

Of Language and the Lodestone

In 1564 in the small Northern Italian city of Modena, a certain Antonia Vignola was brought to trial for having asked a local priest to baptize a magnet in her possession, her intention having been to attract a handsome townsman through a lodestone christened with his name. Modena's master goldsmith, asked by the court to comment upon the confiscated stone, explained what was evidently a widespread practice amongst both the laity and the lower orders of the clergy: "It is generally held that a white magnet can be used for amatory incantations by touching the person's skin. However, the magnet does not have this power unless it is baptized or enchanted by holy things."¹ Those who performed the rite combined familiar sacramental language with *nomina barbara* or "unheard of words," foreign utterances whose force lay in sound rather than in semantic sense. That the magnet's attractive powers were somehow augmented by barbarism and baptism—in a ceremony complete with a priest, holy oil, and godparents—was of peculiar concern to Italian Inquisitors of the mid- to late sixteenth century; that various members of the clergy sometimes used these *esperimenti ad amorem* to pursue their own affairs was a particular embarrassment.²

The odd coupling of magnetic forces with linguistic formulae is part of a larger early modern cultural practice specific to Italy, though well known beyond it.

¹ Cited in Mary O'Neil, "Magical Healing, Love Magic and the Inquisition in Late Sixteenth-Century Modena," in Stephen Haliczer, ed., *Inquisition and Society in Early Modern Europe* (London and Sydney: Croom Helm, 1987): 88-114, on 103.

² See for a valuable overview Ruth Martin, *Witchcraft and the Inquisition in Venice 1550-1650* (Basil Blackwell: Oxford, 1989). On the role of the parish priest, see Luciano Allegra, "Il parroco: un mediatore fra alta e bassa cultura," in *Storia d'Italia*, ed. Corrado Vivanti (Turin: Giulio Einaudi editore, 1978) 4: 898-947, especially 898-910.

The magnet was dimly associated with some sort of communication long before the actual advent of electromagnetic devices, but the ways in which the lodestone and the distinctly human attribute of language were articulated in the late sixteenth and early seventeenth centuries differ significantly. To say, as we would today, that magnetic forces enhance and extend human speech, appears anachronistic: the persistent fiction is rather that occult or divine language permits communication by reassigning the lodestone's various properties to flesh and blood protagonists. I'd like to examine this proposition through scrutiny of three early modern fables of magnetism.

A word may be in order, first, about how I came to this project. About two years ago I began investigating a puzzling remark made in 1632 in Galileo's treatment of magnetism in his *Dialogue Concerning the Two Chief World Systems*, one that casts William Gilbert's *On the Loadstone* of 1600 as an occult document. In this passage Galileo's spokesman Salviati, after suggesting that the Aristotelian Simplicio feared Gilbert's treatise as he would the *tregenda*, a gathering place of sorcerers, promised to show that such terrors existed "in name only."³ The observation appeared to me entirely under-motivated, for Simplicio's intellectual timidity has already been established, and there seemed to be nothing in Galileo's portrait of this stolid Aristotelian that suggested contact with the occult, nor anything in the modern assessment of Gilbert's work that allowed for such an interpretation. The fact that things existing "in name only" were the premise of a

³ "... avete in orrore cosa che nulla tiene in sè di spaventoso, quasi piccolo fanciullo che ha paura della tregenda senza sapere di lei altro che il nome, come quella che oltre al nome non è nulla." Galileo Galilei, *Dialogo sopra i due massimi sistemi al mondo*, in *Opere*, ed. Antonio Favaro, 20 vols. (Florence: Giunti Barbèra, 1890) V: 427.

good many magic rituals—among them, baptized magnets—seemed further to complicate Galileo’s remark. In other words, of all the available insults—and Galileo had many at his disposal for his Aristotelian targets—I could find none for the association of a study of magnetism with the *tregenda*, which derived from the Low Latin form *transianda*, and before it had become populated with spirits and sorcerers, had simply meant “a narrow place to be passed through.”⁴

But I was intrigued to find that discussion of erotic coercion involving the lodestone and virtually the same ambiguous remark about the efficacy of magical language had already appeared in another early *seicento* dialogue set in Venice, Moderata Fonte’s *The Worth of Women*,⁵ and that both observations coincided with the epidemic of baptized magnets in Northern Italy, several incidents of which involved scientists of Galileo’s acquaintance.⁶ Upon examining some sniping exchanges between William Gilbert and the Italian magus Giambattista della Porta, an occultist and an early authority on magnetism, I subsequently discovered that each represented the other’s work as insufficiently differentiated from black magic. Ironically, della Porta’s charge then may have appeared the stronger in view of the fact that Gilbert, in developing a specialized scientific vocabulary particular to magnetism, had indeed relied on “barbarous” and “unheard of words,” had dangerously insisted throughout his treatise on the presence of a soul in each and

⁴ See Nicoletta de Carli, “Andare in Corso, Andare in Tregenda, Andar Fuori,” *Lingua Nostra* 54 (1993): 53-61, and “tregènda,” *Glossario degli antichi volgari italiani*, ed. Giorgio Colussi (Foligno: Editoriale Umbra, 2000): 17: iv, 371-373.

⁵ See Moderata Fonte [Modesta Pozzo], *Il merito delle donne* (Venice: Domenico Imberti, 1600): 112 and 29 respectively.

⁶ On the involvement of Francesco Barozzi in particular see Marisa Milani, “Da accusati a delatori: Veronica Franco e Francesco Barozzi,” *Quaderni veneti* 23 (1996): 9-34.

every lodestone, and had, in naming the lodestone *terrella* or “little earth,” in effect baptized the magnet, though not, presumably, for any erotic purposes.

Let me return, then, to that sordid business. The public came to associate the ritual most closely with the *Clavicula Salomonis*, a pseudo-Solomonic *grimoire*, or rather a series of magical handbooks circulating throughout Europe under that name, from the mid-sixteenth through the eighteenth centuries.⁷ In 1583 Tomaso Garzoni insisted upon the connection of the practice and the text in his *Teatro de' vari e diversi cervelli mondani*, observing that those who are “mad with love go in search of the *Clavicula Salomonis* in order to get the *calamita* [magnet] that inevitably fills them with more *calamità* [calamities] than happiness.”⁸ Two years later he relied upon more than word play to warn his readers of the dangers of the necromantic treatise.

And it is well demonstrated that these perverse sorcerers do everything by diabolic arts, inducing insane love and extravagant hatred in men through incantations, using the so-called and profane *Clavicula Salomonis*, wickedly and sacrilegiously baptizing magnets for this effect, and using images of melted wax, and hair-raising, unspeakable imprecations. Thus they make madmen of men, and turn them frantic, as if they were trapped, or rapt by a higher power, and lifted by force from their true selves.⁹

⁷ See *The Key of Solomon the King (Clavicula Salomonis)* Now first translated and edited from ancient MSS. in the British Museum by S. Liddell MacGregor Mathers (York Beach, Maine: Samuel Weiser, 1974); Hermann Gollancz, ed. *Mafteah Shelomoh. Clavicula Salomonis. A Hebrew Manuscript* (Frankfurt and London: J. Kauffmann and D. Nutt, 1903); Gershom Scholem, “Some Sources of Jewish-Arabic Demonology,” *Journal of Jewish Studies* 16 (1965): 1-13. For recent work on the provenance of certain versions of the *Clavicula*, see Claudia Rohrbacher-Sticker, “*Mafteah Shelomoh*: A New Acquisition of the British Library,” *Jewish Studies Quarterly* 1 (1993/1994): 263-270, and “A Hebrew Manuscript of *Clavicula Salomonis*, Part II” *British Library Journal* 21 (1995): 128-136. On the *Clavicula*'s appearance on the Index, and for its cultural importance in the Veneto in the early modern period, see the illuminating study of Federico Barbierato, “Il Testo Impossibile: La *Clavicula Salomonis* a Venezia (Secoli XVII-XVIII),” *Annali della Fondazione Luigi Einaudi* 32:1 (1998): 235-284, 254.

⁸ Tomaso Garzoni, *Il Teatro de' vari e diversi cervelli mondani*, in *Opere*, ed. Paolo Cerchi (Ravenna: Longo Editore, 1993) 223-224.

⁹ Tomaso Garzoni, “De' Maghi Incantari,” in *La piazza universale di tutte le professioni del mondo*, ed. Giovanni Battista Bronzini, Pina de Meo, and Luciano Carceri, 2 vols. (Florence: Leo S. Olschki, 1996): 515.

Garzoni's observations of practices in the Veneto were soon repeated far beyond the region. The Frenchman Jean-Jacques Boissard drew upon that discussion of the *Clavicula* and of baptized magnets to explain the "wicked and impure love" to which men were subjected in his *Treatise on Divination*, a posthumous publication of 1616,¹⁰ and a year later the German alchemist Michael Maier warned Christian readers against the *Clavicula*, and likewise alluded to the socially explosive combination of baptized magnets and certain "unspeakable" incantations.¹¹

The question of why lodestones and "unspeakable imprecations" were effective agents of love magic was, of course, a crucial issue for the Inquisition. A tradition dating to the third century of the Christian era, articulated by authors as diverse as Iamblichus and Origen, held that the power of certain words was in their untranslatable and original connection to the divine: their very unintelligibility, and their resistance to paraphrase and translation were, in effect, the guarantors of their force.¹² "The philosophy of the Greeks is just noisy talk," it was observed in the

¹⁰ Jean Jacques Boissard, *Tractatus posthumus ... de divinatione & magicis præstigiis* (Oppenheim: Typis Hieronymi Galleri, 1616): 44.

¹¹ Michael Maier, *Symbolæ auræ mensæ duodecim nationum* (Frankfurt: Anton Humm, 1617): 69.

¹² See Jan Assman, "Translating Gods: Religion as a Factor of Cultural (Un)Translatability," in Sanford Budick and Wolfgang Iser, eds. *The Translatability of Cultures* (Stanford, CA: Stanford University Press, 1996): 25-36, on 30-31; on *nomina barbara* and *voces magicæ* in general see Garth Fowden, *The Egyptian Hermes* (Princeton: Princeton University Press, 1986): 29-37, John Gager, ed. *Curse Tablets and Binding Spells from the Ancient World* (Oxford and New York: Oxford University Press, 1992): 5-10, Claudia Rohrbacher-Sticker, "From Sense to Nonsense, From Incantation Prayer to Magical Spell," *Jewish Studies Quarterly* 3 (1996): 24-26, Fritz Graf, *Magic in the Ancient World*, tr. Franklin Philip (Cambridge, MA: Harvard University Press, 1997): 218-229, and Naomi Janowitz, *Magic in the Roman World: Pagans, Jews, and Christians* (London and New York: Routledge, 2001): 39-43. See also, in relation to early modern theories of demonic language, Armando Maggi, *Satan's Rhetoric: A Study of Renaissance Demonology* (Chicago: University of Chicago Press, 2001): especially 54-95.

pseudo-Egyptian *Corpus Hermeticum*. “For our part, we use not words, but sounds full of energy.”¹³

Predictably, the Church Fathers were not enthusiastic about the coercive possibilities of such sounds, and the distinct attitudes to what would be known as *nomina barbara* can be articulated around two different impressions of what it means to speak barbarously or *to babble*. For some, the term indicated a kind of nonsensical chain of sounds of no meaning or structure, often associated by transference with a kind of aphasia, most typically stammering. For others, however, *nomina barbara* implied speech that was at once unfamiliar to the listener and the all-too-coherent linguistic face of a repellent culture. Those with knowledge of such foreign languages, as for example the learned Jerome and Augustine, attempted to convert the resonant *nomina barbara* into sheer babble. In 399 C. E., for instance, Jerome applauded the Spaniard Lucinius for his refusal

to embrace “Armagil,” “Barbelon,” “Abraxas,” “Balsamum,” and the absurd “Leusibora.” Such are the portentous names which, to excite the minds of unlearned men and weak women, [the heretics] pretend to draw from Hebrew sources, terrifying the simple by barbarous combinations which they admire the more the less they understand them.¹⁴

Augustine, in this same period, criticized another heretical sect “who recounted some fantastical things about the world, mixing I know not what *nomina barbara* in their arguments in order to terrify their auditors, names which move prudent people to laughter, rather than to fear.”¹⁵

¹³ *Corpus Hermeticum* XVI.

¹⁴ Jerome, Letter LXXV, “To Theodora,” in www.ccel.org/fathers/NPNF2-06/lettes/letter75.htm

¹⁵ Augustine, *De Hæresibus ad Quodvultdeum*, in reference to the Nicolaitæ.

More consequential, perhaps, for the early modern world was the Thomist view.¹⁶ Beginning from the premise that “magicians in their performances use certain words with a meaning to the production of definite effects,” Aquinas argued in his *Summa contra gentiles* (ca. 1260) that the supernatural results produced by language—whether *nomina barbara* or borrowed from Christian sacraments—necessarily depended upon either the speaker or the addressee. Because humans could not, in the normal course of events, “change things one into another” by mere words, Aquinas concluded that such effects came about through the understanding of the addressee, a spirit or intelligence. The fact that necromantic rituals often began, and sometimes continued, as a sort of one-sided conversation involving a series of “invocations, entreaties, adjurations, or even commands” strengthened Aquinas’ position.

If for Aquinas language was not *per se* magically efficacious—as much depended upon who was listening as what was said—non-linguistic elements of the ritual enjoyed the same status. “In ceremonies of this sort,” he observed,

they employ certain [symbols] and geometrical figures. But a figure is no principle of action, imparted or received: or else mathematical figures and drawings would be active and passive. Matter therefore cannot be disposed by geometrical figures to the reception of any natural effect. It follows that these figures are not used as disposing causes, but as signs.¹⁷

Aquinas’ formulation preserved something of the supernatural power of words, symbols, and geometrical figures: they served as a transcript of human desires for the intelligence. While Aquinas condemned those who addressed these intelligences

¹⁶ For an illuminating discussion of the influence of the Thomist position on Inquisitorial practice, see Ruth Martin, *Witchcraft*, 47 ff.

¹⁷ Thomas Aquinas, “Whence the performances of Magicians derive their Efficacy,” *Summa Contra Gentiles* III: 105; www.nd.edu/Departments/Maritain/etext/gc3_105.htm.

for what were usually evil ends, his view of the magical formulae as signs legible and persuasive to these beings explains the early modern mania for comparing different versions of the *Clavicula*, and for retaining and copying their sometimes lengthy lists of incomprehensible words and diagrams, especially when baptized magnets were involved.

If this makes even the craftiest of magicians no more than a sounding board or medium, something of the same might be said of the magnet. Speculation about the magnet's ability to communicate *something* dates to Antiquity: the first-century Roman naturalist Pliny pointed out that this "dull and stiff stone," so unpromising in appearance, seemed possessed of certain specialized functions, having "hands" for grasping iron, and an obscurely designated *sensus* or "capacity for feeling."¹⁸ Pliny's portrait of the sensitive lodestone finds no further development in his *Natural History*, but it is worth noting that early descriptions of the compass preserved some of that anthropomorphic flavor: the needle was often called the *lingula*, *languette*, or *züngelein*, "little tongue," and what it had to convey—"this is North"—characterized by verbs like "to tell."¹⁹ Quite clearly, it would take no more than a *very* little tongue to relate its rather modest message, but my point is that while the Italian practice of baptizing magnets obviously subordinates physical forces to a kind of performative discourse, making erotic attraction and repulsion the effect of occult mutterings, here we may assume that natural phenomena are privileged and prior, language merely denotative, and the compass a tongue-tied thing in man's service.

¹⁸ Pliny, *Natural History* XXXVI: 25.

¹⁹ For such instances see Franz Posset, "The Heavenly Magnet: On the Attractiveness of God in Western Christian Spirituality," *American Benedictine Review* 46:1 (1995): 24-44, on 36-37.

There's very little in the ritual of the baptized magnet that attempts to explain in rational fashion how the forces of attraction and repulsion could possibly be transferred from the lodestone and iron to human protagonists, and the closest thing to a rigorous discussion of these *esperimenti ad amorem* is, in fact, virtually indistinguishable from a parody of experimental procedures. In the late sixteenth century, Giambattista della Porta, having observed with surprise that identical formulae involving *nomina barbara* and magnets were used with equal success by women of quite different appeal—the bewitching *affascinatrice*s of the countryside and the hordes of lowly urban whores—concluded that the occult powers of the stone did function as a form of erotic coercion, and were quite well known not to Aquinas' higher intelligences, but to Satan, who had somehow added the foreign imprecations in order to condemn the unknowing speakers to perdition. Della Porta's insistence on the "naturalness" of this kind of love magic, rather than on its dangerous occult additives, is undoubtedly related to his own curse-free magnetic recipe, the particulars of which, regrettably, lie beyond the scope of the present study.²⁰ What is interesting about della Porta's position, however, is that in making reliance on ritual formulations into a kind of morals charge, rather than the efficacious basis for magical practices, he subscribes less to a view of the universe in which language produces, governs, and organizes natural phenomena, than to one in which the word serves no purpose but to describe the physical world. It is this latter perspective, generally consonant with our own, that I would like to examine,

²⁰ Giambattista della Porta, *Criptologia*, ed. Gabriella Belloni (Rome: Centro Internazionale di Studi Umanistici, 1982): 188-189.

particularly as it relates to an early modern magnetic instrument designed for communication.

Thus around 1610 the Jesuits, among others, sought to develop a primitive sort of telegraph based on the adaptation of the 24 letters of the Latin alphabet to the 360 degrees of a magnetic compass, itself an adaptation of the 8- or 12- point wind rose.²¹ Two correspondents separated by thick stone walls or even by great distance could communicate at a prearranged time, it was believed, if each had a dial so marked, for the second needle, if magnetized by the first, would move in simultaneous sympathy as the message was spelled out letter by letter. The venture was evidently limited to an intellectual elite: “I have no doubt two *mathematici* can indeed communicate without paper and ink,” wrote one knowing Jesuit astronomer to another, “for what of the hidden force of the magnet?”²² As treatises detailing the (quite unworkable) magnetic dial made clear, the alphabet employed here was regarded as a mere linguistic convention, and other sign systems could easily have been substituted, so long as their constituent parts could be mapped in legible fashion onto a compass-like array of magnetic forces.²³ The range and possibilities of language were allegedly dictated by, and literally grounded in, the giant lodestone

²¹ For an overview of the development of the compass and its relationship to the wind rose see Lloyd A. Brown, *The Story of Maps* (New York, Dover, 1977): 113-140.

²² “Mathematicum profecto etiam sine ijs [atramentum et charta] loqui posse Mathematico non dubito.... Nullane uis occulta Magneti?” Paul Guldin S.J. to Johann Lanz S.J., 13 February 1611, in August Ziggelaar S. J., “Jesuit Astronomy North of the Alps: Four Unpublished Jesuit Letters, 1611-1620,” 101-132, on 117.

²³ On the prehistory of the telegraph see P. D. Timoteo Bertelli, Barnabite, *Un supposto sistema telegrafico magnetico indicato da alcuni autori dei secoli XVI e XVII* (Rome: Tipografia delle scienze matematiche e fisiche, 1868), J. J. Fahie, *A History of Electric Telegraphy to the Year 1837* (London: E. & F. N. Spon, 1884) 1-25, with numerous bibliographical errors, Louis Figuier, *Les merveilles de la science ou description populaire des inventions modernes* (Furne: Jouvett, ca. 1870) 2: 86-102, and Alexis Belloc, *La télégraphie historique* (Paris: Firmin-Didot, 1894) 55-66.

that is the earth; within this silent and virtual exchange of messages, neither the phonetic nor the iconic qualities of any symbol was of the slightest importance.

It is tempting to connect the “Jesuitical” device, with its implications of global communications and its presumed adaptability to a host of languages and writing systems, to the Society’s vigorous proselytizing, particularly in the Far East, in the early modern period. More crucial to our purpose here, however, is the fact that these two means harnessing of communication and magnetic phenomena—the baptized lodestone and the alphabetic dial—cannot simply be interpreted respectively as indices of a pre-modern religious mentality and a modern scientific outlook. Somewhat surprisingly, the notion that *nomina barbara* and iconic signs actually controlled rather than merely described physical laws was most frequently associated with the efforts of mathematicians, astrologers, and astronomers; as late as June 1700, in fact, geometrical diagrams and *numeri incogniti*—probably Hindu-Arabic numerals written in an old-fashioned script—were presented as evidence, alongside the inevitable baptized magnets, of a Bolognese suspect’s necromantic dabbling.²⁴ Put differently, magical and mathematical formulae appeared to some to circulate indistinguishably, the “unheard of words” and “unknown numbers” functioning as actual agents in the physical world.

By contrast, the alphabetic dial, for all its proto-scientific air and its subordination of sign systems to physical phenomena, derived from the smutty

²⁴ Romano Canosa, *Storia dell’Inquisizione in Italia dalla metà del cinquecento alla fine del settecento: Napoli e Bologna* (Sapere 2000, 1990) V: 194. The numbers were probably in *huruf al-ghubar*, the script in which Hindu-Arabic numerals had entered the Latin West in the eleventh century, but later associated with Islam and possibly with magic. On *ghubar* or “dust” numerals see Georges Ifrah, *The Universal History of Numbers*, tr. David Bellos (New York: Wiley, 2000): [], and Jonathan M. Bloom, *Paper before Print* (New Haven, CT: Yale University Press, 2001): 133-134.

ambit of the baptized magnets. The first extended description of the device, dating to 1600, was written by a German mathematician and specialist in Oriental languages whose wish it was to divulge a secret previously restricted to alchemists, doctors, and naturalists. The treatise stated that when the needle pointed North, South, East or West to one of the 16 letters of the system, it indicated the precise letter of each quadrant by pointing one to four times to that sector. But in order to transmit messages through sympathetic movement, the twin needles or *züngelein* were first to be anointed with holy oil and baptized with cabalistic names.²⁵ The thing worked, therefore, only because these “unheard of words” allowed the “capacity for feeling” that normally obtained between the lodestone and iron to be transferred to human correspondents through alphabetic articulation; the act of communication itself, no less than the subset of erotic attraction and repulsion, depended on the initial utterance of these “sounds full of energy.”

The sympathetic needles of the alphabetic dial, stripped by the Jesuits of these embarrassing occult trappings, were promoted in various contexts and genres throughout the seventeenth and eighteenth centuries, eventually becoming so familiar that they would be ridiculed in passing by Galileo in the *Dialogue concerning Two Chief World Systems* in 1632,²⁶ employed in 1682 in the apocryphal *Letters of a Turkish Spy* to account for Cardinal Richelieu’s uncanny knowledge of foreign affairs in the 1630s,²⁷ and offered in 1740 by Mark Akenside as a figure for

²⁵ [Daniel Schwenter], *Steganologia & steganographia aucta* (Nürnberg, S. Halbermayers, 1600) 127-132.

²⁶ Galileo Galilei, *Dialogo*, in *Opere*, V: 120.

²⁷ [Giovanni Paolo Marana], “Letter XIII, to the Kaiman,” *The first volume of letters writ by a Turkish spy who lived five and forty years undiscovered at Paris, written originally in Arabick, first translated into Italian, afterwards into French and now into English* (London: Henry Rhodes, 1691) 134.

the subterranean logic of two apparently unrelated ideas.²⁸ By 1760, Jean-Jacques Rousseau's letter-writing Julie alluded to those needles in *La Nouvelle Héloïse*, not to propose a more effective means of communication, but rather to portray the constant sympathy between two distant lovers;²⁹ by 1802, a prototype of the actual electric telegraph with this same alphabetic dial, the so-called *télégraphe intime*, had been developed by one of Rousseau's illegitimate children.³⁰

It is, however, one of the early denunciations of the device that is the most interesting. The Jesuit Athanasius Kircher, writing in the 1640s, suspected a fraud in the cabalistic prototype of the instrument, but condemned the dial on philological rather than scientific grounds, the four names having been coined "in the Devil's own kitchen," and wantonly modeled on Arabic and other Oriental languages. "I don't remember ever having read of anything more stupid and absurd than this ridiculous little machine," Kircher remarked,

for here there are as many lies and hoaxes as there are words, and I've discovered a truly profound ignorance of magnetic matters. [The promoters] wanted to forge something miraculous and entirely unheard of in this day and age, and yet they knew nothing of it. Striving for the glory of the most recondite studies, they took care to veil the secret [of the mechanism] in barbarous and outlandish words, ones truly fit for overpowering a demon, such that not even [the promoters] themselves understood what they were saying.³¹

But Kircher's emphasis on the unsavory occult origins of the alphabetic dial is merely the obverse face of the several early modern efforts made to naturalize the device, and to suggest its kinship with more compelling and familiar accounts of

²⁸ Mark Akenside, *The Pleasures of the Imagination* I: 326 ff.

²⁹ Jean-Jacques Rousseau, "Lettre XI de Julie," *Julie ou la nouvelle Héloïse* (Paris: Garnier, 1988).

³⁰ Thus Figuier, *Les merveilles de la science*, 2: 93-98.

³¹ Athanasius Kircher S.J., *Magnes sive de arte magnetica* (Rome: Ex typographia Ludouici Grignani, sumptibus Hermanni Scheus, 1641) II: iv: 5, 384.

inspired speech. Consider, in this connection, miraculous explanations of the translation of the Pentateuch, or the first five books of the eventual Old Testament, from Hebrew to Greek. According to the *Letter of Aristeas* of the mid-second century B.C., seventy-two priestly interpreters working in constant collaboration produced the Septuagint after seventy-two days of labor.³² The story was soon embellished: the translators, isolated individually or in pairs in stone cells in the Pharos of Alexandria and “without any presence other than the four natural elements,” were said to have produced the single Greek text of the Septuagint through a sort of divinely ordained sympathy. The influential Philo of Alexandria suggested in the first century C.E. that each translator, literally “inspired” by words “breathed into” him, wrote “as if under dictation from a hidden whisperer.”³³ Philo also stated that the original Hebrew text itself was understood have generated a univocal and unequivocal response—rather than the latitude typical of translations—of the kind he associated with scientific texts, “particularly those involving geometry and logic.”³⁴

What concerns us most here is the echo of the Septuagint legend in the humble material particulars of the magnetic dial: the actual mechanics of communication through thick stone walls are ascribed to a pre-existent whispering

³² On the *Letter* see the introduction provided in Moses Hadas, ed. and tr., *Aristeas to Philocrates (Letter of Aristeas)* (New York: Harper & Brothers, 1951) 1-84. See also Harry M. Orlinsky, “The Septuagint as Holy Writ and the Philosophy of the Translators,” *Hebrew Union College Annual* XLVI (1975): 89-114 and Naomi Janowitz, “The Rhetoric of Translation: Three Early Perspectives on Translating Torah,” *Harvard Theological Review* 84:2 (1991): 129-40.

³³ Philon d’Alexandrie, *De vita mosis* II: 37, in *Les Œuvres de Philon d’Alexandrie*, eds. Roger Arnaldez, Jean Puilloux, et Claude Mondésert (Paris: Editions du Cerf, 1967) 209.

³⁴ *De vita mosis* II: 38. Given that the *Letter to Aristeas* alluded to certain defects that had crept into the Pentateuch, and seems to have been concocted in part to explain significant differences in cosmological details between the Hebrew and Greek versions, Philo’s emphasis on this natural and scientific tenor of the translation is not surprising. On the myth of the naturalness and neutrality of the scientific translation, see Scott L. Montgomery, *Science in Translation: Movements of Knowledge through Cultures and Time* (Chicago: University of Chicago Press, 2000), especially 271-294.

Spirit, here rather banally converted into the omnipresent wind rose, onto which other and apparently related sign systems might be mapped by elite scribes spelling out an identical text at the exact same time. Just as the emphasis on the physical setting of the translation and the “scientific” character of the Pentateuch was intended to convey the air of something inevitable, natural, and evident to all cultures, rather than the recent product of a particular one,³⁵ so the promoters of the rehabilitated alphabetic dial envisioned its eventual adaptation to any sign system, and championed it as a pellucid medium of communication. Writers detailing the *mode d’emploi* of the dial insisted on what seems to us a curious redundancy: the text of the message was written down in pen and ink by the recipient, rather than simply being read off as it arrived. The end product, as at Alexandria, was thus less a private *communiqué* between two individuals than a piece of writing that many might read and contemplate.

It is also significant that the device, for all the emphasis placed on the alphabetic character of the messages spelled out by sender and receiver alike, was associated with translation, and in terms that recall that of the Septuagint. Even as he was composing his own rather liberal French translation of the *Psalms*, for instance, Blaise de Vigenère advocated the use of the dial to allow someone “to read through walls three feet in thickness,” and as at the Pharos, “using the medium of

³⁵ For a similar notion in emergent copyright statutes, see *Donaldson v. Beckett* (1744): “science and learning are in their Nature *publici Juris*, and they ought to be as free and general as Air or Water.” The author’s and translator’s rights, in other words, were at most a function of the labor they performed in giving these always available ideas a particular linguistic form. See Lawrence Venuti, *The Scandals of Translation* (London and New York: Routledge, 1998) 57. In the case of the Septuagint legend, the translation is labor-free, and the material itself something already in the air and merely articulated on a particular day by the Holy Spirit.

Nature alone.”³⁶ And the Jesuit Famiano Strada, one of the most vigorous promoters of the instrument, portrayed himself and his putative correspondents in 1617 as heirs to the priestly elite who had taken dictation from the hidden whisperer in Alexandria: “we [are] the race of scribes,” he claimed, as if no message originated with them, but always came from undisclosed remote source. Most tellingly, the revolving needle itself was called both the “iron interpreter,” and the *ferrum volubile*, a phrase that captures at once its mobility and its apparent capacity for speech.³⁷

But this is merely a triumphal version of Kircher’s “ridiculous little machine:” Father Strada, contemptuously identified in the 1640s by Sir Thomas Browne as “the *Æolus* that blew about” the news of the dial,³⁸ appears to promote a form of communication made possible, in more miraculous fashion, by the unseen Spirit in Alexandria, just as Kircher, perhaps less consciously, broadcast the four pseudo-Eastern *nomina barbara* on which that same instrument depended. The differences in their postures are, of course, crucial: the several analogies with the legend of the Septuagint legitimize, but do not pretend to reenact, the events at Alexandria, while any recitation of those “unheard of words” sets the stage for magic. Put differently, referring to the Septuagint *recalls* the one-time work of the Spirit; uttering the unheard of words *calls* a still active demon.

It’s also worth noting here that the way in which the foreign is configured with the marvelous is crucial to my distinction. To oversimplify, this sort of magic

³⁶ Blaise de Vigenère, *Traicté des chiffres* (Paris: Chez Abel L’Angelier, 1586) 14.

³⁷ “nos soboles scribarum,” “ferroque interprete discit.” Famiano Strada S. J., “Prolusio secunda,” *Prolusiones academicæ* (Rome: Iacopo Mascardi, 1617) 360.

³⁸ Sir Thomas Browne, *Pseudodoxia Epidemica*, ed. Robin Robbins, 2 vols. (Oxford: Clarendon Press, 1981) Book II: chapter 3; vol. I: 114.

depends upon preserving an alien or unspeakable element, while the alleged miracle at Alexandria insists rather optimistically on the ultimate intelligibility and invisibility of all language. This latter posture does not reduce either the Pentateuch or the eventual Bible to documents of unequivocal meaning available to all: the parable of the sower in the New Testament makes clear, in fact, that successful communication is a random³⁹ and comparatively rare event.⁴⁰ In that parable, most of what is broadcast by the hand of the sower falls on stony ground, or is consumed by passing birds, or soon withers away in the sun; only occasionally does this capricious scattering of seeds result in a yields of forty, sixty, or a hundred-fold. There is a certain economy in this apparent wastefulness: if the point of the story about the miraculous episode at Alexandria is that nothing was lost in the translation, the parable of the sower appears at least initially to correct for any information overload implied by that legend. It insists above all on the dubiety of communication: if you understand the parable, you know that you can never be absolutely certain that you've actually gotten the Scriptural message to which it alludes.

Thus far, then, I have argued that in the case of the baptized magnets, the active agents of communication are, as the term “sounds full of energy” implies, the *nomina barbara*, for these are the words that transfer magnetic properties of attraction and repulsion to people and do away with the crucial social distances that normally separate them. In this rehabilitated version of the alphabetic dial, by

³⁹ Fabrizio, che ne dici?

⁴⁰ See *Matthew* 13, *Mark* 4, and *Luke* 8. On the importance of the parable of the sower as a model for communication, see John Durham Peters, *Speaking into the Air: A History of the Idea of Communication* (Chicago: University of Chicago Press, 1999) 51-62.

contrast, it is the lodestone that overcomes physical and linguistic barriers as quickly and apparently as naturally as did the “hidden whisperer” of Alexandria, and it does so in order to convey intelligible words between distant parties. In both cases, of course, there’s an odd confusion between man and magnet, one which conveniently excuses adulterous attraction, and more interestingly, makes the “iron interpreters” of the dials barely distinguishable from the two flesh and blood scribes. But this coupling of the lodestone and language can also result in a kind of static, as a noise that signals the very limits of such fictions, and here I turn to a third fable.

A tradition made familiar to the Latin West by Pliny and Ausonius held that at the command of her bereaved spouse and brother Ptolemy Philadelphus, an iron statue or coffin had been fashioned for the Egyptian queen Arsinoe, and was forever suspended in space beneath a cupola of lodestone in Alexandria.⁴¹ In his mid-seventeenth-century discussion of the origins of the Septuagint, the Anglican prelate and scholar James Ussher embedded the somewhat scandalous story of Arsinoe’s shrine within his account of Ptolemy’s entertainment and awed support of the seventy-two translators of the Pentateuch.⁴² Ussher’s relation is a sober one—he mentions neither isolation nor inspiration, and the miraculous character of the translation is confined to the pedestrian fact that the seventy-two men brought from Jerusalem actually finished their work in Alexandria in seventy-two days—and his initial reference to “Queen Arsinoe, [Ptolemy’s] sister” emerges most pedantically, as an amendment to an erotic arrangement that had been more discreetly presented

⁴¹ See Pliny, *Natural History* XXXIV: 14 and Ausonius, *Idyll X (Mosella)* v. 314-317.

⁴² James Ussher, *Annales veteris testamenti* (London: J. Flesher, 1650) 480-483.

in the *Letter of Aristeas*. But this story is indisputably linked to the lore of the lodestone as an agent of communication, and I will argue that it serves to condemn what Ussher must have understood as the most questionable aspect of the Septuagint legend.

Unlike the modern marvel of the magnetic dial, the miraculous coffin simply figures in the midst of this triumphal narrative of religious and cultural transfer as a bizarre sort of background noise, being the very monument of all that is and must remain resistant, alien, and forever foreign. In the odd emergence of Arsinoe's iron effigy in Bishop Ussher's account of the creation of the Septuagint, Scripture is, of course, the more enduring, inclusive, and substantive communication: it is as if Ptolemy's generous support of the translation and the large community of Hellenized Jews it would serve somehow compensates for his monument to Arsinoe, an idiosyncratic architectural version of an exceptional affective attraction, a love so extraordinarily exclusive that it conflated fraternal and conjugal roles. The forces in the cupola articulate the same message endlessly—reduced, like graffiti, to “Ptolemy ♥ Arsinoe 4-ever”—while the Septuagint appeared to offer to all who understood Greek an account of origins, a historical chronicle, and a set of injunctions organizing the civic and spiritual life of an entire people.

But to the extent that Ussher's story about the Septuagint is the model of successful but not miraculous communication—for in his hands it appears above all a tale of administrative support, efficiency, organization, and collaboration, in a word, a prosaic parable of a sustained effort somehow to preserve *and* to transform a text—the surd element of the lodestone cupola shows what sort of communicative

acts that same system recognizes and excludes. Here, the rather dull working conditions Ussher described are surely significant. The translation took place, morning after morning, at the Pharos, “far from all roaring and rumbling;” the interpreters, reading the original, discussed aloud one passage after another in an effort to achieve harmonious Greek equivalents for each, and (rather astonishingly) never revised the work of previous days.⁴³ Though the linear thing that emerged was copied each day, it evidently began as speech, and more specifically, as the continuous and cacophonous conversation of seventy-two elderly non-native speakers of Greek. Quite clearly, the greater part of what they said was *not* recorded, but strictly necessary if, as Ussher suggested, the final version was a harmonious blend of all contributions.

The process itself seems a primitive model of a modern theory of communication, where the actual message understood is a statistical average of the possible signals transmitted. It is this situation that allows you to follow me, for instance, if I occasionally stutter or trail off while speaking, or misspell words or punctuate them rather casually while writing. Of this formulation the good Bishop Ussher would have known nothing, but he would have recognized the need to distinguish quite sharply between the many false starts embodied in the productive utterances of his seventy-two translators, and other and more dangerous signals. These last, while mere gibberish, alter the statistical distribution of the signals sent;

⁴³ “... atque ab omni tumultu & strepitu remotâ. Ibi interpretationem illi aggressi, singula ex collationibus ad consonantium elaborant, quæ ita elaborata Demetrius ex scribenda curabit. ... pergebant leger & singula interpretari.” Ussher, *Annales*, 483. Ussher’s description of the translation process seems not unlike that actually used to produce the King James Bible from 1604-1611; see Edward Craney Jacobs, “Two Stages of Old Testament translation for the King James Bible,” *Library Ser.* 6: 2 (1980): 16-39.

like a malicious version of Philo’s “hidden whisperer,” they transform the eventual message.

It is a coincidence, of course, that such disturbances today are often the result of magnetic storms, but it is not by chance that precisely the kind of communication Ussher sought to exclude from his account of the Septuagint involved magnetism. With its strong ties to that rival version of the events at Alexandria—that of the authoritarian “hidden whisperer” who quite literally dictated the Septuagint—the lodestone would be just the system-altering sort of signal Ussher rejected in his depiction of a loud and laborious translation presumably based on something more like consensus.⁴⁴ The kind of instantaneous transmission associated with the “hidden whisperer” story, so nicely embodied by the alphabetic dial, now appears neither natural nor inevitable, but strangely coercive and entirely unlikely.

By way of closing I’d like to argue that what Ussher struggles against—the sense that occult or divine language is the precondition for all communicative acts, and that men and magnets alike are mere media for pre-scripted messages—was shared by Galileo’s disciple, the Benedictine monk and scientist Benedetto Castelli. In his brief *Discourse on the Magnet*, written in Rome between 1639 and 1641 to another prominent member of the clergy inclined towards Copernicanism, Castelli recapitulated a few basic tenets of magnetism, and after observing that names were

⁴⁴ For overviews of noise, system, and signal, particularly within the context of the work of Warren Weaver, Claude Shannon, and Norbert Wiener, see Doede Nauta, Jr., *The Meaning of Information* (The Hague and Paris: Mouton, 1972): 86-93, 120-128, David Ruelle, *Chance and Chaos* (Princeton, NJ: Princeton University Press, 1991): 129-135, N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetic, Literature, and Informatics* (Chicago: The University of Chicago Press, 1999): 50-112, and Ronald E. Day, *The Modern Invention of Information: Discourse, History, and Power* (Carbondale, IL: Southern Illinois University Press, 2001): 38-59.

arbitrary and could be imposed as one saw fit, quite timidly compared the lodestone and the earth without suggesting any motion on the part of the latter.⁴⁵ Unlike della Porta, Gilbert, and Galileo, the pious Castelli was careful to attribute souls neither to the lodestone nor to the earth. He openly acknowledged that his discussion of magnetism had been to this point quite iterative, going over and over but never beyond what Gilbert and Galileo, the latter at some great cost, had already established.⁴⁶ There is thus a curious mutism in a treatise so insistent on the magnet's ability to *communicare la virtù ad altri corpi*, "to communicate its powers to other bodies," as if that soulless stone could somehow do what this very accomplished scholar and teacher could not.⁴⁷

One of the few revealing moments of this unnaturally restrained discourse lies in Castelli's experiment with filings:

If you take a piece of a magnet, and in crushing it reduce it to a powder—which is exactly what most of that black powder used here and Rome and elsewhere in Italy to dry wet ink on freshly written letters is composed of—and you place the powder on top of a piece of paper, and underneath it a magnet, when you touch the paper with the magnet, or draw it near to it, right away that powder will organize itself in something like filaments, and if you turn the magnet to its opposite pole and approach the paper again those filaments will rise perpendicularly above the paper....⁴⁸

Tricks with filings were commonplace, having made their way into occult and scientific discussions a full fifty years earlier. More crucial are the rather heavy-handed reference to the epistolary conventions of the Rome from which Castelli wrote—details perfectly familiar, one supposes, to his Roman correspondent—and

⁴⁵ Benedetto Castelli, "Discorso sopra la calamita," *Bullettino di Bibliografia e di Studi delle Scienze Matematiche e Fisiche* 16 (1883): 545-564, on 551-552, 559.

⁴⁶ "Discorso," 559.

⁴⁷ "Discorso," 553.

⁴⁸ "Discorso," 561.

the implicit comparison between the spirited movements of the filings and the dull, ink-drying drudgery to which they were usually restricted. What better way to suggest that the still fresh writing had become the ultimate dead letter, and the lodestone the livelier and superior medium?

In closing this rather melancholy fantasy of magnetic communication, Castelli begged his addressee

not to broadcast this discourse of mine in indiscriminate fashion to everyone, and above all not to them who take pleasure in contemplating Nature, and her great works, in books, and in piles of paper, heaping up wholesale a great harvest of them, and filling vast storerooms with them at great expense, without ever deigning to lift their eyes to reflect on this great Book of the Heavens, which was nonetheless written by the hand of God...⁴⁹

Castelli's impatience with a style of scientific investigation that reduced all such study to a series of commentaries on Scripture is of course to be expected. More crucial is his contempt for the sheer abundance of that questionable intellectual harvest, for it implies that something had gone horribly awry with the very mode of communication described in the Synoptic Gospels of the New Testament. The sower's rare returns of forty, sixty, and a hundredfold had, with a certain arithmetical inevitability, yielded the horrific harvest Castelli described in 1640, an excess of letters surely enlivened by no spirit.

Castelli's preference for the tired trope of the Book of the Heavens is significant, for this is the correlate of his hypotheses about magnetic forces within and beyond the globe: "if we accept these [forces]," he noted, *si apre spaziosa strada*, "a wide road opens up," a medium.⁵⁰ It is difficult, finally, not to see this imaginary

⁴⁹ "Discorso," 564.

⁵⁰ "Discorso," 563.

site of perfect communication as the idealized version of the *tregenda* with which the Aristotelian Simplicio associated the lodestone, that narrow and fearful place of passage, likewise animated by unseen and disembodied forces, but echoing with the barbarous and the blasphemous, productive of unseemly messages about attraction and repulsion somehow conveyed from the magnet to the most inappropriate of addressees.