

1) If we examine the relationship between Lull's art and Bruno's mnemotechnic, first we must consider if and how Bruno was a Lullist. Indeed, their own theoretical frameworks are completely different, because the Christian and theological background of Lull's system is totally absent in Bruno's perspective. Lull settles his universe unfolding a triadic and hierarchic transmission from God down to materiality, (passing through human faculties), as the nine degrees of the Alphabet symbolize. Differently, Bruno develops a natural philosophy within an infinite cosmological horizon, absolutely detached from God, without any hierarchy inside: all beings – be they stars, planets or human beings – are ontologically equal, made by the same matter, be alive due to a unique universal soul. Consequently, human beings are totally absorbed by the natural world, as well as their knowledge. Though, hostile to any mystical and anthropocentric perspective, Bruno only faces God through the infinity of the whole nature: in fact the «Eorico furioso» prefers contemplating naked Diana's inner essence – i.e. the *substantia naturalis* –, to Apollo's surface that theologians used to inquire by reason. This theoretical stance is partially due to a shift from a Platonic gnoseology to a 'hard' Aristotelianism: what we know is not proper ideas, but «shadows of ideas» (*umbrae idearum*) projecting truth from God (the «light»), through nature (the «dark body») to the mind (the «shadowy surface»). Thus, human knowledge completely results in natural and perceptible experience: the more complex and complete it is, the more it will tend to be true. Finally, rationalism is only a part of the whole intellectual process, whereas the central role has played by fantasy as a 'screen' which connects reality with inner concepts: every thought belongs to a particular image and – forcing Aristotle's *De anima* – without images, man cannot think at all.

2) Despite these theoretical and preliminary instances, Bruno wrote some books about Lull's combinatory art; what is more, the presence of this peculiar technique is widely spread over all his opera. However, the works explaining Lull's art are only three, although he openly applies the combinatory to philosophy, mnemotechnic, methodology or simply to rhetoric in about ten works, even if we can find references to the Lullian technique in each text by Bruno. The first book commenting Lull's combinatory is *De compendiosa architectura et complemento Artis Lullii*, published in Paris in 1582, the same year of *De umbris idearum* et *Cantus Circaeus*, two books about mnemonics. The *De compendiosa architectura* is a short commentary of the *Ars brevis*, and it was printed by Gilles Gourbin, the same printer of *De umbris idearum* and many other Lullian works, among which, in 1578, *Ars brevis* itself, as reprinted from the 1514 edition by Bernard De Lavineta. Those years Bruno was privately teaching theology and philosophy at Collège de Paris, nevertheless he became famous as a mnemonic and Lullist master. Thanks to these two peculiar interests he managed to meet the French King Henry III and then he was accepted at the College Royale. The second Lullian work is the *De lampade combinatoria lulliana*, a longer *Ars brevis* commentary with a more substantial rhetoric outcome, printed in 1587 at the apex of Bruno's very short academic career, after he had spent two years teaching dialectic as a professor at Wittenberg University. There, he gathered a large number of students and many of them became his devoted followers: Bruno was trying to 'convert' them to his natural philosophy – well outlined in his last three years English stay –, through Lullism and mnemonics. Finally, the third book,

entitled *De specierum scrutinio et lampade combinatoria Raymundi Lullii*, was edited in Prague in 1588: it is a simple collection of the previous two, assembled by Bruno to introduce himself to the Spanish Ambassador at the Imperial Court. In fact, Guillen de Sanclemente was the most influential politician in Rudolf II's entourage and, just like the Emperor, he was an occultist and, moreover, one of Lull's fanatic admirers, even boasting to be his descendant.

3) As we have just seen, all Bruno's Lullian works originated within a Lullistic cultural frame: during the whole XVI century, France was an important area for Lullistic studies, especially after Lefèvre D'Étaples had called Bernard De Lavineta to teach Lullism in Paris. Similarly, in the Wittenberg University there was a marked trend to look for alternatives to Ramists, i.e. Calvinists: so Lull's technique was there well known up to the end of the century. Even more, in the very next years the so called Philipp-Ramist movement would have spread across the whole Germany using Lullism as a mean for blending Ramist method and the Philipp Melanchton's dialectic. In a similar atmosphere, Rudolf II's occultist interests found in Lull's method an unrealistic way of merging admitted doctrines with forbidden ones. In all these circumstances the Lullism they used was not the 'original' Lullian system: on the contrary, they were adopting a dialectic and encyclopedic tool grounded on a version of Lull's combinatory which had been totally or almost totally deprived of its own theology and philosophy.

We must consider Bruno's other works referring to combinatory inside this peculiar cultural atmosphere, although they are about mnemonics, dialectics or philosophy. The first two of them, the *De umbris idearum* and the *Cantus Circaeus*, are edited in Paris in the same year of *De compendiosa architectura*; the *Explicatio triginta sigillorum* was to be published the next year in London, however it exposed materials Bruno had developed in the near past. They all included handbooks about an art of memory, which applied the combinatorial technique to several elements: from the combining wheels used to shape images for syllables or words, to the building of visual architectures arranging orders and levels of mnemonic data. The *De lampade venatoria logicorum* (Wittenberg 1587) and the *Lampas triginta statuarum* (first written in 1587 and then edited only at the end of XIX century in a volume about Bruno's 'Magic works') were part, together with the *De lampade combinatoria lulliana*, of an editorial project concerning dialectic and philosophy, a sort of overall encyclopedia – as Michele Ciliberto described the *Lampas* – about the 'Nolana philosophia'. Finally, last 'Lullian' works, such as the *De imaginum compositione*, the *De artificium perorandi* or the *Medicina lulliana* are all written and partially edited during the German period, when Bruno was moving from Wittenberg to Frankfurt, then to Helmsted and Zurich. Specifically, the *De artificium perorandi* collects some lessons about rhetoric – exposed according to a combinatorial structure – which Bruno taught in Zurich and edited *post mortem*; whereas the *Medicina lulliana* must be ascribed to Helmsted years, when Bruno used a Lullistic 'code' in order to attract his students through hermetic, magic and dialectic interests.

4) I told French and German Renaissance Lullism was not proper close to the original Lullian system, rather it was a dialectic and methodological re-interpretation of his combinatory, likewise Bruno's Lullism was too. Anyway, from which texts did he derive it? Critics showed how Bruno formerly had met Lull's works in Napoli, during his youth: probably, at that time, he was reading the *Arbor scientiae* and later, in France, he might have learnt the combinatory technique, reading the *Ars magna* and the *Ars brevis*. His contacts with French Lullists or,

even more, with Gilles Gourbin, the editor of many Lullian works, might have made Bruno know Bernard De Lavinheta's *Explanatio compendiosaque applicatio artis Raymundi Lulli*, the most systematic and the largest Renaissance *compendium* of Lull's philosophy and art. Gilles Gourbin was also the editor of both the *Ars brevis* and the *De auditu kaballistico*, as well as Bruno's *De umbris idearum* and *De compendiosa architectura*. In Paris, he also might have read a manuscript version of *Logica nova* and the 1515 printed *In rethoricam isagoge*, an apocryphal *summa* of Lullism and, furthermore, another famous Renaissance handbook of Lullist dialectic. Bruno widely refers to both texts in many of his works.

Lastly, in order to further describe the relationship between Bruno's Lullism and its cultural milieu – and the cogent size of this framework –, it is useful to mention the 1598 Strasbourg Zeztener's edition of *Raymundi Lulli Opera*, which included *De specierum scrutinio* and *De lampade combinatoria lulliana*, as well as *De lampade venatoria logicorum*. They were part of the commentary section (together with Agrippa's commentaries), while the main section contained *Ars brevis*, *Ars generalis ultima*, *De auditu kaballistico*, *In rethoricam isagoge*, and *Logica brevis et nova*; the latter had been previously included in Lavinheta's *Explanatio*.

5) Giordano Bruno's interest in Lull's combinatory was primary dialectical; furthermore, he had found in that technique the right features he could have well applied to own philosophical perspective: a coherent structure and a productive dynamism, just as his idea of nature had. Indeed, Bruno's natural universe is an endless organism: it is a huge, complex and non-stop transforming structure of living beings, which includes stars and planets and all the living creatures inhabiting them. It has no ontological hierarchy, it has no centre, no bounds; nevertheless, it has two simple laws, as resulting of the union of two theoretical principles: the *vicissitudo universalis* and Cusanus' *concordantia oppositorum*. The first 'law' decrees that everything is continuously changing; the second one – which Bruno simply declines within the natural horizon – establishes that every change is the passage from a state to its opposite through a progression of similar degrees. These peculiar theoretical foundations demand a consequent gnoseological perspective, a proper dialectic and a consistent logic. According to Bruno, everything is subordinated to nature, knowledge included. We will see later how each act of creation – be natural or human as well – derives from nature and how also thinking can be considered as an inner creation. Anyway, let us focusing on what Bruno is finding out from Lull's combinatory and how it should be applied to his dialectic. He deduces from it structure and dynamism, managing alphabets, trees, *scalae*, *tabulae* and, above all, combinatory wheels. He forcefully inserts them into the main operations of Renaissance rethoric/dialectic, the *dispositio* and the *inventio*, likewise many other Renaissance Lullists had done. This actually means that Bruno, on a first level, applies combinatory to every argumentation: he uses its raw sequences, schemes and combinations – although with no reference to their theoretical background – in order to compose, arrange and transform words and arguments. His ultimate dialectical goal is generating the meaning itself, modelling linguistic objects as if they were part of the living natural matter, since he considers intellectual creativity like the expression of the universal soul embodied into all creatures. At a second step, he applies the combinatory to mnemonics: fantastic images are strictly part of knowledge, because they are the fundamental and the only medium between sensory experience and conceptual abstraction. Each sensory datum is translated into a proper image, as well as each conceptual achievement needs a peculiar own image – a 'fantastic body' – to be related with others data

and concepts. Thinking can not be possible without images; even more, we concretely think by the means of images. Consequently, the ancient art of managing images – the *ars memoriae* – results being the privileged tool of a new dialectic, the most fitting one with both human experience and natural action; a kind of visual rational/irrational activity that Paolo Rossi defined as a ‘fantastic logic’ («logica fantastica»)<sup>1</sup>.

Let me now show you some examples of this peculiar way to use Lull’s combinatory, first focusing on *inventio* and *dispositio* of terms and arguments, then analysing how and why the same dialectic attitude should be transferred to mnemonic images and places.

6) The first example comes from *Explicatio triginta sigillorum* a work published in London in 1583. It is a book about the art of memory with an important third section about knowledge and dialectic, which is entitled *Sigillus sigillorum*. Differently, the two main sections present and explain thirty ‘seals’, i.e. symbolic and concise teachings «for the invention, disposition and memory of any discipline and art»,<sup>2</sup> as the frontispiece declaims. The fourth *Sigillum* is «the Tree», and it shows a strict hierarchic scheme consisting of subordinate sequences originating from a main one. Its formal structure is well described by the picture Bruno added to the text, which is openly inspired to Lullian ‘diagrams’ and suggestively has got the shape of a tree made by the letters of the ‘*alphabetum*’. It can be used for *inventio* and *dispositio* of terms, even if it also works to arrange mnemonic images, either inspiring their pattern, or building a simple architecture hosting them. Anyway, let us read what Bruno specifically designates for the *inventio terminorum*:

«When we want to speak about any subject [...] we must manage it as if we were watching a tree: first, we have to consider its roots, i.e. the principles of its origin, as well as the causes and the foundations; then the trunk, i.e. its own essence; thirdly the branches, i.e. potentialities, abilities and possibilities; then the leaves, that are the accidents and circumstances; additionally the flowers, as its actions and operations; lastly the fruits, which are the acts and their outcomes».<sup>3</sup>

As we can see, this doesn’t properly deal with the *inventio terminorum*, rather with their arrangement – their *dispositio* – like in the traditional rethoric of *loci* it was: nevertheless, Bruno considers this way of arranging terms as an *inventio*, because it develops a kind of process and procedure generating terms, thus it ‘creates’ the meaning. As a matter of fact, he is referring to a more dynamic notion of *inventio*, closer to an idea of the natural *foecunditas* as the outcome of a living universal structure, rather than a dialectical one. However, this peculiar feature is explicitly ascribed to Lull’s technique, as Bruno declares at the beginning of the fourth *Sigillus*’ explanation (*explicatio*): «the tree supports the invention and the judgement, just like it is shown in the book of *Arbor scientiae*».<sup>4</sup> Bruno renews this commitment with Lull’s famous work also in the *De imaginum compositione*, but there, he advances an important methodological remark: «our tree differs from Lull’s tree, because it is solid, while his is flat, just as a pyramid differs from a triangle, as a solid body from a surface. For that reason, his offers a way of invention through height and width, but ours drives a path

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1 Cfr. P. Rossi, *Clavis universalis*, pp. 109-134.

2 *Explicatio triginta sigillorum*, OMN II, p. 34: «Ad omnium scientiarum et artium inventionem dispositionem et memoriam».

3 Cfr. *ivi*, p. 104.

4 *Ibid.*: «Arbor ad inventionem facit atque iudicium, ut manifestum est in iis quae in libro *Arboris scientiae* perhibentur».

through the multiplex profound». <sup>5</sup> Bruno is comparing a two-dimensional ‘tree’ with a three-dimensional one, that actually means a one-direction or a ‘flat’ argumentative pattern versus a more effective branched scheme, a multi-directional path for generating meanings. Furthermore, in the *De imaginum compositione*, Bruno wants to show his deep betrayal of Lull’s system, not only by strengthening the outcomes of Lull’s combinatorial tools, but, once again, highlighting his own dialectical and philosophical originality. Consequently, he stresses his radical distance from Lull’s theoretical background. Finally, he also mentions his new idea of combinatory applied to mnemonics, that was totally ignored by Lull himself: «yet his is the father of ours, while ours is the child so far as pertains to the work of a formal invention. However, concerning the subject of sciences that are certainly speculative, it is not Lull that we consult. Moreover, for what pertains to some other intellectual powers of the soul [i.e. fantasy], our tree is totally of another genus, about which Lull appears not even to have thought». <sup>6</sup>

7) The second example about dialectics directly deals with *dispositio terminorum*. It also comes from *Explicatio triginta sigillorum* and it peculiarly refers to the eighteenth seal; it is entitled *De quadrato encyclo*, i.e. ‘a squared encyclopedia’, where «squared» means ‘fourfold’, as the number of parts and sub-parts a subject can be divided into. As a matter of fact it offers a way of arranging concepts with a four-based scheme:

«Thus, you can realize a squared encyclopedia when four concepts [*intentiones*] are set upon a main subject, then other four concepts are set above each one of those four, which are put below as their subjects. Furthermore, each one of the last four is put below other four subsequent concepts and you could go on this way, until both your needs and the necessity of what has to be arranged will allow it». <sup>7</sup>

This peculiar paradigm – that has got a ‘twin’ seal named *De binarii encyclo* – is specifically dedicated to the *dispositio* of arguments: it works as a regular and recursive four-parted structure of several subordinate layers, which ‘spring up’ from the first subject, i.e. the main topic to be analysed. It is such a kind of inverted three-dimensional dialectic pyramid, because its vertex is settled underneath: by the way, this is confirmed by Bruno himself, who openly mentions the ‘solid’ shape of this seal too. Once again, in the *De imaginum compositione*, Bruno states that both the *binarium* and the *quadratum encyclium* have to be placed under «the shadow of our tree [i.e. the Tree seal]»: <sup>8</sup> which actually means that both these two *sigilli* technically and theoretically are grounded in the Lullistic framework established at the background of his dialectic.

It may be a problem that, according to Bruno, dialectical *inventio* and *dispositio*, seem to be quite similar. In fact, they offer a structured arrangement of terms, but the difference between them is the dynamics: the *inventio* ‘moves’ the terms and generates their meaning ‘along’ a pattern, the *dispositio* confers to them ‘that’ pattern. Anyway, both *inventio* and

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<sup>5</sup> *De imaginum compositione*, OMN II, p. 840: «Differt ab illa arbor nostra, quia haec solida est, illa plana, nempe sicut pyramis differt a triangulo, corpus a superficie. Ideo illa promit inventionis viam per altum et latum, haec vero etiam per multiplex profundum».

<sup>6</sup> *Ibid.*: «Atqui illa est mater, haec vero filia quoad opus inventionis attinet formalis: de materia quippe scientiarum speculativarum non est quod Lullium consulamus. Quod vero ad alias animae potentias intellectivas attinet quasdam, alius generis omnino haec arbor est, de quo certe ne cogitasse quidem Lullius apparet».

<sup>7</sup> Cfr. *Explicatio triginta sigillorum*, cit., p. 134.

<sup>8</sup> *De imaginum compositione*, cit., p. 840: «sub umbra nostrae arboris comprehendatur».



*dispositio* are ‘devices’ for deploying and composing terms, arguments, and concepts as well: indeed, a ‘combinatory’.

8) I have shown how Bruno tries to transfer Lull’s technique into the traditional dialectic. This peculiar shift is due to a different view of dialectic itself, considering every term as an ‘atomistic object’ into a structured system of neutral logical relationships, like a point within the geometrical space. This deeply matches with the Renaissance idea of dialectic, which sharply distances itself from the ‘terministic logic’ of late Scholastic, which was totally absorbed by the ‘quantitative’ analysis of terms inside the syllogistic structure. Otherwise, Renaissance authors, such as Lorenzo Valla, Rudolf Agricola or Pierre de la Ramée, had contributed to reform dialectic within a completely renewed ‘ideological’ framework, in which rhetoric and dialectic were converging. Furthermore, *dispositio* or *topica* became the new and main model to compose a discourse or a text, while *inventio* was considered synonymous with *foecunditas* and creativity, rather than the search for the right medium term. This is the same theoretical horizon in which Bruno settles his dialectic too. In addition, he emphasizes even more the value of both disposition and invention by means of combinatory. In fact, he manages the terms as if they were the ‘pieces’ of a whole dialectic/linguistic machinery, whereby the equivalence between the letters of Lullian alphabet and the fundamental parts of the words would seem to be more than a symbolic formalism. Moreover, this is why every seal can systematically be adaptable for either the *dispositio* of terms, or their *inventio*, as well as for either arranging or shaping mnemonic images. So as every element of whatever expression can be considered as an atom or a point within a net of relationships, similarly, every syntactic relationship can be expressed as a dynamic ‘composition’ of terms, like the aggregation of atoms forming a body or the mark of the line connecting points into a figure. By the way, this theoretical parallelism among dialectic, atomism and geometry will find a formal definition in Bruno’s late philosophy, when he theorises the *minimum*. Despite the difference between words and images, their ‘grammar’ and their ‘syntax’, Bruno works out to manage words and images with the same combinatorial tools, because he has successfully ‘translated’ the dialectic into a visual activity. So *dispositio* becomes an architecture of places and *inventio* a movement through them. Subjects can be considered as characters, predicates as the actions they make.

We first examine how *dispositio* can be transformed in an visual architecture, reading an important excerpt from *Cantus Circaeus* (Paris 1582), Bruno’s second mnemotechnic work:

«Actually this subject, because it results peculiarly able to receive memorable forms so as they should be memorized [...], it can be the most general, i.e. so vast as the space of the whole universe is; or quite general, i.e. just as the extent of geography; or general, like the extension of a continent. Furthermore, it can be particular within a political dimension; or even, more particular having a domestic or economic extension; lastly the most particular, just like the very many parts of a house and its smallest ones».<sup>9</sup>

This passage is quite ambiguous and I must confess that many commentators didn’t understand it at all: one of them, for example, once stated that it refers to the subject of the discourse, which it could be about astronomy, geography, politics, business, or architecture. Of course, I cannot deny that those literally are, according to the degrees of this sequence. But what does Bruno really mean with ‘subject’? He has explained it a page before: «in this book

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<sup>9</sup> Cfr. *Cantus Circaeus*, OMN I, p. 672.

I don't assume the subject just like physics or logic assume it, but in the way this technique conveniently requires, according to its artificial meaning». In other words: «it is the subject of fantastic forms that can be freely placed, removed or moved around by operating fantasy and *cogitativa*».<sup>10</sup>

Therefore, Bruno is intending the mnemonic subject, just like the *locum* where mnemonic images are to be placed into; consequently, he is describing how large a mnemonic place should be and, above all, how mnemonic places should be arranged, in order to better host all the mnemonic data. The largest place embraces the largest quantity of images, as the smallest place («*propriissimum*») will host only a single image. This means that there is a decisive structural connection between the physical/visual extent of *loci* and the logical extension of mnemonic data: as general the information is, so large the place must be; on the contrary, a single datum needs only one image, thus it will be placed in a single and small *locum*. Practically, if I want to memorize a book parted in three sections, each one divided in five chapters formed by tens of paragraphs, I shall contemplate in my fantasy a three floors palace, where each floor will host five large rooms, in which I will find out tens of small and peculiar places, such as corners, windows, recesses. Then, I will be able to put inside them, in the right order they originally had, all the images of what I need to memorize. Bruno identifies this architectural and creative process with a combinatorial approach to mnemonics: the more the 'architecture' is well formed, the more the logic and the dialectic system of the data will be preserved. We can see how this idea can be visually symbolized, watching at the picture on the right side: a man with his arms open – a kind of Vitruvian paradigm assumed in Classical mnemonics – is placed in the middle of a square, next to a well (U letter); all around, at the corners, there are other smaller pictures: the celestial globe (A), the Earth (E), a circle's quadrant (I), a square (O). They depict the different forms of 'general' places: the most general, i.e. the astronomic sphere (like Metrodorus of Scepsis had taught, linking memories to the forty-eight constellations); the 'more general', that is the earth, i.e. the geographical or 'political' place. Then, the 'domestic' or 'economic' place, that is as large as a house is: it is described by a 'quadrant', because this is the symbol Bruno uses for the *atrium*, that is a unique and large hall parted into several smaller rooms named *cubilia* or *officinae*. Further, we have the *cubillum*, i.e. the single room, that can host up to nine single places: the four corners, plus other five recesses, if we consider the middle of each wall and the centre of the room itself. Lastly, there is the particular place, that is where the single image has to be placed: usually this one is a whole complex scene with a living character doing something within this peculiar frame.

Later, I will examine how and why this peculiar idea about mnemonic places represents an innovation in managing mnemonic structures: once again I would like to highlight that such a strict disposition of places means, for Bruno, the best translation of dialectical *dispositio* into a visual one.

9) Let us now consider a second example, in which the combinatorial perspective is even more relevant than the previous one. It belongs to *Ars memoriae*, the large mnemonic section completing the *De umbris idearum* and specifically deals with *memoria verborum*. The

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<sup>10</sup> Ivi, pp. 670-672: «Subiectum ergo in proposito non sumitur secundum intentionem logicam vel phisicam, sed secundum intentionem convenientem, quae technica appellatur, utpote secundum intentionem artificialem. [...] Sed est subiectum formarum phantasiabilium, apponibilium et remobilium, vagantium et discurrentium ad libitum operantis fantasiae et cogitativae».

traditional mnemonics had always considered either *memoria rerum* (memorization of things) or *memoria verborum* (memorization of words) as distinct issues. The first had been used to translate the meaning of a thing into an equivalent image; the second one worked to shape the ‘sound’ of a word, because it presumed its meaning unknown. Mnemonists used to arrange a sort of visual alphabet, in which figures would recall the shape of the letters: sometimes they used to employ either living characters (i.e. Albericus, Bernardus, Caesar, ...), or animals (*avis, bos, canis, ...*), whose initials represented the letters. In order to form a word-image they simply composed all the letter-images as an unique scene, making the single images to connect themselves by some peculiar actions. Some more complex word memory devices could contemplate the possibility of creating a visual alphabet of syllables, then directly compose them. As a matter of fact, the more complex the alphabet was, the more simple the image resulted. On the contrary, too many letter-images would have produced a too much rich scene, especially if the word was long. A good compromise might have been a medium-rich alphabet and a well versatile compositing tool, just like some mnemonists, such as Publicius, Romberch and Bruno did. All of them would choose to employ combinatory as a means of managing letter/syllable images and thus forming the right fitting word scene.

In spite of the fact that Bruno’s idea is not absolutely original, the way he applies the Lullian combinatory to *memoria verborum* into the *De umbris idearum* is quite innovative. He creates a more and more complex machinery of combinatorial wheels, offering to readers a gradual set of tools for learning how to dynamically manage the images. Thus, he starts with a first exercise made by a thirty-images alphabet and two wheels. Then he considers three wheels in order to compose a three letters syllable image. Finally, he suggests a one hundred and fifty syllabic alphabet (thirty letters for five vowels) moved by five combinatorial wheels in order to form a scene for up to five syllables words. Let us examine how the first level works. We have to imagine thirty living characters for the same number of letters; this is because Bruno is considering all the letters of the Latin alphabet (23), plus four letters from Greek and three from Hebraic. Indeed, none of these seven added sounds exist in Latin or Romanic languages and *memoria verborum* is peculiarly useful with foreign words. In order to compose a two letters syllable image, we need a second alphabet: thus the further step consists in creating another thirty images series: this time they will represent actions to be connected to the formerly thirty living characters. Bruno suggests a list drawn from Ovid’s *Metamorphoses*: Lycas (A) is laying at a banquet (A); Decaulion (B) is throwing stones (B); Apollo (C) is killing the Python (C); Argus (D) is grazing his cows (D), and so on. The order of images in Ovid’s text suggests both the sequence and value of letters they represent. Finally, the two groups have to be moved, ‘as if’ they were on two combinatorial wheels: «Firstly, you must impress in your memory those wheels previously presented, so as they were still, until you have clear which [action] must be assigned to each one [character]. Then you shall train with this further and more important exercise, aimed at obtaining a first composition that consists of two any letters. In fact, you could see that the first picture was made by two still wheels. Now, while keeping the external one still, you will release the internal wheel. Anyway, this one was formerly still, because its condition and purpose should be stillness. Now, on the contrary, in order to make it work, it needs to turn all around, having to be very versatile, if we want it to produce many and several operations».<sup>11</sup>

Bruno is describing the passage from the two ‘still’ alphabets to their composition, in order to shape a syllable. He says that by moving the internal wheel, all its thirty letters may

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<sup>11</sup> Cfr. *De umbris idearum*, cit., p. 238.



be associated to each one of the thirty letters of the external wheel. This also happens in Lull's combinatory. Therefore, what does Bruno mean about mnemonics? Maybe, as some critics misunderstood, do we really need to imagine those wheels twisting in our mind? What actually Bruno is teaching is how to apply a combinatorial principle to a mnemonic and visual scenery. Thus, we must first memorize the two 'still' alphabets – i.e. thirty characters with their own actions – as if they were a single visual system. Then, after considering both characters and actions as two different series, we must mix up all actions and characters. Therefore, the rotating wheels are only a symbol – even a graphic symbol, since Bruno drew them inside his book – of a combinatorial dynamic process. Thus, you must combine all the actions with all the characters in order to form the scenes of all the possible couples from two thirty letters alphabets. For instance: if Lycas, instead of laying at his banquet, is throwing stones, as Deucalion does, it will signify AB. Then the two, three and five wheels of *Ars memoriae* are simply combinatorial 'formulas', which have to be applied to images. Once again, their ordering, movements and mutations must express, on a visual level, the semantic and logical relationships their meanings have.

10) Let us back to *Sigilli* in order to discover the ultimate version of Bruno's 'fantastic combinatory'. I will draw my last example from the twenty-first seal, which is entitled the *De rota figuli*, that is the potter's wheel. Bruno uses this metaphor to symbolize the operation of combining images, together with their ordering and their 'modelling', as Bruno seems to suggest at the very starting lines of the *Sigillus' explicatio*: «the atrium, which is the place, is alike the wheel; those who figure are alike the potter; the meaning that has to be figured is the clay».<sup>12</sup> Bruno's description could not be more explicit: the system of *loci* itself is the 'combinatorial tool', because the mnemonist can shape and modify the images into and through them. In fact, they who manage places and images may impose on them any hierarchy and dynamic: first by making 'horizontal' movements through places; then displaying by images the 'vertical' passage from higher levels to subordinate ones, mixing up both sequences and orders. Nevertheless, it is in the second section, where we can read a very curious, but 'enlightening' application:

«If you want to practice with mathematics [i.e. astronomy and astrology] by means of this technique, as if you would like to retain the aspects of the stars, their meanings and the meanings of planets positions within the signs, you shall arrange twelve *domos*, figured with their supplementary objects. They should include so many elements and parts to be extremely convenient in making any examination through and into them. Furthermore, you shall also arrange seven subjects, which will turn all around, and due to the many affections they receive into the places, you could methodically signify everything the planets express».<sup>13</sup>

This astrological implementation of the *Rota figuli* is very helpful to make us understand how the fantastic combinatory should really work. First the mnemonist have to arrange the *loci*'s system, i.e. twelve *domos*: they are small 'rooms' with many objects and several recesses inside; they are all ordered in a 'circular' sequence, just like if they were a gallery or a 'cloister'. In fact, they must symbolize the Zodiac's signs or, better, the twelve astrological houses in which the horoscope's chart is parted, as we can see in the picture. Thus, with the first operation Bruno sets up the base structure of his inner modelling, the 'wheel' as he said by his metaphor: it is a semantic closed pattern with a big kit of virtual

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12 Cfr. *Explicatio triginta sigillorum*, cit., p. 140.

13 Cfr. *ibid.*

accessories useful to form many scenes. The second step consists in combining the seven active images with the objects assigned to the houses, by making them wander and operate through the mnemonic places, so that they could form many scenes. In this case, the images of the seven living characters will personify the planets: a very old and slow man for Saturn, a thunder-striker Jupiter, a brilliant Sun, Mars the warrior, a young and sexy Venus, the flying Mercury, lastly the pale and cold Moon. This suggestive crew, together with all the objects and places, are the 'clay', the rough matter the mnemonist has to model in order to shape out all the possible meanings it could generate by the mutual combining of its many visual elements (likewise the formerly mixing up of characters and actions produced all the syllables). Finally, we are able to see how the potter's work can form all the astrological meanings and schemes. In fact, by moving a planet-image into a sign I could represent its value. Secondly, I will be able to show its relationships with other planets placed into their own sign-houses by making both of them interact. Otherwise, I could express the most general level of their meaning, by referring all of them to the whole sign-system.

Once again, Giordano Bruno is so skilful in mixing up different theoretical layers and languages, in order to put forward his philosophical view. He is using the astrology, even though he does not really support the Ptolemaic cosmology, because the geocentric perspective is the same of the fantastic one, which implies an inner eye placed at the centre of a sphere of moving/changing images. While Bruno is building his fantastic world, equally he tries to describe his idea of nature; indeed, his recurring and recursive mnemonic operations symbolically disclose to us the shadow of nature's *vicissitudo*.

11) It is now the time to escape from the oneiric world of mnemonics and try to sum up what combinatory definitively means. It is clear to all of us, I hope, that Lull's combinatory has no theoretical value within Giordano Bruno's philosophy, rather it is a plain technical tool. He uses it to dynamically and creatively manage terms, arguments and mnemonic images, as well. He simply considers Lull's *figurae*, such as *scalae*, *tabulae* and *rotae*, as 'graphic' formulas of combinatorial operations. He applies them – likewise other dialecticians and mnemonists did – to the language, with the peculiarity that he believes the fantasy be wholly part of the semantic and linguistic sphere.

However, this premise does not prevent the fact that Bruno confers a strong theoretical value to his use of combinatory, and, above all, that the outcomes and the impact of Lull's combinatory on Bruno's dialectic and mnemonics are many. Thus, let us focus again on the relationship between the architecture of places and the logical structure of retained data. This feature is fundamental for Renaissance mnemonics, even more according to Bruno's perspective, since he considers it the main innovation he found out. Then, it is not without reason if, just right at the beginning of the *Ars memoriae*, Bruno explains this problematic issue about recollecting memories:

«this weakness happens because of the lack of connection; for this reason, the users of the art often cannot retrieve images placed there; nevertheless, it seems that our forerunners did not understand the cause of that».<sup>14</sup>

Thus, Bruno immediately reveals the core point:

«On the contrary, since we have found out and solved it, we don't need to use physical places – i.e. experienced through external senses – anymore, nor we confine the order of memories

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<sup>14</sup> Cfr. *De umbris idearum*, cit., p. 140.

within the order of places, but thanks to the pure architect of our fantasy, we will be able to connect the order of places to the order of things we have to memorize».<sup>15</sup>

Bruno has just pointed out what mnemonists traditionally did: they first visualized a system of places then they put images inside them. They did not think of places as specifically ordered for those images, rather they were simply choosing a location that was usual for them, such as a cathedral or a palace they well knew. It was the familiarity with this place to assure its own memory, however all the *loci* inside it had nothing to do with the order of images placed into them: they only represented a raw sequence of positions. Therefore, he is suggesting to radically change this paradigm: if we want all the images to be a whole and true mnemonic 'sign', then we must model images and places as well, in order to have both of them in accordance with the whole mnemonic data. Indeed, like each image has to represent a specific datum, similarly the system of places must represent the system of data. In other words, their logical structure has to be translated into the structure of *loci*. This is why a 'Brunian' mnemonist needs to use the Lullian combinator: it can confer order to places and images, better than any other dialectical or mnemonical tool could do. Combinatory has got its formulas, it has strong rules for composing and combining 'things': it has structure and dynamism, as we said.

After passing to analyse the theoretical outcomes of Bruno's combinator, it is useful to rapidly read how he really intends logical 'structures', since they must reflect nature, they cannot have any hierarchy. Consequently, they have to form a whole systematic net of logical and semantic relationships, just like a living body, or even better, the whole universal living body. Indeed, this parallelism between the world of the logic and the natural world is so strict, that it really is the fundamental and theoretical core of Bruno's own dialectic:

«You can reach our goal, when you are able to move from a confused plurality to a clear unity. Indeed, this doesn't mean to blow up logical *universalia*. Actually, they are collected from the inferior *species*, even though they are distinct, through the confused middle ones, up to the highest and even more confused *species*. Rather it does mean to arrange a whole unity, as if we were collecting many and shapeless parts all together. A hand is connected to the arm, a feet to the ankle and an eye to the forehead. In fact, they result more cognizable when they are composed rather than divided. Therefore, as no parts and *species* of universe are isolated and excluded from one order – which is, when related to the first intellect, the most perfect, simple and beyond any number –, if we think of our concepts by connecting them to one another and collecting each of them rationally, what may not we understand, remind and realize?».<sup>16</sup>

12) Let me still take your time up for few minutes, trying to draw some philosophical conclusions. We have showed how, in Bruno's philosophy, the inner thought can be considered as a mixing up of both rationality and irrationality. Indeed, thinking through

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15 Cfr. *ibid.*

16 Cfr. *ivi*, cit., p. 100: «Talem quidem progressum tunc te vere facere comperies et experieris, cum a confusa pluralitate ad distinctam unitatem per te fiat accessio. Id enim non est universalia logica conflare, quae ex distinctis infimis speciebus confusas medias exque iis confusiores supraemas captant, sed quasi ex informibus partibus et pluribus formatum totum et unum aptare sibi. Sicut manus brachio iuncta pesque cruri et oculus fronti, cum sunt composita, maiorem subeunt cognoscibilitatem quam posita seorsum, ita, cum de partibus et universi speciebus nil sit seorsum positum et exemptum ab ordine – qui simplicissimus, perfectissimus et citra numerum est in prima mente –, si alias aliis connectendo et pro ratione uniendo concipimus, quid est quod non possimus intelligere, memorari et agere?»

images actually means pursuing concepts and intuitions into a ‘three-dimensional’ sphere, a virtual microcosm, where the past and the present, the outside and the inside reality, are connected through fantastic visions. Moreover, thinking without images is absolutely impossible, because all the thoughts, even the most abstract, are necessarily related to perceptive experiences. No idea is connected with the metaphysical truth. They are all ‘shadows of ideas’, because they always need reality to be set up. Therefore, only images mediate between things and concepts; moreover, we need them for managing intellectual contents, too. As we read before, logical *universalia* are ‘confusing’, because they are empty containers unrelated to reality. On the contrary, ideas must be considered as ‘classes’, i.e. sets of either subordinate sets or members. In fact, the most general a concept is, the widest is the net of references it has with other correlated concepts. Thus, every thought is conceived by Bruno as a ‘versatile intellectual object’ within an ‘open’ net made by all possible conceptual relationships. Specifically, every general idea is an ‘aggregate’ of similar mental representations, which, in turn, are derived from experience. A concept is never ‘closed’, rather it is constantly adjustable, depending on the quantity and quality of its conceptual relationships with both concepts and experiences. Because of this theoretical core, Bruno prefers Lull’s combinatory to traditional logic, since it allows to manage concepts as geometrical points and generate arguments, as if they were geometrical figures within the linguistic space. In other words: 1) the logical/linguistic world must be engaged within a structured framework; 2) every point of this framework has to be connected to the others; 3) we need dynamic logical formulas to move inside this framework and generate meanings. (By the way, these are the same theoretical conditions Pierre de la Ramée assigned to his three *aureae regulae* on method).

Let us now focus on a further feature deriving from Bruno’s gnoseological background. Thinking through images presumes forming fantastic representations in a two-directional way. First, when we receive perceptions; secondly when we use concepts. In both cases, either abstracting or reflecting, we shape ‘contents’ (either *species* or *intentiones*) into fantastic images (*phantasmata*). Thus, concepts have got a bodily form, they ‘impress’ fantasy just like forms within matter, while an undefined intellectual and conscious subject (the whole personal soul) is playing the role of creator. As a matter of fact, Bruno considers thinking as an act of creation. So that, let us analyse the proportion he settles up among human creativity, nature and metaphysics:

«In this book [i.e. *De imaginum compositione*], we are proposing a method which doesn’t concern things, rather the signs of things. However, it is a method which contains, beyond any doubt, the productive power of all the things to be done. That could be easily understood by those who contemplates, even superficially, nature itself, together with its voice that always resounds around us, and its characters too, by which it draws the *species* of things: because it seems to be the idea, i.e. the form, more than the matter, that contributes to the specification of things to be produced. Thus, in this principle all things come together and are one; and actually in this one and through this one all things are distributed into the genus, the *species* and their numbers».<sup>17</sup>

The art of memory, as Bruno says, is a method (*methodus*), that means a disciplined technique. However, it pushes its roots down to the first natural principle, «the productive power of all things to be done» («virtutem rerum omnium producendarum»). This one is not the «matter», rather it is the form, i.e. the universal soul (*anima mundi*), because it contains all

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<sup>17</sup> Cfr. *De imaginum compositione*, cit., p. 494.

the forms of all possible things and it transmits them to the matter. Therefore, as we have to consider the «matter» as the fantasy itself, similarly we find out that the inner creativity (the action of the inventive/memorative faculty) corresponds to universal creativity. Thus, the ultimate goal is to understand that our imagination can behave like the universal form inside the natural matter, producing every mnemonic sign from any system of images, mixing up symbols and so generating new meanings.

13) The strong parallelism between human inventiveness (*facultas inventiva*) and natural creation, is also described at the beginning of *Ars memoriae*, when Bruno investigates about the relationship between art and nature, subverting the Aristotelian paradigm. In fact, it is not the nature to be an *artifex*, rather all *arteficies* are natural, human beings included:

«I ask: where does this faculty [of creating] come to the art from? With no doubt, from where the intelligence resides. But, whom the intelligence belongs to? To human beings. Finally, where do originally human beings, together with all their faculties, derive from? Indeed, from nature, which generates everything. Therefore, if you want to examine it from the beginning, picking up that plant from its roots, bow yourself with reverence to nature's knowledge. You will certainly and successfully obtain it, if you pay close attention to the principle that resounds and shouts out from the inner of us, enlightening our soul».<sup>18</sup>

The focus is, once again, on the *principium*, which 'resounds' and 'shouts' out to the surface of reality from its very inner depth. It constitutes the active e creative power of the unique universal substance, i.e. the *anima mundi* (while its passive counterpart is the absolute matter). Bruno is aiming to demonstrate that if we consider human intelligence as an active and creative power, it necessarily should belong to the substantial active and creative power of human nature, that is nature itself. This is a very dangerous ground: critics often noted how these pages, as well as the similar others of *De la causa*, *Spaccio de la bestia trionfante* or *Cabala del cavallo Pegaseo*, could mark the nearest point to Renaissance Averroism. As a matter of fact, Bruno is asserting that human intellectual creativity is part of a universal one, so he is presuming such a kind of universal intellect or something alike. What is more, in *De la causa* he just considered how the active part of universal substance could be a sort of 'intelligence':

«The universal intellect is the innermost, most real and most proper faculty or potential part of the world soul. It is that one and the same thing that fills everything, illuminates the universe and directs nature to produce her various species suitably. It is to the production of natural things what our intellect is to the production of the representations of things. The Pythagoreans call it the 'mover' and 'agitator of the universe'. [...] The Platonists call it 'world artificer' [...]. The Hermeticists say that it is 'most fecund in seeds' or yet that it is the 'seed sower' [...]. Orpheus calls it 'the eye of the world' [...]. Empedocles calls it 'the differentiator' [...]. Plotinus says it is 'the father and progenitor'».<sup>19</sup>

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18 Cfr. *De umbris idearum*, cit., p. 128.

19 *De la causa, principio et uno*, II, OEC III, pp. 113-115: «L'intelletto universale è l'intima, piú reale e propria facultà e parte potenziale de l'anima del mondo. Questo è uno medesimo, che empie il tutto, illumina l'universo et indirizza la natura a produrre le sue specie come si conviene; e cossí ha rispetto alla produzione di cose naturali, come il nostro intelletto alla congrua produzione di specie razionali. Questo è chiamato da Pitagorici 'motore' et 'esagitator' del universo [...]. Questo è nomato da Platonici 'fabro del mondo' [...]. È detto da Maghi 'fecondissimo de semi', o pur 'seminatore' [...]. Orfeo lo chiama 'occhio del mondo' [...]. Da Empedocle è chiamato 'distintore' [...]. Plotino lo dice 'padre e progenitore' [...].»



Therefore, the universal intellect plays the role of an active creator and it has been defined as a ‘faculty’ of the world soul. However, since it is part of *anima mundi*, then it can not be separated from the whole natural substance which the world soul belongs to. Actually, the universal intellect can be considered as an ‘attribute’ of nature itself, the ontological ‘faculty’ of its productive action. Furthermore, Bruno is describing how it works through a metaphor that, at this point, is well known to us: the universal intellect makes things, just as our intellect ‘forms’ *species rationales*, i.e. concepts. Lastly, even though Bruno has recalled all the traditional definitions of universal intellect, he finally asserts the radical originality of his own position: «as for us, we call it the ‘internal artificer’, because it shapes matter, forming it from inside».<sup>20</sup> We can see, now, how this excerpt I quoted, can definitively clarify the conclusion of the passage we had previously read:

«Thus, since nature produces everything possible, either before natural things, or within and through them, then you must understand that any action can derive from any natural things, in order to find out that nature first is acting through them».<sup>21</sup>

Bruno’s arduous syllogism is eventually concluded: when we think, we create; since we are creating, we are *arteficies*; anyway, as nature is the first and the only *artifex*, thus nature itself creates through us. We are going to close showing how mnemonic art might give us the immediate experience of this fundamental theoretical statement.

14) Our last passage still focuses on this important connection between the intellectual sphere and the metaphysical notion of world soul. It is not properly a mystic union, rather a methodological and philosophical acquirement. Actually, if we really and deeply understand how reality is, how the universal substance has been structured and the formal principle joins the matter, we will be able to know the right role played by human beings, as an integral part of a whole and endless nature. This is due, as we showed, to the substantial identity of personal soul and world soul – just like a sort of ‘natural Averroism’ – which has no theological outcomes, rather it completely restricts human condition to its physical horizon, knowledge and thought included. Thus – at the beginning of the second part of *Sigillus sigillorum* – on considering the «four guides of inner operations»,<sup>22</sup> i.e. love, art, magic and mathematics, Bruno states that «art perfectly operates, when it is connected with operating nature»;<sup>23</sup> in other words and even more explicitly:

«in order to obtain a perfect and universal art, you must connect yourself to the world soul. You must operate as if connected to it, because full of rational principles due to its natural fecundity and because it generates a world full of similar rational principles. And – just like Plotinus believes – these rational principles, as seeds, shape and form everything as if they were small worlds. And since this soul is everywhere, it is totally inside everything and in each single part of the whole. Then, according to the condition of matter, you will be able to consider into each thing, the smallest it may be, the whole world and not only a simulacrum of the world. Therefore we, together with Anaxagoras, can effectively assert that ‘all is in everything’».<sup>24</sup>

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20 Ivi, p. 117: «Da noi si chiama ‘artefice interno’, perché forma la materia, e la figura da dentro».

21 Cfr. *De umbris idearum*, cit., p. 130.

22 *Sigillus sigillorum*, OMN II, p. 256: «Videto primum quatuor internos actuum rectores».

23 Ivi, p. 258: «perfecte agit ars, cum naturae agentis connectitur».

24 Ivi, pp. 258-260: «Ut igitur absolutam consummatamque artem adipiscare, animae mundi te copulari cumque ipsa copulatum agere oportet, quae naturali foecunditate rationibus plena mundum rationibus similibus plenum generat. Quae quidem rationes – ut et sentit Plotinus – in seminibus fingunt formantque universa quasi exiguis

Thus, the core of Bruno's theoretical consideration is not the union between human and nature, rather he suggests we should investigate the connection between formal and material principle within nature, in order to understand that we already are connected to nature. In fact, on recalling Plotinus, he says the word soul fills the nature with «rational principles» (*rationes*) and these principles are the seeds by which *anima mundi* models all the single things. This actually is the *De la causa*'s ontology, i.e. Bruno is referring to the universal intellect, the 'faculty' and the active power of the world soul.

Let me now to eventually sum up my conclusions:

1) Bruno consciously misunderstands Lull's combinatory: he manipulates and falsifies it in order to make it more effective in terms of quantity and quality of combinations. He totally refuses Lull's theoretical framework.

2) Bruno takes from Lull's art the raw computational and ordering power of *figurae*, such as trees, *scalae*, charts and wheels. He applies them to his peculiar idea of dialectic and, furthermore, to his mnemonic art. Indeed, he manages words, arguments, images and places as if they were neutral objects within a net of open semantic relationships.

3) Bruno forces a traditional and well known technique within his own ideological framework: why did he do it? I have tried to offer two answers:

3.a. Firstly, he knew that Lull's art was a common language among non-aligned scholars, especially those who were refusing Aristotelian Scholasticism looking towards Ficinian Neo-Platonism. So the first reason is the ideological affinity.

3.b. The second reason is wholly theoretical. Bruno developed a new and radical philosophical perspective: universal and infinite nature is the only existing being, while all other beings are 'part' of it. They are not substances, rather they are accidents of the only substance. Nature has an endless body – the matter – and an omnipervasive soul (the form). This one is just like the Aristotelian personal soul: it makes nature 'live' (*anima vegetativa*), since everything is non-stop changing; it makes nature 'feel' (*anima sensitiva*), because everything is connected to everything; it makes nature 'think' (*anima intellectiva*), as it generates everything through infinite single acts of production. Obviously this power is not anthropomorphic, rather it is a unique and universal principle common to every operating actor, human beings included. Therefore, this peculiar philosophical perspective needs a peculiar theoretical structure, which expands itself on every cultural aspect. Thus, from the logic and the theory of knowledge, to rethoric and dialectic, passing through mathematics, mnemonics, even magic art: they all have to be framed within this universal theory. Consequently, we may say that Bruno found in Lull's derived combinatory a kind of primary language for managing this theoretical hegemony, because of its specific combinatorial versatility and its dialectical neutrality. In conclusion, he uses it as a kind of computational code for an universal system that was no more Medieval, not Modern yet.

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mundos. Unde cum anima ubique praesens existat, illaque tota et in toto et in quacumque parte tota, ideo pro conditione materiae in quacumque re etiam exigua et abscisa mundum, nedum mundi simulacrum valeas intueri, ut non temere omnia in omnibus dicere cum Anaxagora possimus».

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