory* (Cambridge, 1990); F. L. Müller, *Kritische Gedanken zur antiken Mnemotechnik* (Stuttgart, 1996); J. P. Small, *Wax Tablets of the Mind* (London, 1997); P. Rossi, *Logic and the Art of Memory*, trans. S. Clucas (London, 2000) (hereafter LAM); D. Draaisma, *Metaphors of Memory*, trans. P. Vincent (Cambridge, 2000), pp. 24–48; L. Bolzoni, *The Gallery of Memory*, trans. J. Parzen (Toronto, 2001).
 - 10 Aristotle, *Topica*, 163a28–30; *De Anima*, 427b18; *De Memoria et Reminiscientia in Parva Naturalia*, 451b16–452a23; *De Insomniis*, 458b20–22. Unless otherwise stated, all classical works are quoted from the Loeb Classical Library.
 - 11 Aristotle, *Parva Naturalia*, 450a25–31, 450b20–451a1. Aquinas's commentary on Aristotle's *De Anima* makes the point succinctly: 'man cannot think without images' ('Nihil potest homo intelligere sine phantasmate'), T. Aquinas, *In Aristotelis Libros De Sensu et Sensato, De Memoria et Reminiscientia Commentarium*, ed. R. M. Spiazzi (Turin and Rome, 1949), p. 92.

- 12 [Pseudo-Cicero], *Rhetorica ad Herennium*, 3.16–24; Cicero, *De Oratore*, 2.85.350–2.88.360; Quintilian, *Institutio Oratoria*, 11.2.17–26.
- 13 See Carruthers, *Book of Memory*.
- 14 See W. S. Howell, *Logic and Rhetoric in England, 1500–1700* (Princeton, 1956), pp. 85–9, 95–8, 103–04, 143, 207, 341; Newton-De Molina, ‘Critical Select History’; B. Vickers, *In Defence of Rhetoric* (Oxford, 1988), p. 65; *LAM*, pp. 1–6.
- 15 On hostility to the classical art of memory, see e.g. *De Ratione Studii* in D. Erasmus, *Omnia Opera*, 9 vols (Basel, 1540), I, 466; Henrie Cornelius Agrippa, *of the Vanitie and Uncertainie of Artes and Sciences*, trans. J. Sandford (London, 1569), pp. 24–5. Of the large literature on commonplace books, see particularly J. M. Lechner, *Renaissance Concepts of the Commonplaces* (New York, 1962); A. Blair, ‘Humanist Methods in Natural Philosophy: the Commonplace Book’, *Journal of the History of Ideas*, 53 (1992), 541–51; A. Moss, *Printed Commonplace Books* (Oxford, 1996); A. Blair, *The Theater of Nature* (Princeton, 1997), pp. 65–77; E. Havens, *Commonplace Books* (New Haven, 2001), esp. pp. 25–53. It has been suggested that the very term ‘commonplace’ (the sense of which is somewhat puzzling) owes its genesis to Aristotle’s elastic usage of the mnemonic term *topoi* in his *Topica* – see e.g. F. Solmsen, *Die Entwicklung der aristotelischen Logick und Rhetorik* (Berlin, 1929), pp. 170–5.
- 16 On Lull and his mnemonically expedient *alphabetaria revolutio* see *AM*, 175–96; *LAM*, pp. 44–55; M. D. Johnston, *The Spiritual Logic of Ramon Llull* (Oxford, 1987). On Bruno, see e.g. F. Yates, *Giordano Bruno and the Hermetic Tradition* (London, 1964); *AM*, pp. 197–309; L. Spruit, *Il problema della conoscenza in Giordano Bruno* (Naples, 1988); R. Sturlese, ‘Per un’interpretazione del Umbris Idearum di Giordano Bruno’, *Annali della scuola normale superiore di Pisa*, 3rd series, 22 (1992), 943–68; S. Clucas, ‘Simulacra et Signacula: Memory, Magic and Metaphysics in Brunian Mnemonics’, in H. Gatti (ed.), *Giordano Bruno: Philosopher of the Renaissance* (Aldershot, 2002), pp. 251–71.
- 17 See e.g. C. B. Schmitt, *John Case and Aristotelianism in Renaissance England* (Kingston and Montreal, 1983).
- 18 F. Bacon, *Of the Advancement and Proficiency of Learning*, trans. G. Watts (Oxford, 1640), pp. 253–4.
- 19 *Ibid.*, pp. 254–5. Cf. Bacon’s statement that *topoi* are ‘of use, not only in argumentations, when we come to dispute with another; but in meditations also . . . Neither doe these places serve only for *suggestion*, or *admonition*, what we ought to *affirme* or *assert*; but also what we ought to *inquire* and *demand*’ (*ibid.*, p. 239). Mnemonics are also seen as potentially useful in F. Bacon, *Sylua Sylvarum*, ed. W. Rawley (London, 1627), p. 256 and the ‘Letter to Sir Henry Savile’, in F. Bacon, *Resuscitatio*, ed. W. Rawley (London, 1657), p. 229. See Howell, *Logic and Rhetoric*, p. 368; *AM*, pp. 370–3; Newton-de Molina, ‘Critical select history’, pp. 115–41, K. R. Wallace, *Francis Bacon on the Nature of Man* (Urbana, Chicago and London, 1967), pp. 55–68; *LAM*, pp. 97–129.
- 20 Bacon, *Advancement*, p. 255.
- 21 *Novum Organum*, 2.26, in *The Oxford Francis Bacon*, 15 vols (Oxford, 1996–), vol. XI, eds G. Rees and M. Wakely, pp. 285–7.
- 22 *Ibid.*
- 23 *Ibid.*, p. 287. Cf. Bacon, *Advancement*, pp. 255–6.

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- 24 In this discussion of Beale, I draw heavily on chapter 3 of my 'John Wilkins's *Essay* (1668) and the Context of Seventeenth-Century Artificial Languages in England', D.Phil. thesis, University of Oxford, 2003. On the characterisation of Beale as 'a prolific, hasty, and careless writer' (and thus one who does not fit into some authors' over-defined schema of those involved in post-Restoration science), see *The Correspondence of Henry Oldenburg*, 13 vols, eds A. R. and M. B. Hall (Madison, Milwaukee and London, 1965–86), I, 320 (hereafter OC). See C. Webster, *The Great Instauration* (London, 1975), pp. 11–16 and M. Hunter, *Science and Society in Restoration England* (Cambridge, 1981), pp. 194–7 for the necessary correctives to this view. On Beale's life and work see M. Stubbs, 'John Beale, Philosophical Gardener of Herefordshire Part I. Prelude to the Royal Society (1608–1663)', *Annals of Science*, 39 (1982), 463–89, and 'John Beale, Philosophical Gardener of Herefordshire Part II. The Improvement of Agriculture and Trade in the Royal Society (1663–1683)', *Annals of Science*, 46 (1989), 323–63. For an introductory biographical sketch, see *The Correspondence of Robert Boyle*, 6 vols, eds Michael Hunter *et al* (London, 2001), I, 506 (hereafter BC). Two useful recent studies are P. Goodchild, "No phantasticall Utopia, but a reall place": John Evelyn, John Beale and Backbury Hill, Herefordshire', *Garden History*, 19 (1991), 105–27 and M. Leslie, 'The Spiritual Husbandry of John Beale' in M. Leslie and T. Raylor (eds.), *Culture and Cultivation in Early Modern England* (Leicester, 1992), pp. 151–72. For Beale's religious views, see e.g. Beale-Evelyn, 1664, British Library Additional MS 78312, nos. 27–31 (hereafter Add. MS); Beale-Boyle, 3 March 1672/3, BC, IV, 345–6. See further N. von Maltzahn, 'Laureate, Republican, Calvinist: An Early Response to Milton and *Paradise Lost*', *Milton Studies*, 27 (1993), 1–19; W. Poole, 'Two Early Readers of Milton: John Beale and Abraham Hill', *Milton Quarterly*, 38 (2004), 76–99.
- 25 Beale-Christopher Wase, 21 October 1671, Corpus Christi College, Oxford, MS 332, fol. 18r (hereafter CCC. MS).
- 26 Cromwell-[?], n.d., n.p., Beinecke Library, Yale University, Osborn File MS 4014, fol. 1r (also transcribed in *The Hartlib Papers*, 2nd edition, eds Patricia Barry *et al*, CD-Rom (Sheffield, 2002); hereafter HP). D. Norbrook, *Writing the English Republic* (Cambridge, 1999), p. 467, gives the impression that Beale was a typical Royalist.
- 27 On Beale's mnemonic work see the reference in B. De Mott, 'Science vs. Mnemonics', *Isis*, 48 (1957), 8; a paragraph in Stubbs, 'Beale, I', 483; a brief and somewhat misleading mention in *LAM*, p. 169; and some brief and instructive references compiled in V. Salmon, 'Language-Planning in Seventeenth-Century England: its Context and Aims', in C. E. Bazell (ed.), *In Memory of J. R. Firth* (London, 1966), pp. 384, 387; V. Salmon, 'The Evolution of Dalgarno's "Ars Signorum"', in M. Brahmmer (ed.), *Studies in Honour of Margaret Schlauch* (Warsaw, 1966), p. 365; and *The Works of Francis Lodwick*, ed. V. Salmon (London, 1972), pp. 16, 95, 113.
- 28 Beale-Hartlib, 19 December 1656, Sheffield University Library Hartlib Papers, HP 31/1/2a, 5b Beale-Hartlib, 23 December 1656, HP 31/1/7a-7b.
- 29 *Ibid.*, HP 31/1/7b.
- 30 *Ibid.* Cf. Add. MS 4383, fol. 95r-v. See M. A. Muret, *Antonii Mureti Variorum Lectionum Libri X* (Antwerp, 1580), pp. 53–6; H. Plat, *The Jewell House of Art and Nature* (London, 1594), pp. 81–5 (see AM, pp. 276–77); the *Jewell House*

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- was republished in 1653 by Hartlib's associate Arnold Boate. Plat was a colourful man of letters and innovator, who probably first came to Beale's attention through his agricultural writings (for evidence of which, see J. Beale, *Herefordshire Orchards* (London, 1657), p. 49, and Beale's 'From Utopia', Royal Society Library Extra MS Vol. 366, no. 6, fol. 6v (point 72)). On Plat, see B. Juel-Jensen, 'Some Uncollected Authors XIX: Sir Hugh Plat, ?1552-?1611', *The Book Collector*, 8 (1959), 60–8.
- 31 Hartlib-Beale, 8 January 1656/7, Add. MS 4384, fol. 64v. Cf. EL MS B1, no. 15.
- 32 'Coppie of a noate of M^r Morleys had fro[m] Oxford', British Library Sloane MS 1466, fol. 16r. See W. Briggs, 'On Certain Incidents in Ben Jonson's Life', *Modern Philology*, 11 (1913–14), 279–88; J. H. Raach, *Directory of English Country Physicians* (London, 1962), p. 67. On Jonson's linguistic activities, see O. Funke, 'Jonson's *English Grammar* (1640)', *Anglia*, 64 (1940), 117–34.
- 33 Goad's approval is quoted in Beale-Boyle, 23 February 1663, BC, II, 69 (cf. Add. MS 4384, fols 65r, 98r).
- 34 *Ephemerides* (1635), HP 29/3/32b. See also references to the "Mnemonica Morleana" in Hartlib's commonplace book (dating from the mid to late 1630s), British Library Sloane MS 653, fols 118v, 129r, 130v.
- 35 Hartlib-Beale, 22 January 1656/7, Add. MS 4384, fols 64v-65r. Cf. EL MS B1, no. 15a.
- 36 Beale-Boyle, 29 September 1663, BC, II, 140.
- 37 Under the heading 'Mnemonica', Hartlib lists 'Memoria Morleana[,] Methodus Mnemonica Palatinj Bremensis. Mnemonica Bodinj.' (Sloane MS 653, fol. 118v). I have been unable to identify the second of these, but the third seems to have been the work of the German educationalist Elias Bodinus, whose work towards an art of memory was known to Hartlib through Johann Moriaen. See Moriaen-[,], late January 1639, HP 37/167a; N. Malcolm, 'Six Unknown Letters from Mersenne to Vegelin', *The Seventeenth Century*, 16 (2001), 116–17.
- 38 Beale-Hartlib, 8 April 1657, HP 61/15/1a.
- 39 Kinner-Hartlib, 27 June 1647, HP 1/33/12a-14b, quotation from 14a (translated from its original Latin by HP). This letter is discussed and partially transcribed in B. De Mott, 'The Sources and Development of John Wilkins' Philosophical Language', *Journal of English and German Philology*, 57 (1958), 1–12. On Kinner see also Lewis, 'John Wilkins's *Essay*', pp. 63–6; G. H. Turnbull, *Hartlib, Dury and Comenius* (London, 1947), pp. 382–440.
- 40 On which, see R. Lewis, 'A Babel off Broad Street: Artificial Language Planning in 1650s Oxford', *History of Universities*, 20 (2005), 108–45 (here 108–11).
- 41 On Dalgarno, see D. F. Cram and J. Maat, *George Dalgarno on Universal Language* (Oxford, 2001); W. Poole, 'The Divine and the Grammarian in the 17th-Century Universal Language Movement', *Historiographia Linguistica*, 30 (2003), 275–303; Lewis, 'Babel off Broad Street', 121–32. On the universal language movement, see notes 72–4 below. Intriguingly, the will of the mathematician and grammarian John Wallis (dated 6 August 1703) posits an immediate personal connection between Beale and Dalgarno: having bequeathed five pounds to Dalgarno's widow, Wallis left the same sum 'to M^{rs} Susannah Beale wife of John Beale Doctor of Divinity daughter of the said George and Margaret Dalgarno' (Public Records Office, MS PROB 11/473, fol. 105r-v). I am grateful to David Cram for this reference.

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- 42 Beale-Hartlib, 24/25 August 1657, *HP* 62/18/4a-4b. See also Beale-Hartlib, 3 November 1657, *HP* 52/14a.
- 43 Beale-Hartlib, 9 January 1657/8, *HP* 31/1/61b.
- 44 Beale-Hartlib, 9 January 1657/8, *HP* 31/1/61b-62b.
- 45 *Ibid.*, *HP* 31/1/63a. This passage of Bacon is discussed at notes 21–23 above.
- 46 Hartlib-Pell, 4 February 1657/8, Add. MS 4279, fol. 49r (repr. Vaughan, *Protectorate*, II, 438).
- 47 On Pell, see R. Vaughan, *The Protectorate of Oliver Cromwell*, 2 vols (London, 1838); N. Malcolm and J. Stedall, *John Pell (1611–1685) and his Correspondence with Sir Charles Cavendish* (Oxford, 2005) (I am very grateful to Noel Malcolm for allowing me to read pre-publication typescripts of this work). In the late 1630s, Pell had made moves himself towards the development of a real character and an artificial-philosophical language, but these attempts were abortive. See Add. MSS 4409, fols 251r, 254r; 4415, fols 26r-28v; 4423, fol. 376v; Lewis, 'John Wilkins's *Essay*', pp. 17–29.
- 48 Add. MS 4423, fol. 376r. Cf. J. Pell, *An Idea of Mathematicks*, in J. Dury, *The Reformed School: And the Reformed Librarie-Keeper* (London, 1651), pp. 45–6. Hartlib had first published the *Idea* in 1638; see N. Malcolm, 'The Publications of John Pell, FRS (1611–1685): Some New Light and Some Old Confusions', *Notes and Records of the Royal Society*, 54 (2000), 275–92.
- 49 Beale-Hartlib, 10 September 1658, Royal Society Library, MS Boyle Papers 7, no. 11. In addition to Malcolm and Stedall, *John Pell*, on Beale and Pell, see Vaughan, *Protectorate*, II, 439–77, esp. pp. 447–8, 456–7. On Brereton, who had been taught mathematics by Pell at Breda and who would later have a crucial role to play in the preservation of Hartlib's manuscripts, see M. Greengrass, J. Leslie and T. Raylor, 'Introduction', in M. Greengrass *et al* (eds), *Samuel Hartlib and Universal Reformation* (Cambridge, 1994), pp. 4–7.
- 50 *HP* 29/8/16a; see also Oldenburg-Beale, 4 September 1660, *OC*, I, 384–7.
- 51 On Johnson, his scheme and moves to resuscitate it in the early 1650s, see T. Barnard, 'Miles Symner and the New Learning in Seventeenth-Century Ireland', *Journal of the Royal Society of Antiquaries of Ireland*, 102 (1972), 129–42; Lewis, 'John Wilkins's *Essay*', pp. 35–41, 76–82.
- 52 On Clogie, see T. W. Jones, *The True Relation of the Life and Death of William Bedell* (London, 1873), pp. 211–20.
- 53 Hartlib-Worthington, 12 September 1661, *Diary and Correspondence of John Worthington*, 3 vols, ed. J. Crossley, II.i, 38 (hereafter *WDC*).
- 54 Beale-Hartlib, 28 September 1661, *HP* 31/1/73b. Beale nevertheless conducted a friendly correspondence with Wase between 21 October 1671 and 5 November 1673 (*CCC*. MS 332, fols 18r-29v).
- 55 On which, see J. Olszowy-Schlanger, "The General Grammer of Orientall Tongues" and Universal Language Schemes in Seventeenth-Century Britain', in D. F. Cram *et al* (eds), *History of Linguistics 1996*, 2 vols (Amsterdam, 1999), II, 131–41; G. J. Toomer, *Eastern Wisdom and Learning* (Oxford, 1996), esp. pp. 183–200.
- 56 Cf. also Beale's interest in the graphic work of the Scottish schoolmaster David Brown, and in the language of gesture adumbrated by the London physician John Bulwer. See Beale-Hartlib, 10 January 1656/7 and 23 February 1656/7, *HP* 31/1/12b and 62/22/2b; D. Brown, *Calligraphia* (St. Andrews, 1622), sig. ¶¶¶2v,

- p. 50 and *Introduction to the True Understanding* (London, 1638), sigs B1a, B4a; J. Bulwer *Chirologia* (London, 1644) and *Philocophus* (London, 1648).
- 57 Three copies of this letter survive. The above is quoted from Beale-[Hartlib], 4 October 1661, BC, VI, 426–7. Cf. HP 71/6/1a; Add. MS 4384, fol. 110r. On Pye, see G. E. Aylmer, *The King's Servants* (London, 1961), pp. 308, 311–13, 380–1; on Sherwyn see G. E. Aylmer, *The State's Servants* (London, 1973), p. 253; on Nicholas, see Aylmer, *King's Servants*, pp. 78–9, 111, 419, 468 and G. E. Aylmer, *The Crown's Servants* (Oxford, 2002), pp. 11–12, 76, 158. Though Boyle saw sense in the proverb ‘That good wits have bad memories’ (R. Boyle, *The Sceptical Chymist* (London, 1661), p. 170), he remained one of Beale’s regular and most intimate correspondents for 25 years.
- 58 This letter also exists in three copies, and is quoted here from Beale-[?], 4 November 1661, BC, VI, 427–8. The editors of Boyle’s correspondence contend that this letter (and that of 4 October 1661) was not intended for Boyle. This is not supported by a letter written by Beale to John Evelyn on 6 September 1662. In this, Beale noted that he had already ‘represented’ his mnemonic proposals to ‘M^r Boyle & M^r Oldenburgh’ (Add. MS 78683, no. 29). It is therefore probable that – although the letters in question were not addressed to Boyle directly – Beale wrote them with the clear intention that they would be read by Boyle, and that Boyle did in fact read them. Cf. copies at HP 71/6/1a-1b and 67/22/11a-12a; Add. MS 4384, fol. 109r. See further the letter to Oldenburg referred to in n. 69 below.
- 59 The technical similarity between cryptographical and universal or mnemonic characters has occasioned much speculation on the purportedly interpenetrative nature of their relationship; see e.g. G. F. Strasser, *Lingua Universalis* (Wiesbaden, 1988). A useful corrective to such views was given in 1654 by Seth Ward: ‘*Hieroglyphicks* and *Cryptography*, were invented for the *concealment* of things . . . and Grammar is one of those Arts and Language one of those helps, which serve for the *explication* of our minds and notions’ (S. Ward, *Vindiciae Academicarum* (Oxford, 1654), p. 18).
- 60 Beale-Hartlib, 23 November 1661, EL MS B1, no. 15c; Beale-Hartlib, 2 December 1661, HP 67/22/13a-13b (Stubbs, ‘Beale, I’, p. 483 mistakenly contends that this letter was written by Worthington, while it is has also been proposed that Beale was offering advice to Morley himself therein (Greengrass *et al* ‘Introduction’, p. 15)).
- 61 *Ibid.*, HP 67/22/14a-14b.
- 62 Hartlib-Worthington, 7 December 1661, WDC, II.i, 83.
- 63 Worthington-Hartlib, 12 December 1661, *ibid.*, 89.
- 64 Beale-Hartlib, 14 December 1661, EL MS B1, no. 15d. See Matthew 23:23.
- 65 Hartlib-Worthington, 16 December 1661, WDC, II.i, 92; Hartlib-Worthington, 14 January 1661/2, *ibid.*, 98
- 66 Hartlib-[?], 1661, HP 71/6/3a. On Becher, see e.g. WDC, I, 228–32; W. Waffenschmidt, *Zur mechanischen Sprachübersetzung. Ein Programmierungsversuch aus dem Jahre 1661* (Stuttgart, 1962).
- 67 On Chinese characters – newly familiar to the Occident in the accounts of returning Jesuit missionaries – and their seventeenth-century interest, see e.g. Bacon, *Advancement*, pp. 258–9; R. Hooke, ‘Some Observations and Conjectures Concerning the *Chinese* Characters’, *Philosophical Transactions of the Royal Society*, 16 (1686), 63–78.

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- 68 Beale-[Pye?], n.d., Add. MS 4384, fols 93v-94r. Beale refers to himself as the 'poor kinsman' of his correspondent. On the connection between Beale and John Pye see Beale-Hartlib, 17 February [1660], Add. MS 15948, fol. 86r; Beale-Evelyn, 30 July 1664, Add. MS 78312, fol. 9r. On Beale's connections to the Pye family, see n. 57 above. Beale cites G. B. della Porta, *De Occultis Literarum Notis* (Strasbourg, 1606), pp. 17–18. This is an expanded version of Porta's *De Furtivis Literarum Notis* (Naples, 1563, 1602). Porta was also interested in mnemonic characters themselves: see, e.g., G. B. della Porta, *Ars Reminiscendi* (Naples, 1602), pp. 17–20, 39–41; L. Volkmann, 'Ars Memorativa', *Jahrbuch der Kunsthistorischen Sammlungen in Wien*, Neue Folge Sonderheft 3 (1929), 175–6; *LAM*, p. 109. 'Gravelled': '2. Perplexed, puzzled' (*OED*).
- 69 Beale-Evelyn, 6 September 1662, Add. MS 78683, no. 29. Oldenburg records receiving a letter on mnemonics from Beale on 14 December 1661 (EL MS B1, no. 15c). Cf. further Beale's opinion, in relation to Evelyn's interest in copper engraving, that there should be a list of inventions 'soe methodicall, ordered in relation to time and place, as to be an excellent Mnemonical ayde in many kinds of literature' (Beale-Evelyn, 26 October 1662, Add. MS 78683, no. 32). Beale and Evelyn corresponded from the late 1650s and continued to do so until Beale's death in 1683. See Add. MSS 15948, fols 80r-96r, 136r-138r; 78312; 78313; 78683, nos 22–38; Osborn File MS 5096; *Diary and Correspondence of John Evelyn*, 4 vols, ed. W. Bray (London, 1906), III, 360–5 (hereafter *EDC*); Goodchild, 'No phantasticall Utopia'.
- 70 EL MS B1, nos. 15–15d contains details of Beale's mnemonic character and of his correspondence with Hartlib; it is marked 'Ex Beal', dated 15 March 1662, and is immediately followed (*ibid.*, no. 16) by a copy of a letter from Beale to Evelyn, dated 15 December 1662. It is thus at least possible that Evelyn passed on this material to Oldenburg shortly after the receipt of the 6 September letter from Beale.
- 71 E.g., on 29 October 1662, 'Dr. WILKINS was put in mind to prosecute his design of an *universal language*' (Birch, *History*, I, 119).
- 72 See Bacon, *Advancement*, pp. 257–63.
- 73 Secondary literature on the subject includes Salmon, *Lodwick*; M. M. Slaughter, *Universal Languages and Scientific Taxonomy* (Cambridge, 1982); Cram and Maat, *George Dalgarno*; Lewis, 'John Wilkins's Essay'.
- 74 On the professedly great mnemonic facility of artificial languages, see e.g. G. Dalgarno, *Ars Signorum* (Oxford, 1661), pp. 58–61; J. Wilkins, *An Essay Towards a Real Character and a Philosophical Language* (London, 1668), pp. 21, 385, 453–4; Salmon, *Lodwick*, pp. 110–14. Also cf. Kinner in n. 39 above.
- 75 Beale-Boyle, 25 February 1662/3, *BC*, II, 69.
- 76 Beale-Boyle, 2 October 1663, *BC*, II, 143.
- 77 Beale-Boyle, 25 February 1662/3, *ibid.*, 70–1. On the decoration of medieval texts, see Carruthers, *Book of Memory*, pp. 229–57. See the mnemonic treatise (the first to appear in print) appended to J. Publicius, *Oratoriae Artis Epitomata* (Venice, 1482), sigs. C7r-D3v, the characters in which are reproduced in Volkmann, 'Ars Memorativa', 146–7; J. Paëpp, *Artificiosiae Memoriae Fundamenta* (Lyon, 1619). See *AM*, pp. 117–18, 291–3; *LAM*, pp. 27, 92, 220, 228.
- 78 Beale-Boyle, 25 February 1662/3, *BC*, II, 69; T. Birch, *History of the Royal Society*, 4 vols (London, 1757), I, 179, 198. Given the interests of Hooke and Glanvill, Beale's fears seem to have been mistaken.

- 79 Beale-Oldenburg, 18 May 1663, Add. MS 4384, fol. 96r. The mental perfection of Christ – who was, after all, typologically the second Adam – was a popular theological topos. See, e.g., William Perkins's assertion that Christ was replete in 'his soule, [h]is vnderstanding, memorie, will and suchlike' (W. Perkins, *A Golden Chaine*, trans. R. Hill (London, 1597), p. 36).
- 80 Beale-Oldenburg, 18 May 1663, Add. MS 4384, fol. 96r. Marcus Antonius Sabellicus was the humanist, historian and curator of St Mark's library in Venice in the late fifteenth century. Beale cites from M. A. Sabellicus, *De Memorabilibus Factis Dictisque* (Basel, 1533), pp. 511–15.
- 81 Hill-John Brooke, 19 May 1663, in A. Hill, *Familiar Letters* (London, 1767), p. 108. Hill made notes on a universal language in his commonplace book (Sloane MS 2899, fol. 190r). On Hill, see Poole, 'Two Early Readers of Milton'.
- 82 Brereton-Pell, 21 May 1663, Add. MS 4384, fol. 97r.
- 83 Add. MS 4384, fol. 98r. It is probable that other members of the Royal Society were acquainted with what Pell was transcribing. Pell was elected one of the original FRS on 20 May 1663, and – with Brereton – attended all the meetings of the Royal Society until 20 June 1663 (Birch, *History*, I, 236, 239–40, 242, 249, 253, 255, 259).
- 84 Add. MS 4384, fol. 64r. See Bacon, *Resuscitatio*, p. 229; M. Casaubon, *A Treatise of Vse and Custom* (London, 1638); Pell, *Idea*, pp. 45–6.
- 85 Add. MS 4384, fol. 64r.
- 86 *Ibid.*
- 87 See n. 31 above.
- 88 Beale-Brereton, May 1663, *ibid.*, fol. 65r-v.
- 89 *Ibid.*, fol. 65v.
- 90 *Ibid.*, fol. 66r.
- 91 *Ibid.*
- 92 *Ibid.*
- 93 *Ibid.*, fol. 66r-v.
- 94 *Ibid.*, fol. 66v.
- 95 *Ibid.*
- 96 On the Royal Society and language, see B. Vickers, 'The Royal Society and English Prose Style: a Reassessment', in B. Vickers and N. S. Struener (eds), *Rhetoric and the Pursuit of Truth* (Los Angeles, 1985), pp. 3–76; Lewis, 'John Wilkins's *Essay*', pp. 212–17.
- 97 Add. MS 4384, fol. 66v.
- 98 *Ibid.* See P. Du Val, *A Geographical Dictionary* (London, 1662), which contains an alphabetical listing of geographical terms from the old and new world with brief descriptive definitions. Cf. Pell's rather more advanced 'Philosophicall Language by which hearing y^e names of all places in y^e Earth you should know their place for Longitude or Latitude' (Add. MS 4423, fol. 376v).
- 99 Add. MS 4384, fol. 66v. On Adam's onomastic authority, see e.g. A. Williams, *The Common Expositor* (Chapel Hill, 1948), pp. 80–4.
- 100 Beale cites a manuscript work of Joachim Jungius in support of this. On Jungius, see Kinner-Hartlib, 25 July 1648, *HP* 1/33/41a; H. Kangro, *Joachim Jungius' Experimente und Gedanken zur Begründung der Chemie also Wissenschaft* (Wiesbaden, 1968); H. Kangro, 'Die Unabhängigkeit eines Beweises: John Pell's Beziehungen zu Joachim Jungius und Johann Adolph Tassius', *Janus*, 56 (1969),

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- 203–9; C. Meinel, 'Enzyklopädie der Welt und Verzettlung des Wissens: Aporien der Empirie bei Joachim Jungius', in F. Eybl *et al* (eds), *Enzyklopädien der frühen Neuzeit: Beiträge zu ihrer Forschung* (Tübingen, 1995), pp. 162–87.
- 101 Add. MS 4384, fol. 66v.
- 102 Similarly, as the information recorded within commonplace books arranged around *loci* or *topica* became more complex, it was suggested that they could only be easily navigable with the aid of an alphabetical index. See G. C. Meynell, 'John Locke's Method of Common-Placing, as Seen in his Medical Notebooks, Bodleian MSS Locke D.9, F.21, F.23', *The Seventeenth Century*, 8 (1993), 245–67.
- 103 Beale-Boyle, 29 September 1663, *BC*, II, 140–1 (the editors do not appear to be aware of Beale's work towards a mnemonic character as recorded by Pell in Add. MS 4384).
- 104 *Ibid.*, p. 142.
- 105 Beale-Boyle, 2 October 1663, *ibid.*, p. 143.
- 106 Beale-Evelyn, 3 February 1663/4, Add. MS 78312, no. 37.
- 107 Add. MS 78330, fol. 83v; cf. Add. MS 78328, fol. 105r. Although Evelyn was interested in the improvement of the English language (see e.g. Evelyn-Peter Wyche, 20 June 1665, *EDC*, III, 309–12; J. Evelyn, *Publick Employment* (London, 1667), sig. A8r), he was not, for instance, one of the FRS comprising the revisory group to improve Wilkins's *Essay* in 1668 (Birch, *History*, II, 282). See R. Lewis, 'John Evelyn, the Early Royal Society and Artificial Language Projection: a New Source', *Notes and Queries*, 51 (2004), 31–5.
- 108 Beale-Evelyn, 26 April 1665, Add. MS 78312, no. 48.
- 109 Beale-Evelyn, 14 July 1669, *ibid.* See J. Webb, *An Historical Essay* (London, 1669).
- 110 Beale-Boyle, 26 June 1682, *BC*, V, 301 (a copy of this letter, forwarded by Beale to Evelyn and unnoted by the editors of Boyle's correspondence, is at Add. MS 78683, no. 38).
- 111 Hill-Brooke, 19 May 1663, Hill, *Familiar Letters*, p. 108.
- 112 See refs in n. 83 above. Wilkins also knew Beale's correspondence with the Royal Society at this time (Birch, *History*, I, 179, 198). Pepys records that along with Petty and John Graunt, he discussed 'the Universall Character – [and the] art of memory' on 11 January 1665 (S. Pepys, *Diary*, 11 vols, eds R. Latham and W. Matthews (London, 1970), V, 12). See further E. H. Cohen and J. S. Ross, 'The Commonplace book of Edmund Halley', *Notes and Records of the Royal Society*, 40 (1985), 18.
- 113 *AM*, p. 364.
- 114 H. More, *Philosophicall Poems* (London, 1647), pp. 429–30.
- 115 For Beale's hostility to Glanvill's neo-Platonic leanings, see e.g. Beale-Boyle, 31 October 1666, *BC*, III, 260.
- 116 *LAM*, p. 156.
- 117 F. Urquhart, *Ekskubalauron* (London, 1652), p. 29. Cf. C. Beck, *The Universal Character* (London, 1657), sig. B1r-v and the 'art of memory' described in Beck-[Hooke], n.d., Royal Society Library Classified Papers MS 16, no. 2. Beck also believed that 'Dr Wilkins's ground for an U. language, may serve happily to build an artificiall memory', Nathaniel Fairfax-Oldenburg, 17 July 1668, *OC*, IV, 155.

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- 118 See D. K. W. Modrak, *Aristotle's Theory of Language and Meaning* (Cambridge, 2001), pp. 95–114; I. Maclean, 'Language and the Mind: Reflexive Thinking in the Late Renaissance', in C. Blackwell and S. Kusakawa (eds), *Philosophy in the Sixteenth and Seventeenth Centuries* (Aldershot, 1999), pp. 296–321.

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