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Editorial Contact Address:

University of Edinburgh
Old Medical School
Edinburgh EH8 9AG
United Kingdom
E-mail: laura.cariola@ed.ac.uk

Lancaster University
County South
Lancaster LA1 4YT
United Kingdom
E-mail: a.wilson@lancaster.ac.uk

Scope

The journal of ***Language and Psychoanalysis*** is a fully peer reviewed online journal that publishes twice a year. It is the only interdisciplinary journal with a strong focus on the qualitative and quantitative analysis of language and psychoanalysis. The journal is also inclusive and not narrowly confined to the Freudian psychoanalytic theory.

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· Authors need to confirm with a cover letter that the manuscript has not been published previously and is not being submitted currently to another journal.
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· Interviews and obituaries should not exceed 4,000 words in length.

Style:
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· Manuscripts should follow the style conventions as outlined by the *Publication Manual of the American Psychological Association*, 5th edition.

Content

Nikola Tesla
and the Science of 'a Successful Paranoia'

Scott Wilson[1]
Kingston University, London

Abstract

This essay offers a psychoanalytic reading of Nikola Tesla's remarkable text *My Inventions*, a series of articles published in 1919 for the *Electrical Experimenter* magazine, edited by Hugo Gernsback (Tesla, 2011). The paper argues that the famous 'elementary phenomena' described in these articles operate as proto-linguistic elements or enigmatic 'signifiers' that form the basis of his subsequent scientific inquiry. These articles demonstrate that unusually for a scientist, Tesla did not give up on the object cause of his knowledge nor on his own position as the subject of his inventions – indeed I argue that his inventions were the means by which Tesla created and realized himself as a subject. I discuss in particular two of Tesla's inventions: the Rotating Magnetic Field, that is the basis for the AC induction motor, and the Magnifying Transmitter in the context of Tesla's own accounts of their 'psychological' genesis. I will suggest that it was through these electrical inventions in particular that Tesla managed to design a form of subjectivation that enabled him to stabilize his schizophrenic symptoms and disclose the coherence and efficacy of knowledge and delusion. In so doing Tesla's inventions perhaps point the way towards the delivery of science as 'a successful paranoia', in the terms of Jacques Lacan.

> Our science's prodigious fecundity must be examined in relation to the fact that [it] does-not-want-to-know-anything about the truth as cause…A successful paranoia might just as well seem to constitute the closure of science. Jacques Lacan (2006, p. 742)

> Perhaps one day we will no longer know what madness was…[Its] traces, the indispensable grids through which we render readable ourselves and our culture. Michel Foucault (1996, p. 97)

Introduction

In 'Science and Truth', the final chapter of *Écrits* (2006), Jacques Lacan suggests that should science come to a point of closure it would constitute 'a successful paranoia' (p. 742). Since science shows no signs of drawing to a close, we can safely assume that its ultimate success or failure is yet to be determined, the latter no doubt by its outcome in some kind of global catastrophe of which there are many popular scenarios. In the meantime, we can say that our epoch – in so far as it is determined by the applications of scientific discourse in conjunction with capitalism – is relatively

[1] Correspondence concerning this article should be addressed to Dr. Scott Wilson, Kingston University, London. E-mail: S.Wilson@Kingston.ac.uk

stable insofar as belief persists in the consistency and utility of scientific knowledge that, as the history of science demonstrates, is a locus of delusion and error.[2] Indeed, it is the coherence between delusion and knowledge that enables paranoia to stabilize schizophrenic symptoms in psychosis.

Science and psychosis have two main structural features in common: the rejection of the truth as cause and the ejection of the subject. In its classical, nineteenth-century form, science 'sutures' the subject that it nevertheless implies as a function of an essentially mechanical, deterministic, de-subjectivized world of natural forces. Or at least until Kurt Gödel fatally undermined the mathematical basis of science by demonstrating that formal systems are necessarily either inconsistent or incomplete (see Kauffman, 2001, p. 107). Lacan, of course, was quick to see that Gödel's idea about the ability of integers to represent sets that could represent further sets of integers was equally true of signifiers in the sense that any 'supposed set of signifiers can never be complete' (see Fink, 1995, p. 29). There is always excess or deficiency in language, aporias produced by a certain formula which function as its real cause.

It was pre-eminently in the nineteenth century that science gave up on the cause and the subject, finding efficacy in the economic efficiency of its technical applications. The logical problems involved with the principle of sufficient reason and the infinite regress that it implies – every cause must have a cause – or the inherent teleology of a final cause, a process determined by its form, or a means judged by its end, was left to the theologians. Similarly, contingency or chance played no part in science except insofar as it might become incorporated as a statistical variable in a system of probability that sustained a measurable return. Indeed, physicists and engineers did not largely concern themselves with providing information about the origin or essence of their concepts or objects, electricity for example, any more than biologists or psychologists did about 'instinct'. Nor was it necessary; it was enough to observe that something worked – and turned a profit.

This was not the case with Nicola Tesla, however, who continued to question the truth of electricity to the end of his life. 'Day after day I asked myself what is electricity and found no answer' (Tesla, 1984, p. 284). As the greatest electrical engineer who ever lived, Tesla was of course well aware of the physics of electricity and electromagnetism, the idea of charged particles, electrons and protons circulating a nucleus, but he clearly found such definitions inadequate and unsatisfying. Certainly, insofar as we depend upon the cheap, efficient and ubiquitous flow of electricity, Tesla is increasingly regarded as the inventor of the modern world of the twentieth century (see for example Nye, 1992 and Schwartz Cohen, 1997). He was famously the inventor of the AC polyphase system and the induction motor that enabled, after years of failure by Edison's systems that relied on direct current, the efficient electrification of New York, its illumination, and the electricity-driven mechanization of the second industrial age. Further, among many other inventions, some yet to be realized, Tesla is now credited with the invention of modern radio (before Guglielmo Marconi), X-rays (before Wilhelm Röntgen), radar (forty years before its use in WWII), robotics, artificial intelligence, electric vehicles and particle beam weapons; he posited the existence of cosmic rays (before Victor Hess and Theodor Wulf), and his 'Magnifying

[2] As Karl Popper (1959) famously contended, the history of science is a continuum of conjectures and refutations.

Transmitter', a huge tower at Wardenclyffe on Long Island, promised the conduction of free energy throughout the globe, the wireless transmission of images, text and speech in an individuated and secure way that anticipated the principle of the internet and the world wide web by nearly a hundred years. Indeed, Tesla liked to insist that he was not so much an inventor of objects and devices but a 'discoverer of new principles', a genuine scientist. (O'Neill, 1944, p. 2)

Indeed, with Tesla there could be no better example of the 'fecundity of science', but could he also be described as a 'successful paranoia'? In this essay, I want to argue that he could in the sense that in his science he did not give up on the object cause of his knowledge nor of his own position as the subject of his inventions – indeed his inventions were the means by which Tesla created and realized himself as a subject. In 1919 Tesla published a series of articles under the general title of *My Inventions* for the *Electrical Experimenter* magazine, edited by Hugo Gernsback (Tesla, 2011). These articles are curious because along with a wealth of scientific and technical information, they contain a high degree of intimate 'psychological' detail that Tesla regarded as equally indispensable to his readers for their understanding of the nature of his inventions. In these articles Tesla underscores, on the one hand, that as a man of science he has an entirely materialist and mechanistic view of life, claiming to be 'merely an *automaton* endowed with power of movement' (2011, p. 11). Yet on the other hand, the memoirs continually draw attention to a life full of 'miraculous' events (p. 22), 'astounding' discoveries (p. 82), achievements and abilities, 'inexplicable' occurrences (p. 12) and 'extraordinary experiences' (p. 19), 'phenomena strange and unbelievable' (p. 15), particularly where they concern bodily events and 'mysterious' (p. 34), heightened faculties of thought and perception.

In this essay, I want to argue that the material cause of Tesla's inventions can be found in an event of the body, what Lacan calls a missed encounter with the real, (Lacan, 1986, p. 53) that became encoded in his electrical inventions. As such, they can be regarded as an example of a prosthetic system that symbolizes and regulates jouissance, thereby compensating for foreclosure from the Name of the Father, Lacan's famous formula for psychosis. The Name of the Father is the phrase that Lacan uses in his teaching of the 1950s to describe the function of the signifier to locate the position of the subject and ground the symbolic order through the promise of meaning. That it is named after the father is simply a historical contingency; any signifier can function in this way so long as one believes in it – 'Woman', for example. As Freud's case studies continually show, belief in the father is a neurotic symptom; furthermore, the impact of a signifier such as the Name of the Father that is for Lacan the material cause of the (neurotic) subject is rejected by both science and psychosis, as can be seen in nineteenth century scientific texts, and of course in the *Memoirs* of Daniel Paul Schreber (2000). In the wake of the triumph of scientific discourse in conjunction with capitalism, contemporary society no longer believes in the Name of the Father, and consequently Lacan abandoned the notion in his later teaching in favour of other forms of stitching the subject into the rings of the Borromean knot that represents the Imaginary, Symbolic and the real (ISR) that together constitute 'the structure of the Real' (Lacan, 1999, pp. 132-133). But throughout his teaching, from Seminar II to XX, Lacan contended that 'the world of the symbolic is the world of the machine' (Lacan, 1988, p. 47), predicting to his students in 1972 that 'from now on you are, and to a far greater extent than you can imagine, subjects of gadgets or instruments – from microscopes to radio and television

– which will become elements of your being' (Lacan 1999, p. 82). Not only do most of these gadgets and instruments owe much to Tesla's innovations, he also explored how they might function as elements of one's being. By way of illustration, in what follows I will discuss two of Tesla's inventions: the Rotating Magnetic Field that is the basis for the AC induction motor and the Magnifying Transmitter in the context of Tesla's own accounts of their genesis in *My Inventions* (2011). I will suggest that it was through these electrical inventions in particular that Tesla managed to design a form of subjectivation that enabled him to tie together ISR, and disclose the efficacy and coherence of knowledge and delusion. In so doing Tesla's inventions perhaps point the way towards the delivery of science as 'a successful paranoia'. And further – assuming we grant this terminology any kind of theoretical efficacy – the re-incorporation of psychoanalysis as a discipline in a redefined idea of science.

The Coherence of Knowledge and Delusion

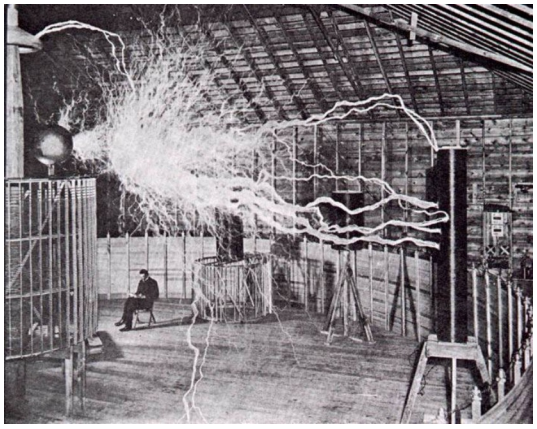

Figure 1

Tesla in Colorado Springs

In 1939, just four years before his death, Nikola Tesla reflected on his first encounter with the idea of electricity in a letter dedicated to Pola Fotitch entitled 'A Story of Youth told by Age' (Tesla, 1984, pp. 283-285). In the story, Tesla is a child of about three years old whose closest companion and playmate was the family cat called Macak. Eighty years later, Tesla recalled that it was the dusk of a very cold, dry evening and

I felt compelled to stroke Macak's back. Macak's back was a sheet of light and my hand produced a shower of sparks loud enough to be heard all over the place. My father was a very learned man, he had an answer for every question. But this phenomenon was new even to him. Well, he finally remarked, this is nothing but electricity, the same thing you see in trees in a storm. My mother seemed alarmed, stop playing with the cat, she said, he might start a fire. I was thinking abstractly. Is nature a gigantic cat? If so, who strokes it's back? It can only be God, I concluded. You may know that Pascal was an extraordinarily precocious child who attracted

attention before he reached the age of six years. But here I was, only three years old, and already philosophizing!

I cannot exaggerate the effect of this marvelous sight on my childish imagination. Day after day I asked myself what is electricity and found no answer. Eighty years have gone by since and I still ask the same question, unable to answer it. Some pseudo scientist of whom there are only too many may tell you that he can, but do not believe him. If any of them knew what it is I would also know and the chances are better than any of them for my laboratory and practical experiences are more extensive and my life covers three generations of scientific research (Tesla, 1984, p. 284).

This is a long quotation but it is important to include it all because the main elements that concerned Tesla's life and work are outlined here, including his relation to his parents, to God, nature and of course the central enigma represented by electricity that fascinated him throughout his life. This enigma, that is associated here with the surprise and excitement of the electrifying experience with Macak is also related to the conditions of his birth, as they came to be known to him through family legend (O'Neill, 1944, p. 6). While the effects of stroking the cat may have been the first time Tesla came upon electricity as an idea proffered by his father, it was not his first encounter with the phenomenon. According to his mother and her midwife, Tesla was born on the stroke of midnight between 9th and 10th July 1856 during a violent electrical storm. The well-known story holds that midway through the birth the midwife declared the lightning a bad omen, suggesting he would be 'a child of darkness', to which his mother replied: 'No. He will be a child of light' (Cooper, 2015, p. 22). Despite his legendary eidetic memory, Tesla could not personally testify to the truth of the story since he was busy being born, but he nevertheless refers to it in the speech he gave on the occasion of his being presented the Edison Medal at the Annual Meeting of the American Institute of Electrical Engineers on May 18, 1917. This was one of the very rare occasions that his genius was publicly acknowledged. Tesla died in The New Yorker Hotel in January 1943 penniless and virtually unknown. In his acceptance speech, however, on this grand occasion in 1917, Tesla refers to some of the autobiographical information that he would later publish in *My Inventions* in 1919. Claiming to have no birthday because he was born on the stroke of midnight, Tesla suggests that 'something must have happened' at the moment of his birth because when he was born his heart beat on the right side of his body, setting off a train of strange body phenomena that affected him throughout his life and which he relates in detail in his autobiographical accounts. In his speech, he describes how his heart would subsequently beat on both sides, only to return later in life to the right. Clearly referring to the dramatic intervention of the electrical storm, Tesla repeats that 'something that was quite unusual must have happened at my birth [because] my parents destined me for the clergy then and there' (Tesla, 1984, p. 186). Concerned that he should be a child of light rather than a child of darkness, Tesla's mother was of course referring to the light of God not that of the arc lamp or the fluorescent and neon

bulbs for which Tesla is now famous. Nevertheless, the story brings into conjunction in a relation of opposition and equivalence dimensions that are both miraculous and scientific. Tesla writes in *My Inventions* that the thought that he 'was intended from [his] very birth for the clerical profession…constantly opprest [sic] me' (Tesla, 2011, p. 7). Indeed, it would take his near death through cholera at the age of fourteen for his parents to consent, at his insistence, for him to give up the clergy for a career in engineering.

In the anecdote concerning his first contact with the notion of electricity, the 'shower of sparks' that betrayed the strange force of nature seems to be the spontaneous expression of his identification with and love for Macak. Tesla calls the animal the 'fountain of his enjoyment', exclaiming on the great 'depth of affection' of their 'mutual love' (Tesla, 1984, p. 283). Tesla's parents, present at the scene, frame the spectacular and alarming experience and occupy positions in the anecdote that also structure his autobiographical writings. His mother, though illiterate, is said to be one of a line of great inventors with the kind of high intelligence and capacity for work that Tesla credits himself. Meanwhile, his father's support is granted rather fainter praise. 'Altho I must trace to my mother's influence whatever inventiveness I possess, the training he gave me must have been helpful' (2011, p. 8). In the Macak anecdote, his mother enunciates the Law, commanding young Tesla to leave the animal alone before he sets something on fire, while his father, initially perplexed, provides the banal reassurance of his 'learning', his knowledge – 'it's nothing but electricity'.

Tesla's story, however, shows his younger self to have no intention of giving up on the mystery of electricity any more than he allows himself to be severed from his connection to the cat by his mother. On the contrary, he is quick to assume the position of God, conjuring the power of electricity by imaginarily stroking the 'gigantic cat' that is the totality of nature. The delusion of grandeur that is betrayed here and reinforced by Tesla's claim to be, at three years old, more prodigiously philosophical than Pascal also provides the general tenor of his autobiographical writings even when it plunges to its negative pole in utterances of ostentatious modesty and self-abasement. In his speech to the American Institute of Electrical Engineers, Tesla alludes to the legend surrounding his birth and implies that he was engendered out of time by the miraculous intervention of a lightning bolt that produced an event in his body that anointed him a 'child of the light', as named by his mother. Meanwhile, his father seems to have had as much to do with his birth as Joseph the conception of Christ. But as we shall see, it is precisely this locus of delusion, and the inventions that spring from it, that provides the basis for his genuine greatness.

In what follows, it is not my intention to 'diagnose' Tesla with psychotic structure on the basis of his writings but rather to discuss him as a symptom of his and our age. In the age of the Death of God, he is a symptom of the powers of invention that may spring from the congruence of knowledge and delusion. In the 'post-truth' age, he is a symptom of the necessity of symbolic prostheses and the efficacy of instruments and gadgets to mediate a social bond in the absence of paternal guarantees. While Tesla certainly suffered a number of profound breakdowns, he did not suffer prolonged incapacity or catatonia, but managed on the whole to stabilize his condition in a number of ways. This is not uncommon. 'Psychosis is an immense continent', avers Jacques-Alain Miller, 'look at the difference between a good, fine, muscular paranoiac, who really makes a world for himself and for others, and a schizophrenic

who can't get out of his room' (2009, pp. 161-162). In fact, Tesla was both of these things: a socially isolated, life-long celibate who made a world for himself and for others. The portrait that Tesla gives of himself in his autobiographical writings in some aspects resembles the picture of classical psychosis given in his contemporary Daniel Paul Schreber's *Memoirs of My Nervous Illness* (1903/2000). In addition, a number of Tesla's 'eccentricities' that have been noted on many occasions in the past including numerous phobias and obsessive rituals that are often associated with obsessive compulsive disorder or autism (see Seifer, 1998, pp. 465-467, Silberman, 2015, pp. 230-231), can also function to stabilize a psychosis. However, these features, along with Tesla's hyper-affection for pigeons that he manifested later in life, are here regarded simply as symptoms, elements that both indicate and help manage a condition conducive to scientific invention in which knowledge and delusion are constantly inter-implicated and exist on the same plane, as if on a Möbius strip. The scientific coherence between knowledge and delusion is constitutive particularly in an epoch when scientific knowledge has lost all connection to the ideas and belief systems inherent to natural languages. Contemporary science takes place entirely in mathematics and code where it produces its own reality. As is evident with the CERN Large Hadron Collider, the job of 'empirical' science is likewise to smash existing reality to smithereens in order to produce new particles, new pieces of reality like the Higgs Bosun. Productions of other purely theoretical or fictional (and in that sense, delusional) concepts like 'dark matter' and 'dark energy' will no doubt follow in its train. As psychology gives way to neuroscience, a clear distinction is drawn between sense and the real. Following the reductionists and eliminative materialists, there is no longer any sense in the real, signifiers such as 'belief, desire, pain, pleasure, love, hate, joy, fear, suspicion, memory, recognition, anger, sympathy, intention and so forth' being regarded as 'folk psychological' notions misapplied to the various firings of neural activation vectors (Churchland and Churchland, 1998, p. 3). In the meantime, while science and its technical applications have the power to radically transform the social reality actually lived by human subjects (or the various 'platforms' upon which it is experienced), such subjects have no relation to the production or deployment of this knowledge and power.

To return to the nineteenth century discovery of the coherence between knowledge and delusion, it is possible to make a series of analogies and even homologies between Tesla, Schreber and indeed Freud. For example, while Schreber had a theory of 'divine nerves' by which God would communicate with him through 'rays', Tesla also believed that interplanetary communication could occur wirelessly through the medium of waves. The main difference between Schreber and Tesla in this regard is that Tesla's belief is correct, even if it wasn't achievable at the time. Further, as Freud recognized in his interpretation of Schreber's *Memoir*, 'Psycho-analytic notes on an autobiographical account of a case of paranoia' (1958), Schreber's theory of 'nerve rays' could easily be regarded as analogous to his theory of libido.[3] While Tesla did not believe in divine nerve rays, any more than he believed in God, he did believe in cosmic rays that he claimed shattered Einstein's fundamental axiom concerning the

[3] Furthermore, when Freud attempted to give a definition to his theory drawn from physics, he uses the analogy of electricity. In 'Project for a Scientific Psychology' (1895), Freud uses the 'conception of a fluid electrical current' in order to give an entirely quantitative account of the 'increase, decrease, displacement and discharge' of libidinal energy.

constancy of the speed of light. Along with cosmic rays, however, Tesla also had a concept of cosmic pain. His discovery of cosmic pain he considered 'of the greatest moment to human society' (p. 82). Rather than the Freudian concept of libido, however, Tesla's cosmic pain looks more like a theory of cosmic jouissance, anticipating the Lacanian notion that retrospectively provides the basis of libido and ultimately displaces it.

The concept of jouissance is developed throughout Lacan's teaching, but it always retains the sense of excess. That is to say an excess of life, sensation or 'enjoyment' beyond the pleasure principle – that is, essentially, pain – more sensation than a body can bear. In the late Lacan, jouissance is rigorously distinguished from energy, or at least energy understood scientifically as a numerical constant that enables work to be done, mechanical or otherwise. Jouissance, in contrast, 'is what serves no purpose' (Lacan, 1999, p. 3). Since it is excessive, does no work and serves no purpose, jouissance becomes the negative basis for law and economy. The 'essence of law', for Lacan, is to divide up, distribute, or reattribute everything that counts as jouissance' (1999, p. 3). The law says that life in its traumatic or painful excess must be regulated, equalized and discharged in regular amounts. This relation between excess, law and punishment is evident in Tesla's theory. He states that he first encountered the 'astounding truth' of cosmic pain when he was 'a very young man', but considered the disturbing bodily events that he experienced 'simply coincidences'. However, further reflection over the years enabled a more developed interpretation of the phenomena. Namely, he writes, 'whenever either myself or a person to whom I was attached, or a cause to which I was devoted, was [unfairly] hurt by others in a particular way…I experienced a singular and undefinable pain which…I have qualified as "cosmic", and shortly thereafter, and invariably, those who had inflicted it came to grief' (Tesla, 2011, p. 82). Subsequently, Tesla goes on to give an impeccably scientific account – albeit involving 'invisible links' that connect otherwise independent objects and organisms – of how this cosmic system of karmic jouissance operates throughout the universe. The example also illustrates the correlation between schizophrenia and paranoia that is evident in Schreber, and the importance that elementary phenomena have in structuring the delusional interpretations and knowledge-systems that stabilize psychosis. The initially perplexing bodily events that were a feature of Tesla's younger days, and that provide the basis for his theory of cosmic pain, are equivalent to what Lacan calls elementary phenomena. These phenomena provide the basic structure for the inventions of delusion, as we shall see. First I shall briefly recap on these bodily events and phenomena that Tesla recounts in vivid detail in his autobiographical writings.

Elementary Phenomena and the Tesla Coil

Figure 2

The Tesla Coil

> In my boyhood I suffered from a peculiar affliction due to the appearance of images, often accompanied by strong flashes of light, which marred the sight of real objects and interfered with my thoughts and action…When a word was spoken to me the image of the object it designated would present itself vividly to my vision and sometimes I was quite unable to distinguish whether what I saw was tangible or not. (Tesla, 2011, p. 9)

> I never had any control over the flashes of light to which I have referred. They were perhaps my strangest experiences and inexplicable. They usually occurred when I found myself in a dangerous or distressing situation or when I was greatly exhilarated. In some instances I have seen all the air around me filled with tongues of living flame (Tesla, 2011, pp. 11-12)

> These luminous phenomena still manifest themselves from time to time, as when a new idea opening up possibilities strikes me (Tesla, 2011, p. 12).

> As I uttered these inspiring words the idea came like a flash of lightning and in an instant the truth was revealed (Tesla, 2011, p. 40).

Lacan's theory of elementary phenomena that he discusses in Seminar III (1993), arise as an effect of the foreclosure of the Name-of-the-Father and the 'hole' or void that is consequently disclosed in the Other. This 'hole' appears when the subject is confronted with the absence of the paternal function, and the elementary phenomena irrupt partly in an attempt to plug the gap. The effects of these irruptions however can be highly disturbing since they are also distressing symptoms of unregulated, invasive jouissance that in Tesla's case caused 'great discomfort and anxiety' (2011, p. 9). Sometimes they are described as 'agony' (p. 19), or 'torture', causing a sensation that 'my brain had caught fire' (p. 12). Essentially they function as enigmatic, meaningless signifiers – 'strange and inexplicable' – that place under question the ability of the system of signification to produce or guarantee meaning. Classically, the onset of psychosis is characterized by a profound sense of perplexity or strangeness that is reinforced by the incursions of these phenomena. As such they operate as 'the signification of signification' in an empty reflexivity that symbolizes the symbolic

order's lack of cornerstone or ground. Freud comments on a similar set of elementary phenomena that occurred at the onset of Schreber's psychosis in the form of hallucinations and body phenomena. He notes that 'a high degree of hyperaesthesia was observable – great sensitivity to light and noise – later the visual and auditory illusions became more frequent, and, in conjunction with coenaesthetic disturbances'.[4] For Lacan, such hallucinations and traumatic disturbances are delusional interpretations of the hole in meaning or the signified that themselves demand interpretation, thereby potentially setting off 'a cascade of reworkings of the signifier from which the growing disaster of the imaginary proceeds, until the level is reached at which signifier and signified stabilize in a delusional metaphor' (Lacan, 2006, p. 481). For example, Schreber's elementary phenomena became developed into a network theory of divine nerve rays that enabled him to communicate with God. God's selection of Schreber and his invasive plan to impregnate and re-populate the world further conditioned 'the idea of grandeur' that is the fundamental form of paranoia that eventually emerges to stabilize schizophrenic symptoms (Lacan, 2006, p. 456). In Tesla's case, we have already noted his elaborate theory of 'cosmic pain', but that is just one among a multitude of theories, designs and inventions that similarly condition the delusion of grandeur that colour his writings. These designs – many of which were ultimately successful or accurately prophetic – will also involve transforming the world in a way equally profound as that envisaged by Schreber's God.

It is important to stress, then, that while cenaesthetic symptoms and disturbances are events of the body, they are also signifiers. Indeed, they operate as signs in CS Peirce's sense that they represent something for someone. They imply the existence of a subject, since they appear uniquely to that someone, though what they represent is unknown. They therefore locate perplexity at the place where the subject should be. They are evanescent signifiers, like meteors, that are unsupported by the signifying battery that would make sense of them. Outside sense, they emerge from the real of jouissance, indexing the place of the subject as a site of truth through the enigma that they present. Accordingly, as Tesla reiterates, the 'luminous phenomena' and 'flashes of light' flare up in moments of scientific insight and revelation. Of course, this empty site is consistent with the structure of the subject generally; it too is an arena clear for a delusion of grandeur to develop in moments of exhilaration, a delusion that is incomplete without its complementary polar opposite, the humility that every so often will confess 'I am nothing'; 'I am useless'. Tesla's supreme moment of exhilaration was illuminated, he says, by 'a flash of lightning' as 'in an instant truth was revealed' (Tesla, 2011, p. 40). This was the idea of the Rotating Magnetic Field. While it is a commonplace, even a cliché, for a great idea to be signaled by a flash of lightning, for Tesla it has much more significance and reality given his personal myth and career as an electrical engineer. In Tesla's family legend, the electrical storm at the time of his birth provides the elementary signifier of the central mystery of both the phenomenon of electricity and the enigma of existence. Unlike the 'S_1' of the paternal or master signifier, this signifier does not represent a subject for another signifier, but rather points to the absence of a signified, 's_0', the empty site primed for the revelation of

[4] 'Cenesthetic' symptoms remain classic signs of the onset of schizophrenia according to the *International classification of disease* (World Health Organization [*ICD-10*], 1992). See also Redmond, 2014. Typically, these symptoms are limited to short psychotic episodes of the type demonstrated by both Schreber and Tesla.

truth. For any revelation of truth, however, there has to be some set of phenomena that provides the stuff of interpretation, some pool of knowledge, 'S_2'. Because the symbolic register is empty, however, it absorbs the structure of the imaginary, *a-a',* from which the ambivalence of a delusional fantasy develops as in paranoia or even a basic delusion of grandeur. The imaginary register is developed partly from Lacan's mirror stage that 'situates the agency of the ego, prior to its social determination, in a fictional direction' (Lacan, 2006, p. 76). The stability of the 'I' is initially suggested visually in relation to a mirror reflection that provides an image of bodily unity. But given that it is actually just an inverse reflection, the image also functions as the basis of an alter ego or rival that may threaten that unity. The imaginary register is a very unstable world in which identifications and affects are continually oscillating between two poles. Love, affection, empathy, attraction can rapidly switch into hatred, rivalry, antipathy and repulsion. Jacques-Alain Miller (2005, p. 25) schematizes the relations between delusion and knowledge in the following way:

$$\frac{S_1}{s_0} \qquad \begin{matrix} S_2 \\ \Delta \\ a - a' \end{matrix}$$

With Tesla we could translate this as:

$$\frac{\text{flash of light } (S_1)}{\text{enigma } (s_0)} \qquad \begin{matrix} \text{electricity } (\underline{S_2}) \\ \Delta \\ + / - \quad (a - a') \end{matrix}$$

This empty site of the enigma (s_0) devoid of a subject ($) has two poles ($a - a'$) – a plus and a minus – just like an electromagnet. But while the neurotic subject is defined by a master signifier ('S_1' in Lacan's notation) that functions as a conductor to the Other (S_2) thereby providing the resistance (or repression) necessary to regulate the flow of interpretations, the psychotic's 'libidinal energy', in Freud's terms, circulates around the two poles creating an unhindered state of ambivalence that can charge a frenzy of interpretative delusions (S2) as intensely as a Tesla coil (see Figures 1 and 2). Another of Tesla's famous inventions, the coil could produce great sparks and flashes of light. At first in 1891 these would be sparks of about five inches, but then 'in 1900 [he] obtained powerful discharges of 100 feet and flashed a current around the globe'. He was reminded, he recalls, 'of the first tiny spark I observed in my Grand Street laboratory and was thrilled by sensations akin to those I felt when I discovered the *rotating magnetic field*' (Tesla, 2011, p. 51).

Goethe's Faust and the Rotating Magnetic Field

The discovery came after Tesla suffered a 'complete nervous breakdown' in which he experienced some of his most intense cenaesthetic disturbances, enduring symptoms that none of his doctors and medical consultants could comprehend (Tesla, 2011, pp. 31-40). The attacks occurred at the end of his college years at the Polytechnic School in Graz, Austria, apparently as an effect of his struggle to meet the challenge posed by his Physics Professor Poeschl concerning the problem of utilizing electricity without the inefficient use of a commutator.

Electricity is quite erratic, if not chaotic. The notion of a 'flow' or 'current' of electricity is a metaphor introduced from the idea of water, and the phrase 'alternating current' is a formularization of the problem of the rapid and erratic changes normally involved in attempts to direct electrical force. In order to give electricity direction, a commutator that is comprised of a series of little wire brushes is deployed to send it in one direction in order to produce a 'direct current'. The problem is that a commutator does not exert uniform control over the force under its direction and tends to spark all over the place. As Edison and his engineers at Menlo Park discovered, it is difficult and very expensive to get electricity to travel to any distance through the use of 'DC' devices. Tesla's discovery of how to utilize alternating current through the production of a rotating magnetic field circumvented all these problems and enabled the cheap, effective and rapid electrification of the world – once he and Westinghouse had eventually prevailed in the vicious AC/DC 'current wars' of the 1880s.

According to Tesla, his physics Professor Herr Poeschl was scornful of his own ambition for using alternating current, humiliating Tesla by delivering a whole lecture on the subject, detailing at length its impossibility, concluding that it would involve nothing less that the re-orientation of one of the great forces of nature, like gravity (Tesla, 2011, p. 37). Tesla's public humiliation provoked a challenge to his rival that would become all consuming. For Tesla, solving this problem would be 'a sacred vow, a question of life and death' that threatened to result in the latter (2011, p. 39). 'My alternating system of power transmission came at a psychological moment', he writes (p. 56); indeed, Tesla suffered a psychological or 'nervous' breakdown in which all the dimensions of his perceptual field collapsed in upon him. In particular, the sensitivity of his audition became extraordinary: 'I could hear the ticking of a watch with three rooms between me and the timepiece. A fly alighting on a table in the room would cause a dull thud in my ear. A carriage passing at a distance of a few miles fairly shook my whole body' (p. 38). Of all the uncontrollable somatic phenomena, most difficult to bear was his erratic pulse 'that varied from a few to two hundred and sixty beats' making all the tissues of his body twitch and tremor (p. 39). In his own allusion to the founding event of his birth, Tesla claims that the electric storm made his heart switch from different sides of his chest, and indeed the erratic pulse and body tremors seem to suggest that Tesla's body was directly experiencing the problem of alternating current. The latter had hitherto 'presented what seemed an insoluble problem because the magnetic field produced by alternating currents changed as rapidly as the current. Instead of producing a turning force they churned up useless vibration' (O'Neill, 1944, p. 42). But it would be words – literature – that enabled Tesla to solve the problem and alleviate his symptoms. Out for a walk in the early evening with a friend in the City Park, Tesla gazed at the setting of the sun whose rays he had found so oppressive and began citing lines from Goethe's *Faust*. The sunset reminded him, he recalls, of Goethe's famous lines:

> *Sie rückt und weicht, der Tag ist überlebt,*
> *Dort eilt sie hin und fördert neues Leben.*
> *O daß kein Flügel mich vom Boden hebt*
> *Ihr nach und immer nach zu streben!*
>
> [The glow retreats, done I the day of toil; / It yonder hastes, new fields of life exploring; Ah, that no wing can lift me from the soil, / Upon its track to follow, follow soaring!]. (quoted in Tesla, 2011, p. 40).

Perhaps it was the paradox of double movement evoked in these lines as the old circadian notion of time gives way to the impression of the forward march of modernity that proved inspirational. The sun is advancing in time as it explores 'new fields of life' even as it makes its eternal circuit around the earth. Of course, Tesla knew perfectly well that the earth orbited the sun by the force of its gravity, but perhaps this idea of circular motion could be galvanized for a similar magnetic power of projection. The *mise-en-scene* of Goethe's dramatic poem would also have appealed deeply to Tesla given that its general theme opposes religious observance and devotion to the ambitious pursuit of scientific knowledge, echoing his own conflict between a career in the clergy and engineering. Indeed, the lines that immediate precede the sunset offer Faust's ruminations on the frustration of drowning in a sea of error, the uselessness of received wisdom and the importance of a desire for the unknown: *'O glücklich, wer noch hoffen kann / Aus diesem Meer des Irrtums aufzutauchen!' 'Was man nicht weiß, das eben brauchte man, / Und was man weiß, kann man nicht brauchen*' (Goethe, *Faust* 1, lines 1064-1067). Imaginary identification is further encouraged through the friendship and rivalry of Faust and his companion Wagner. As Goethe scholar Harold Jantz writes,

> The difference between Faust and Wagner lies in their drives [...] The drive of Wagner is centripetal, striving toward containment, toward the encompassing and ordering of accumulated knowledge…The drive of Faust is centrifugal, striving toward expansion, the conquest of new realms of knowledge and insight (Jantz, 1951, pp. 106-107).

Tesla's central insight in the production of the rotating magnetic field was to produce and magnetically harness two such 'drives', two circuits carrying the same frequency of alternating current ninety degrees out of phase with each other both in position and timing (see Figure 3). Each phase generates its own positive and negative polarities in an alternating sequence such that the armature is able to rotate wirelessly in space at high speed in the centre of the magnetic force field (for a more detailed explanation see O'Neill, 1944, p. 43; Seifer, 1998, pp. 22-23).

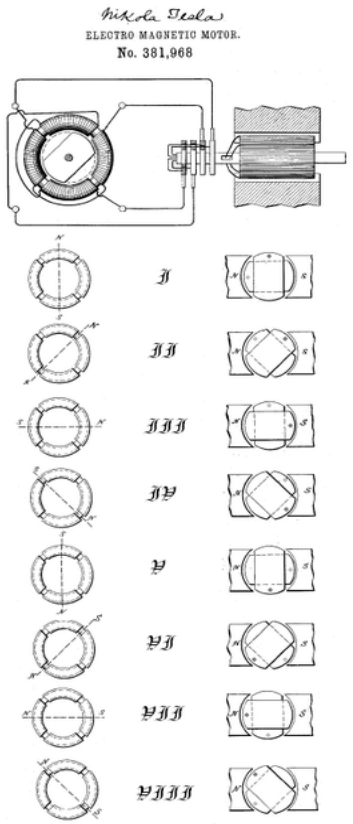

Figure 3

Nikola Tesla's 'Electro Magnetic Motor'

Given Freud's interest in the analogy between electricity and libidinal energy, it is interesting to reflect that it was in the context of his work on Schreber and psychosis that Freud also introduced a two-phase system in which libido alternately 'cathected' to the positive and negative poles of an object and ego. Freud developed this dual-phase system in his paper 'On Narcissism' (1914) which also informs significantly Lacan's notion of the imaginary register. Here, the ego is an effect of the objects *a-a'* that are similarly positive and negative polarities magnetized by the drive as it circulates around the *Vorstellung* or chain of signifiers and images that offer themselves up for identification and differentiation, empathy and antipathy, thereby producing a force field of ambivalence. It takes the introduction or rather 'induction' of Lacan's virtual *objet petit a* in the midst of this field for it to produce the 'alternate cathection' (AC) motor of desire. That is to say, the *objet a* would operate like a receiving magnet or motor armature which by means of induction would turn jouissance into a motor of desire whether or not the charge was positive or negative.

Tesla's AC induction motor formed the template for a multitude of inventions that flowed in 'an uninterrupted stream' for the next few years, ready to populate and electrify the forthcoming century with a new generation of automatic desiring machines. One astonishing, potentially world-changing vision however would quite literally tower over Tesla's future horizon in the early years of the twentieth century.

Wardenclyffe and the Erection of the Gnomon

The 'Magnifying Transmitter'. This is Tesla's best invention – a peculiar transformer specially adapted to excite the Earth, which is in the transmission of electrical energy what the telescope is in astronomical observation. By the use of this marvelous device he has already set up electrical movements of greater intensity than those of lightning and passed a current, sufficient to light more than two hundred incandescent lamps around the Globe (Tesla, 2011, p. 62).

Somewhat strangely writing in the third person, Tesla excitedly explains to the readers of the *Electrical Experimenter* his plans for the 'magnifying transmitter', the main element of five key inventions that comprised the 'World-system'. This was a wireless telegraphy and power plant that Tesla began to build at Wardenclyffe on Long Island in 1900 (see Figure 4). By far the most ambitious of Tesla's projects, the principles for which he researched for two years in Colorado Springs, the world system proposed to deliver free energy by pulsing 100 million volts around the world. At the same time, it would transmit signals, messages and characters wirelessly to anyone anywhere equipped with 'an inexpensive receiver, not bigger than a watch' (Tesla, 2011, p. 62). Distance would be 'absolutely eliminated' (p. 61), 'annihilated' in a repetition of his auditory symptoms. Signals would be 'tuned' and 'refined' such that each individual would be able to receive, privately and securely, speech or music anywhere on land or sea (p. 62). What Tesla envisaged in 1900 was not just a free source of global energy, but a planetary (and inter-planetary) telecommunications center 'more efficient than the combined forces of today's radio, television, wire service, lighting, telephone, and power systems' (Seifer, 1998, p. 263). To which we could also add the internet and world wide web before the advent of digital technology. Tesla explained the principle of energy conduction with the example of a giant tuning fork. The earth is responsive to electrical vibrations of definite pitch; it could therefore be used as a giant natural conductor. Spurred on by his rivalry with Marconi, Tesla envisaged radio waves and electrical vibrations being generated and pulsed through a 'skyscraping tower six hundred feet high, designs for which he scratched out on his fancy Waldorf-Astoria stationery' (Seifer, 1988, p. 263). Cost and other constraints would eventually reduce the size to 187 feet, but the design remained essentially the same, including at the top a 'spherical terminal about 68 feet in diameter' (Tesla, 2011, p. 64). At the tip of the erection was an aperture out of which 'spewed forth a pyrotechnic eruption', 'a vivid display of light several nights [a week]' that could be seen as far as the shores of Connecticut' (Seifer, 1998, p. 292).

Figure 4

Tesla's 'Magnifying Transmitter' Wardenclyffe Tower, Long Island, NY

For Lacan, the life of the non-psychotic subject is illuminated by a 'phallic signifier' (ϕ), that is grounded by the Name-of-the-Father. The 'phallus' signifies the value that transcends the desire of the mother for the child. It thereby gives definition through its very difference to the child, and indeed the definition of meaning for the child. The phallic signifier arises as an effect of 'symbolic castration' (-φ). However, it is precisely this symbolic castration that is refused in psychosis. The phallus does not exist and the desire of the mother remains an enigma (s_0). In a non-psychotic subject, the phallic signifier encapsulates through the operation of metaphorical meaning the 'loss' produced by symbolic castration. According to Lacan, the subject is defined by his or her relation to this phallic signifier that is 'destined to designate meaning effects' (Lacan, 2016, p. 579), since it operates in different ways as both the signifier of jouissance and the signifier of the desire of the Other. In the case of the former, the signifier is imbued with the jouissance that is repressed or barred in the subject; in the case of the latter, it 'provides the ratio [*raison*] of desire', the standard exemplum and measure of the Other's system of value. Culturally and socially, in pre-modern kinship systems, this would be the daughter who is the object of exchange in those dynastic marriages that form the basis of the social bond.

In the imaginary register, the unified image of the body in the mirror (*a*) operates in this 'phallic' way where it produces a frisson of narcissist enjoyment that supports its function as a signifier that hooks the subject onto the symbolic order. Again, this is precisely what is at issue in psychosis where this signifying function is missing and the imaginary is radically unstable (*a-a'*), oscillating across the polarities of positive and negative identifications. The process of stabilization in psychosis, then, involves the attempt to produce – in oneself or of oneself – an imaginary phallus that can take on

this signifying function and produce relatively stable effects of meaning. As with the 'flutter of jubilation' that the child experiences when he or she perceives the unity of her body image, so meaning is similarly apprehended in an experience of enjoyment for the psychotic. For Schreber, memorably, the idea of this meaning and enjoyment is summoned in the suggestion of how delightful it would be to submit to intercourse as a woman. This subsequently becomes the basis of Schreber's delirious system in which God transform him into a woman in order to 'redeem the world and restore it to its lost state of bliss' (Freud, 1958, p. 475). In the Lacanian orientation in psychoanalysis this is known as the 'push-to-the-woman', where the woman (or daughter) equals the phallus, the signifier of the Other's desire in the elementary structures of kinship discussed by Claude Levi-Strauss.

While there appears to be no explicit 'push-to-the-woman' in Tesla's case, there is nevertheless evidence of a similar production of a 'phallic' body at the expense of the jouissance associated with the organ. Tesla was by all accounts a life-long celibate who details his success in abstinence and self-control in *My Inventions* (pp. 19-20). Elsewhere he claims to have 'never touched a woman' (Petkovich, 1927, p. 4). Indeed, this feature is remarked upon at some length by his biographer John O'Neill, someone who knew Tesla as well as anyone. O'Neill claims Tesla 'sacrificed love and pleasure…limiting his body solely to serving as a tool of his technically creative mind' (1944, p. 3); he 'eliminated' love and even spiritual companionship, maintaining a sovereign isolation 'into which no woman and no man could enter'; content to seal himself off in 'self-sufficient individuality from which all sex considerations were completely eliminated; the genius who would live entirely as a thinking and a working machine' (p. 4). And yet this 'machine' wanted to be a 'tool' for facilitating the instantaneous communications of peoples around the world, 'abolishing distance', introducing his own measure of space and time, promising to turn the globe into a village ten years before Marshall McLuhan was a gleam of light in his mother's eye. The distinctive shape of the Wardenclyffe tower, the magnifying transmitter that would have powered Tesla's 'internet', needs no further comment except that it is the most startling manifestation of a structure that receives repeated iterations throughout Tesla's designs and inventions, fetishes, phobias, rituals and even his relation to his body.

In certain neurotic or perverse subjects where the phallic function has failed to become fully effective or castration disavowed, various phobias and fetishes may be deployed in its place. Tesla reports on a number of these: he won't touch anyone's hair, he's revolted by peaches (presumably because of the fur), the sight of pearl earrings 'would almost give me a fit'; at the same time, he's fascinated by bracelets, the glitter of crystals (Tesla, 2011, p.13). These are all classic Freudian examples of the fear and disavowal of castration. For Lacan, they are examples of the '*gnomon* that constantly indicates the site of truth …Revealing that the phallus itself is nothing but the site of lack it indicates in the subject' (Lacan, 2006, p. 745).

The gnomon is a Euclidian geometric concept that can be produced in the case of the square through tracing a diagonal and extending it vertically through erecting the diagonal line. As Jacques-Alain Miller notes, it is this diagonal which counts, because it is in itself already an index (Miller, 2002). What further counts is that it thus becomes the point of stability or 'general principle of construction' though which the square can be extended to various levels vertically or horizontally (see Figure 5)

(Miller, 2005, p. 7).

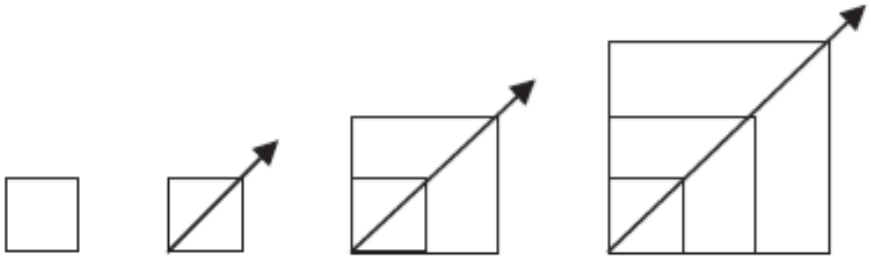

Figure 5

Gnomonology

The gnomon is also another name for the sundial, which from its position at a right angle on the horizon affords the opportunity to tell the time relative to the position of the sun's rotation around the earth. As such, as we have seen, it conforms to the principle of the rotating magnetic field. But to the 'gnomonic' example of the sundial could be added the lightning rod and the tuning fork both of which are operative in the principle of Wardenclyffe tower. All are inventions or metaphors for the stabilization and conduction of oppressive or erratic rays, waves and vibrations, the disturbing elements of Tesla's elementary phenomena. They are also metaphors for Tesla's own body. For while certainly, unlike Schreber Tesla had no interest in his body conducting the amorous designs of God, he was famous for spectacular shows in which he would pass high voltages of electrical current through his body. This was not just for the practical purpose of convincing a public of the safety of alternating current – a public terrorized by Edison's movies of the electrocuted deaths of animals that resulted in the first execution by electric chair. Tesla passionately believed in the therapeutic power of electricity, writing numerous articles on the topic. Indeed, when JP Morgan withdrew funding for the Wardenclyffe project – seeing no financial benefit in the production of free energy – Tesla once again began to suffer nervous collapse. By this time, however, he knew how to effectively self-medicate. He took 'electric baths' in which he charged his body in order to repel foreign particles (Seifer, 1998, p. 413). And he told *The New York Times* that 'I have passed [150,000 volts]… through my head and did not lose consciousness, but I invariably fell into a lethargic sleep some time after' (Seifer, 1998, p. 325).

Postscript: Becoming Horse, Becoming Pigeon[5]

Wardenclyffe tower began to be dismantled in 1917, and more or less about this time, according to the biographical accounts, Tesla developed his passion for the pigeons of New York. If there is one thing about Tesla that defines him as a 'mad scientist' it is the story that he married a pigeon. There was no formal ceremony, but Tesla does relate that of the thousands of birds he fed over the years, there was a particularly beautiful one that would fly to him whenever he wished. 'I loved that pigeon as a man loves a woman, and she loved me. As long as I had her, there was purpose to my life' (O'Neill, 1944, pp. 316-317).

It would take another essay to trace the trajectory of Tesla's affinity with animals, particularly birds. Macak the cat provides Tesla with his first memory of electricity, but the most powerful and traumatic encounter with an animal occurs at the beginning of *My Inventions*, with the magnificent yet febrile family horse who was 'responsible' for unseating his father and killing his brother in separate falls (Tesla, 2011, p. 6). The brother is described as an alter ego and rival for his parents' affections, whose 'attainments made every effort of mine seem dull in comparison' (p. 6). Consistently throughout *My Inventions* Tesla seeks to '*harness*' 'the forces of nature' (see for example p. 5, p. 22, p. 25, p. 31), as he seeks to turn horse power into electrical power, or the power of the vacuum. An agent of death and the unseating of the paternal principle, the horse is another signifier of the lack in the Other that is more fundamental than the enigma of the mother's desire that can be seen as merely its iteration – like the two phases that constitute the rotating magnetic field of the AC motor. In Tesla, the enigma of the lack functions as the object cause of desire that is signified in events of the body, in flashes of light that relate to the fundamental loss that occurs mythically at birth: this is the fall into the world of signifiers, into the being of sex and death. In Seminar XI, Lacan writes, 'imagine that, each time when at birth the membranes are broken, something - the lamella - flies away and is lost forever. This loss is nothing less than the loss of pure life in itself, of immortality' (Lacan, 1986, pp. 197-198). In Tesla's family legend, this loss is illuminated in the flash of lightning that announces his birth as 'a child of the light'. The mother's ambiguous annunciation both endorses and substitutes for the loss of the

[5] I am aware that this essay could be productively re-written according to the theoretical revisions to Lacan's theory of psychosis made by Gilles Deleuze and Félix Guattari. These revisions emphasize the schizophrenic pole of psychosis in which schizophrenia is seen as the symptomatic exception to capitalism and paranoia its defining state. (see Deleuze and Guattari, 1983 & 1988) I have chosen rather to emphasize the importance of paranoia's stabilizing effect on the schizophrenic desire for knowledge because of its structural, epistemic coherence with contemporary science. Certainly, some of Tesla's inventions enabled the expansion of capitalism (as they would have socialism, for that matter) but some of them did not – most notably the magnifying transmitter that promised to end capitalism by supplying free energy to everyone on the globe. Not seeing how he could 'put a meter' on this free energy, JP Morgan famously pulled the plug. Indeed, Tesla's 'paranoia' left him personally far from suited to capitalism, which exploited his genius ruthlessly and left him penniless. For a 'gnomonological' interpretation of the role of the schizophrenic as a 'principle of construction' in Deleuze and Deleuze and Guattari, see Wilson, 2016.

continuity of unborn, unsexed, undead eternal life. It can henceforth only be glimpsed in the miracle of electricity, signifier of the life force, libido, drive, jouissance, the light that never goes out.

The pigeons meanwhile find their antecedents not only in the chickens, crows and geese of Tesla's childhood (2011, pp. 26-29), but in a particular bodily phenomenon: a feeling of abnormal lightness. As a child, Tesla believed that his body could become 'richly charged with oxygen' thus rendering it 'light as a cork' so that he 'could leap and float in space for a long time' (p. 13). He even believed that he could transport himself through the air to distant regions of the world (p. 32); but the delusional nature of these hallucinatory experiences was exposed early on when he attempted to fly by leaping from a tall building with the aid of an umbrella (p. 32). He came down with a bump, injuring himself but surviving the fall.

Nevertheless, the experience of abnormal lightness – as if the body were hollowed out of the weight of its organs – gave buoyancy to his enthusiasm for the 'boundless possibilities' of the vacuum. Indeed, in some ways the prototype of the rotating magnetic field was Tesla's youthful idea for a perpetual motion machine that would enable mechanical flight involving a rotating cylinder powered by a vacuum: 'a flying machine with nothing more than a rotating shaft, flapping wings, and – a vacuum of unlimited power!' (p. 32). Another gnomonological principle of construction predicated on Tesla's weightless body, this flying machine would be the first of many that preoccupied Tesla particularly after the destruction of Wardenclyffe: flivver planes, fuel-less planes driven by wireless energy, hovercrafts and hydrofoils, a 'reactive jet dirigible' and other prototypes of the autonomous drones that execute enemies of the state and deliver Amazon goods today. The hollow body and the vacuum paradoxically denote and fill the void of the subject and the lack in the Other. Yet, it is precisely out of this 'hole' or vacuum that Tesla created genuinely new scientific knowledge. As Paul Verhaeghe and Frederic Declercq write, 'the creation of a new signifier or *sinthome*…is only creation insofar as it builds on the lack of the Other, that is insofar as it is a *creation ex niliho*' (Verhaeghe & Declercq, 2002, p. 14).

Tesla died living on credit in The New Yorker Hotel on January 7 1943. A short while before that winter, Tesla received a final visit from his beloved pigeon. She flew through his open window and stood on his desk. 'As I looked at her I knew she wanted to tell me – she was dying. And then, as I got her message, there came a light from her eyes – powerful beams of light. When that pigeon died, something went out of my life. I knew that my life's work was finished' (O'Neill; see also Seifer, 1998, p. 443).

Author's Biography

Scott Wilson is Professor of Media and Communication at Kingston University, London. He is the author of numerous publications including *Stop Making Sense: Music from the Perspective of the Real*. London: Karnac, 2015, and (with Eleni Ikoniadou), *Media After Kittler*. London: Rowman & Littlefield International, 2016.

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Visualization of Jacques Lacan's Registers of the Psychoanalytic Field, and Discovery of Metaphor and of Metonymy. Analytical Case Study of Edgar Allan Poe's "The Purloined Letter"

Fionn Murtagh[1]
University of Huddersfield

Giuseppe Iurato
University of Palermo

Abstract

We start with a description of Lacan's work that we then take into our analytics methodology. In a first investigation, a Lacan-motivated template of the Poe story is fitted to the data. A segmentation of the storyline is used in order to map out the diachrony. Based on this, it will be shown how synchronous aspects, potentially related to Lacanian registers, can be sought. This demonstrates the effectiveness of an approach based on a model template of the storyline narrative. In a second and more comprehensive investigation, we develop an approach for revealing, that is, uncovering, Lacanian register relationships. Objectives of this work include the wide and general application of our methodology. This methodology is strongly based on the "letting the data speak" Correspondence Analysis analytics platform of Jean-Paul Benzécri, that is also the geometric data analysis, both qualitative and quantitative analytics, developed by Pierre Bourdieu.

General Objectives and Outline

Narrative analysis is at issue here, using what has been a highly profiled text in literary studies. Our approach is unsupervised, relative to supervised learning. It involves visualization of our data, using semantic content, in such a way that there is revealing of relationships in the data. This can be taken further, if so desired, in the direction of statistical modelling and supervised machine learning. Our desire though is to deal with dynamic and fluid expression, and flow and evolution in our data content. Therefore our analysis methodology is motivated very much by the visualization and the verbalization of our data (Blasius & Greenacre, 2014). We can even state (see the Geometric Data Analysis subsection on page 31) that our methodology is data analysis integrated with information synthesis.

A prime objective in this work is the introducing of innovative potential, as both language studies and psychoanalysis still tend to reject quantifying approaches to text and psyche respectively. However, this is more due to historical differentiation within the sciences than to ultimate scientific justification. Lacan's further development of psychoanalysis and the symbolic is affected by Lévi-Strauss' structuralist reasoning,

[1] Correspondence concerning this article should be addressed to Prof. Fionn Murtagh, University of Huddersfield. Email: fmurtagh@acm.org

thus necessitating systematic approaches of visualizing these very structures. Structuralism and geometric data analysis share a common epistemology as both are genuinely relational or topological in their ways of conceptualizing entities. As a matter of fact, the first-ever presentation of correspondence analysis by Jean-Paul Benzécri dealt with textual data and the visualization of the structures that are hidden in texts. Thus, the main orientation of this paper is both innovative in a methodological sense and orthodox in an epistemological sense. In doing so, and due to the traceability of the methodic steps, it might invite scholars from language studies and psychoanalysis to apply similar strategies to their own research fields (see Acknowledgements.)

Our methodology is also highly cross-disciplinary. We aim to demonstrate how an important set of perspectives, developed by Lacan, are generally and broadly applicable, to literary theory. But an even greater objective is to apply Lacan's work to practical investigative problem-solving, including psychoanalytical investigative work. Such is our ultimate aim and ambition.

In the following 'Introduction' section, comprehensive background discussion is provided on Lacan's revealing and relevant methodology.

An initial study that is exploratory is carried out in the 'First Exploratory Study' section. Geometric data analysis is our methodology, based on the work of eminent social scientist, Pierre Bourdieu, who followed in his work, eminent data scientist, Jean-Paul Benzécri, whose earliest work embraced mathematics and linguistics.

In the Visualizing Lacanian Registers section, we show how Lacanian registers can be visualized in the context of narrative flow. The culmination of such visualization is in the subsection relating to 'Semantic Analysis of Chronology'.

Then in the 'Textual Data Mining' section we seek analytical perspectives that will be revealing in regard to discovering metaphor and metonymy. Synonyms in a semantic framework are of potential relevance. Word associations are analysed through clusters determined from the semantic mapping.

In the 'Conclusions', a link is provided to the Poe story following our preprocessing of it with each successive sentence on a new line. Furthermore a good part of the R software used in this work is provided.

Introduction to Lacan's Registers and Analytical Framework

Jacques Lacan's Language and Unconscious: Observing and Tracking the Imaginary and the Symbolic, Dynamically Engaged with the Real

Lacan's reading of Poe's story is closely based (although not explicitly indicated by Lacan) on Marie Bonaparte's reading of the same Poe's story, according to which the letter Dupin finds hanging in a letter-holder between the "cheeks" of the fireplace represents the "rephallization" of the mother (i.e., the queen, with the letter as the

phallus lacking to the queen). This has been just the main remark due to Derrida in the 1980s (Derrida 1980). See also Todd (1990, Part V, Ch. VIII, pp. 166-171). Jacques Lacan's seminar on this story by Edgar Allan Poe (Lacan, 1956) includes interpretation that is "sufficient for us to discern [...] so perfect a verisimilitude that it may be said that truth here reveals its fictive arrangement". A dialogue in the tale by Poe "presents the real complexity of what is ordinarily simplified, with the most confused results, in the notion of communication". Complexity results from: "... communication is not transmissible in symbolic form. It may be maintained only in the relation with the object." What is integral to this: "Language delivers its judgement to whoever knows how to hear it".

Then: "What Freud teaches us in the text we are commenting on is that the subject must pass through the channels of the symbolic, but what is illustrated here is more gripping still: it is not only the subject, but the subjects, grasped in their intersubjectivity, [...] who [...] model their very being on the moment of the signifying chain which traverses them". The context, that we are dealing with, is simple if we just look at events from afar. Consider the following, in Lacan's seminar. The signifier related to this purloined letter: "It remains for it now only to answer that very question, of what remains of a signifier when it has no more signification." This is our interest too, even if: "what the 'purloined letter' nay, the 'letter in sufferance,' means is that a letter always arrives at its destination".

We now turn to the following work, Ragland (2015), in order to point out motivation and justification for what follows in this article, i.e., the general and potentially very beneficial and rewarding application. Ragland (2015) presents a comprehensive account of Lacan's work. Let us summarize the important perspectives for us in this work. All citations in the following part of this subsection are from Ragland (2015). At issue is how Lacan provides a "conceptualization of mind structure" (p. 107), and that (p. 112) "Lacan gives us a means to go beyond biological or cultural materialisms." Therefore (p. 137) "Lacan was concerned with structure [...] – not with the *content* of the unconscious". Language is both representation and also an instrument: "Language itself merely represents desire at one remove" (p. 3), "language promotes jouissance, not just communication, or information" (p. 2). Thus (p. 62), "speech (or writing) carry desire [...] 'discourse' is not grammar". In this perspective, then (p. 5), "for Lacan [...] language is imposed from the outside. It is not innate or hardwired into the brain."

Fundamental to Lacan is that language's way of being an infrastructure for desire, is manifested visually and by shape, as summarized in the following terms (p. 51). "We have left behind the linear logic of linguistics and phenomenology and walked into the universe of multiform, contradictory logic that Lacan calls a way of 'topologizing'." For Lacan, one's mind is related to one's body, and the topology of the body are in particular what comprise holes, input and output, and the body surface (cf. p. 21). Important then for the mind is when body parts, and objects later, are perceived as missing, or are gaps. We have (p. 106): "the surface of the body marked by holes and rims (mouth, ear, nose, etc.)". "For psychoanalysis, topology [...] is not a metaphor, but confirms the presence of the real ... Topology is an active showing of the real of structure." (p. 120). "Topology [...] is not a metaphor. Not an allegory. It does not represent the subject. [...] Topology presents 'the foundations of the subject's

position.' The subject combines itself in the Borromean unit" (pp. 124-125). There follows how important the subject's gaze, and "visual structure" are here.

For Lacan, "language is duplicitous", and it expresses "affective knowledge", and justification for this is how language is not a set, fixed (grammatical or taxonomic) structure, but is dynamical, and fluid (p. 114): "language is duplicitous, not only because it is an agent of *repression*, but also because it does not succeed in repressing the material of identifications that aim the drives towards lures, towards the goal of repeating the familiar." "By bringing the drives into language as an affective knowledge – a montage of the real and the imaginary, the symbolic and imaginary, the real and symbolic – conflict or *torsion* can be proposed as a property of language whose referent is the concrete nature of the drives." (pp. 115-116). "In consideration of the predilection among intellectuals to think of language in purely abstract logical terms, it is vital that we become aware that there is a dynamics of language" (pp. 116-117). Ultimately, at issue (p. 127) is how we have "language as signifying something other than what it says."

Regarding "geometric" written in the following manner, it is stated that: "thought and body are geo-metric" (p. 12), "topological structure is a knowledge of being, not an academic knowledge" (p. 4), and (p. 108) "topology is not [...] a knowledge to be taught by concepts or fundamental texts: 'It is a practice of the hole and its edge'". "As a mathematical knowledge of the real, topology itself draws 'pictures' of how body, language, and world co-exist, intertwined in contradictory ways, that can be explained logically all the same." (p. 45). At issue is "Lacan's theory of a topological 'structuring' of the unconscious" (p. 46). "Lacan's topological forms [...] introduces the real into language, as a set of affective, albeit emotionally ungraspable, meanings." (p. 112).

Metaphor and metonymy are quite central issues here: "each of Lacan's discourse structures has [...] the double, substitutive structure of metaphor" (p. 57), and "interpretation works as a metaphor which allows substitution of one thing for another" (p. 5), with this perspective (p. 88): "the dialectical link between metaphor and metonymy as poetic tropes that make the brain function", "He described condensation as metaphors (substitutes) linked to the object that *causes* desire [...] by the concrete metonymous displacements and contiguities of desire." For Lacan, "structure is Borromean. By Borromean he means the knotting together of the symbolic, imaginary, and real dimensions bound together by the symptom/*sinthome*." (p. 24). There are: "the three different dimensions of knowledge – the real, the symbolic, the imaginary" (p. 2). So there is the following, with a major role in our work that will follow: "the signifying chain is not [...] grammar, language, or writing, but, rather, a chain of dimensions – Real, Symbolic, Imaginary" (p. 63). Thus "the real of the (partial) drives [...] what is repressed in the real returns, anyway, into the symbolic order of language and social conventions." (p. 106). "The drive [...] designates the prevalence of an 'organic' dimension of symbolic and imaginary traits that coalesce with the real of the flesh as a mapping in language" (p. 106).

While fully separate from what will follow in our analyses of Poe's "The purloined letter", it is nice to note, in the paragraph to follow, how Lacan also used the term "letter"! "Ancient cave paintings were a writing before writing, a way to make a meaningness Lacan called the letter" (p. 12). This expresses a role for this term, letter:

"every truth has the structure of the fiction and that truth and fiction are linked by the *letter*. The function of the letter is topological. ... it indicates the *place* where language and the unconscious are linked" (p. 12). Here, there is: "a 'letter' or visual representation" (p. 127). "Lacan described the *lettre* as a *place* where being (*l'être*) resides between the unconscious and language, calling the *lettre* a localized signifier that one can recognize as language converging with the unconscious" (p. 136).

Psychoanalytical Use of Edgar Allan Poe Story

Edgar Allan Poe's "The Purloined Letter" (1845a,b,c) is a story that is investigative and elaborative. It is not just explanatory, reducing the case study in this story to facts and assertions that are ordered. Rather, it is also elucidatory, and positioning in a larger, broader, contextual picture. Also this allows to identify better where truth lies by means of simple psychoanalytic tools. Positioning is done through contextualization. We hypothesize that any and all such elucidation, and contextual positioning, is potentially relevant for various domains such as theatre and drama, legends and mythology, and *mutatis mutandis*, for poetry and music. Therefore, Poe's story is not simply the investigation of illegal behaviour. There are parallels and analogies drawn with schoolboys playing with marbles and strangely enough with mathematical reasoning. These strange connections are just possible in the unconscious realm. A lot of foremost thinkers have discovered, or at least viewed, very interesting mappings of Poe's story into the most interesting contexts. See Department of English at FJU (2010) for discussion with graphical portrayal of Michel Foucault, Jacques Lacan, Jacques Derrida and others.

Description follows of the psychoanalytical approach developed by Lacan, encompassing analysis of synchrony and of diachrony. Diachrony can be based on the inducing of a segmentation of the narrative or storyline into a sequence of main scenes or acts (Bottiroli, 1980, 2006). The synchronous elements decompose any act by means of the three Lacanian registers or orders of the so-called psychoanalytic field in which every human event performs at the unconscious level. The three Lacanian registers, comprising the *psychoanalytic field*, are the real, the imaginary and the symbolic (Richardson, 1985). Lacanian psychoanalysis seeks to outline the co-participation of these three registers in each event and subject of the story, but with a synchronic predominance of one over the others, which will then be the one that is diachronically identifiable. However this is only under the surface of symbolic, the only register that represents the other remaining two (Recalcati 2012-16, pp. 549-550). Our study has the following objective. Firstly we seek to reveal or to determine Lacan's registers in a highly realistic case study. Our mapping of Lacan's registers in the Poe story leads to visualization, to represent visually these registers, in the context of their roles. Specifically seeking metaphor and metonymy is at issue in a later section.

Source of Data and Preparation

In this subsection, and throughout this paper, we detail the data processing carried out, firstly for reproducibility of this study, and secondly for all aspects relating to generalization of this work, and application to other textually expressed content.

The Edgar Allan Poe text of "The Purloined Letter" was taken from Poe (1845a). Accented characters required correction, following the 1845 editions in Poe (1845a,b,c). A program was run on this text that determined sentence boundary (using a full stop), and also took into account blank lines that indicated paragraph boundary. Some cases of repeated dashes, repeated dots, exclamation marks and question marks were modified manually in the input text. The processing allows the specification of standard contractions that are not to be taken as sentence boundaries. (The following were at issue in regard to being ended with a full stop or period but this did not connote the end of a sentence: *no, No, C, G, St*.) A CSV (comma separated values) formatted file was created, with the sentence sequence number, the paragraph sequence number, and the sentence content. This led to 321 sentences and 123 paragraphs. For each paragraph, the speaker was also noted: the Narrator, Dupin and the Prefect. In the following subsection, some further background description on the Poe story will be provided.

Dramatis Personae

The characters in this short story are as follows: (1) C. Auguste Dupin (young private detective); (2) Monsieur "G – –", or G. or Prefect (police chief); (3) the narrator (Dupin's friend and roommate); (4) the Minister "D – –", or "the D – –", or the minister (the villain); (5 and 6) the personage [in the royal boudoir], or other unnamed royal person (often considered as Queen, King); and (7) "S –", sender of the letter (only one occurrence of this name). Examples follow of the first and the last sentences.

- First: "At Paris, just after dark one gusty evening in the autumn of 18 – , I was enjoying the twofold luxury of meditation and a meerschaum, in company with my friend, C. Auguste Dupin, in his little back library, or book-closet, au troisième, No. 33 Rue Dunôt, Faubourg St. Germain".

- Last: "They are to be found in Crébillon's 'Atrée".

Brief Background on the Geometric Data Analysis Methodology

Our approach is influenced by how the leading social scientist, Pierre Bourdieu, used the most effective inductive analytics developed by Jean-Paul Benzécri. See Le Roux and Rouanet (2004), Grenfell and Lebaron (2014), Lebaron and Roux (2015). This family of geometric data analysis methodologies, centrally based on Correspondence Analysis encompassing hierarchical clustering, and statistical modelling, not only organises the analysis methodology and domain of application, but even integrates them. The second in a set of principles for data analytics, listed in Benzécri (1973, page 6), included the following: "The model should follow the data, and not the reverse. ... What we need is a rigorous method that extracts structures from data." Closely coupled to this is that (Benzécri, 1983) "data synthesis" could be considered as equally if not more important relative to "data analysis". Analysis and synthesis of data and information obviously go hand in hand.

The work of Andreas Schmitz, dealing with Angst and fear (Schmitz, 2015, Schmitz and Bayer, 2014), links together Freud and Bourdieu, for example, in regard to "libido

within habitus-field theory". Among the conclusions in Schmitz (2015) are how we have:

1. "Libido constitutive for the foundational concepts of *habitus* and *fields*".
2. Janus-faced character of libido: interest and Angst as constitutive moments of (i) Habitus and practice, (ii) Social space and social fields, and (iii) Symbolic domination.

In Schmitz and Bayer (2014), also presented in Schmitz (2015), the limits are noted of statistical linear modelling for relating personality factors in social space. Moving beyond that methodology, there is categorical interest and personality types, accompanying the socio-structural information for the geometric construction of social space. The aim is to demonstrate in general, whether psychological characteristics will correspond with the structure of social space in a discontinuous way. (This summarizes perspectives in Schmitz and Bayer, 2014, p. 11. The following is from p. 14.) Habitus defines the nexus between structure and subject, whereby the correspondence of social position and "psychic" disposition are understood as class-specific, and thus discontinuous. Psychiatric indicators are used in a discontinuous way (as befits such categorical variables). From a psychoanalytic viewpoint, the habitus roughly corresponds to Freudian super-ego agency, hence it belongs to the Lacanian symbolic register. So, studying the latter, we might infer features of habitus, hence answer to the above issue regarding links between psychological characteristics and social structure. We shall focus on the linguistic.

First Exploratory Study: Analysis Using Simple Diachronic Model

Below, in this paper, most of the set of words in the Poe text are used. This is so as to take account of emotion and sentiment, expressed language-wise through adjectives and adverbs, and so on. Also below, text-based, i.e., data-based, story or narrative flows are considered. In this first study, a somewhat simplified diachronic model of the Poe story is used. That is, a model of the evolution or flow of the story is used. This is strongly based on a Lacanian interpretation. Also in this first study, from the text of the Poe story, nouns are used. This is in order to have a relatively quick, first view of the relationship between key terms. We consider now, the Lacanian motivation, and indeed justification, for this work.

Lacan's *psychoanalytic field* is structured into three dimensions or orders, termed the *Lacan registers*, which may be considered as components of this field, closely linked to each other (*Borromean knot*). These are the *symbolic register*, the *imaginary register* and the *real order*. The Lacan psychoanalytic field relies on the unconscious realm. The *symbolic register* is that field component in which *signifiers* act, operate and combine according to laws and rules of structural linguistics, above all the negation. The main law of this field component is the so-called *Name-of-the-Father*, which triggers the formation of the *signifier's chain*. This register is the most prominent one in acting on the individual, through the intervention of imaginary register. The *imaginary register* is that field component which springs out of the unconscious apprehension of one's own bodily image of the child (*mirror stage*) on the basis of the primary dual relationship of identification with one's own mother. It is

the basis for the growth, by *alterity*, of the Ego agency and the narcissistic pushes, when mother, through Name-of-the-Father law, casts the child into the symbolic register, naming her or him. The *real order* is that field component which is defined only in relation to symbolic and imaginary registers, where there is all that impossible, unbearable or inexpressible content expelled or rejected by these latter two registers. The symbolic and imaginary registers, together with the real order, are in relationship to each other, mostly in opposition.

A simple example of the action of the three registers is as follows. This is a good example of Imaginary-Symbolic interconnection. This is the case of Venice with its renowned carnival. Indeed, this carneval was instituted around 1090 and as early as that date, many tide phenomena flooded Venice, i.e., the unconscious-Imaginary impregnating Venice meant the coming about of this institution of the Symbolic to quite popular malcontents due to social status differences (just featuring the Symbolic), levelling these for instance with masks which made possible the anonymity, the indistinctness, that are most typical of such unconscious relationship as the mother-child relationship of the Imaginary. All the artistic creativity typical of Venice carnival is due, we can claim, to the irruption of the Imaginary (tide and flooding) in the Symbolic. This agrees with the well-known interest of Lacan toward surrealism! In this case, we might claim further that the fear of death due to the flooding of sea water, just belonging to the Real, is such that we have a practical example of Borromean interconnection We observe the Real-Imaginary-Symbolic relatationship.

Table 1

Very summarized rendition of the Poe story. Summary of participant roles, relative to Lacanian registers.

Lacan registers	**Persona**
	Act 1
Real	Queen aware of the letter's content (just belonging to Real register). Inconceivable content of the letter, besides, unknown.
Imaginary	Queen worried about letter and its content. This was then hidden. The Queen belongs to this register as she has hidden the letter; this is a behaviour just belonging to Imaginary register.
Symbolic	Minister seizes letter using apparent substitution with own letter. The King, as main signifier giving rise to the symbolic chain to which he is inscribed.
	Act 2
Real	Police also unsuccessful. Police were on Queen's request. Hence unaware. [Required solution: link between real (the Queen, the only persona to know letter's content) and symbolic (Police interviews because of it being inscribed in a symbolic order).]

Lacan registers	Persona
Imaginary	This Imaginary register, in which operates Minister (as a robber), then seen as a poet (belonging to imaginary register the one related to mere creativity and art), thanks to which prefect didn't catch him. Indeed, Poe says too that prefect (belonging to symbolic, i.e., the blind person who does not see the letter) would have caught him if he had had a mathematician's behaviour (symbolic - see next Act 3), as Minister was both a poet (imaginary) and a mathematician (symbolic).
Symbolic	Dupin, having his aim disguised, sees probable letter; returns; seizes letter using apparent substitution with own letter. Prefect and Police intervention because of their nature and behaviour, which make them belonging to symbolic register.
Act 3	
Real	Minister unaware, could be threatened also by this affair. Letter with its content now known to Dupin and which might be revealed.
Imaginary	Dupin replacement letter had sinister sentence. Dupin's revenge in regard to Minister, left to be presaged or described or guessed by the Crebillon sentence written by Dupin.
Symbolic	Here: the letter, the signifier, in its circuit. [It was/is real; the imaginary was associated with it; symbolic related to apparently similar letters, and also being related to various associated contexts.] Minister seen not as a poet (Act 2) but as a mathematician with accordingly a behaviour belonging to symbolic register

The main message of this Lacan seminar is to stress the predominace of symbolic order in constituting human being as such, illustrating this by means of a Poe story in which Lacan emphasizes how a simple signifier (the letter, which reifes or materializes, according to Lacan, the death agency) and its pathway, determines the whole scenes, in particular, it determines the succession of the three personages involved there, with their role, each of whom occupies that position just determined by the letter (signifier) and its movements, which is never where it is as it is the symbol (in that, signifier) of an absence. On its turn, the seminar also stands out the imaginary's impregnations owned by symbolic chain, which mark the unavoidable insistence of the death drive by means of the compulsion to repeat mechanism.

Lacan underscores the precedence of signifier (letter) on signified (letter's content), which is besides unknown. What is important is that there is contained in this letter, whatever is its effective content which, nevertheless, cannot be revealed (real order) because it is a letter addressed to the queen who is inscribed into a precise symbolic register that, as such, surely warrants, in the symbolic chain in which it is inserted, the symbolic imposing, a priori, of the (unknown) signified just vehiculated by the (known) signifier. This latter will mould the disposition of the other various signifiers (personages) along a chain which will give rise to symbolic order. So, it will be the

various personages of the scenes to be placed along a well-determined chain (of signifiers) of the symbolic order, and only this chain will be given, signified, to every subject (personage) so involved: the queen and the king are placed near real register because of the not revealable content of the letter (which is ineffable just because it belongs to the real register); the minister is mainly placed in the imaginary register (because of his feminine curiosity, intricacy and narcissistic push which led him to become even a thief), as well as Dupin, but with touches also with real register, which constantly provides the right fear to the intrepid actions which they perform; while police and prefect are located in the symbolic register because they represent the law and are in search of what belongs to symbolic, i.e., the letter, but without results because fully immersed in it, without the right amount of imaginary needs to see. Thus, signified (meaning) springs out only once the chain of signifiers (words) is established into the symbolic order. So, the symbolic order with the predominance of signifier on signified, moulds, in a well-determined chain, the various personages and their intersubjectivity: there cannot exist a single, isolated subjectivity but rather an inter-subjectivity provided by the reciprocal opposition between the elements existing in the chain along which they are placed, inserted just by symbolic order. Hence, it is the symbolic order of signifiers that give a precise disposition to the personages in action in the scenes, giving them too an intersubjectivity which exists only within this chain that determines them.

The consequences of the (besides unknown) content of the letter belong to the real register. The chain of signifiers that it emits, belongs to the symbolic register, while it is the imaginary which glues together the rings of such a chain, the register that can spring out only thanks the intervention of a woman (indeed, only the queen knows the real content of the letter) during the relation child-mother.

In Table 1, there is a useful, very summarized, rendition of the Edgar Allan Poe story. It is structured as what we label here as the succession of Acts 1, 2, 3. One register will dominate others synchronically, i.e., at any given time-point. The symbolic register will win out, in that there is a fairly natural progression from the real, to the imaginary, thereby resulting in the symbolic. The real register is occupied by what the symbolic ejects from reality, and that cannot be formalized by language.

In this first study, the Poe story consists of 321 sentences, and a corpus of 1741 words. These words are of length at least 1, all punctuation has been removed, and upper case has been set to lower case. Then we require a word to be present at least 5 times, and used in at least 5 sentences. Next, words in a stopword list were removed. These are (definite, indefinite) articles and common parts of verbs, and such words (using the *tm*, text mining, package in the R software package). Single letter words were also deleted (e.g., “s” resulting from “it’s”, or “d” resulting from “didn’t”, when the apostrophe here was replaced by a blank). Then just nouns alone were selected. There were 48 nouns at this stage. Some of the 321 sentences became empty. There were 213 non-empty sentences, as noted, crossed by 48 nouns. In the 213 sentences, there were 424 occurrences of these words.

The sentence set, characterized by words used, endowed with the chi squared metric is mapped, using Correspondence Analysis, into a Euclidean metric-endowed factor space. In order just to retain the most salient information from this semantic, factor space, we use the topmost 5 axes or factors. These 5 axes account for 17.75% of the

inertia of the sentences cloud, or identically of the nouns cloud. Figure 1 displays the hierarchical clustering of the sentences, that are in their 5-dimensional semantic or factor space embedding. The complete link agglomerative clustering criterion permits adherence to the sequential order of the sentences (Murtagh, Ganz & McKie, 2009; Bécue-Bertaut et al., 2014, Legendre & Legendre, 2012).

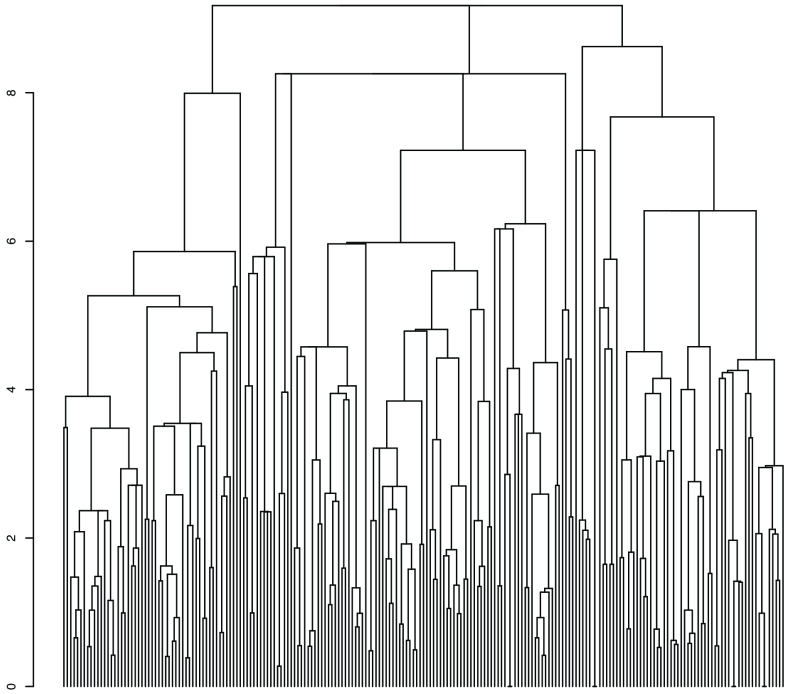

Figure 1

Hierarchical clustering of sentence by sentence, based on the story's sequential structure. There are 213 sentences here, being the terminal (or leaf) nodes, ordered from left to right. Each sentence contains some occurrences from the corpus of 48 nouns that are used. The vertical axis, for such a dendrogram, records the cluster criterion agglomeration values and levels.

To follow our template of three acts, we take the three largest clusters. In the dendrogram in Figure 1 we therefore have the partition, containing three clusters, close to the root node. These clusters relate to sentences 1 to 53, sentences 54 to 151, and sentences 152 to 213. These are to be now our acts 1, 2, 3, following the template set out descriptively in Table 1. The number of sentences in each of these acts is, respectively, 53, 98, 62. Next for analysis, we create a table crossing 3 acts by the noun set of 48 nouns.

The complete factor space mapping is just in 2 dimensions. We may just note the visualization benefits that follow the relating of nouns to what we term the acts, rather than the individual sentences. Figure 2 displays the words that have the highest

contribution to the inertia of this plane. To see the relationship between the words that are close to the origin, thus essential to the whole of the narrative line, to all acts, Figure 3 displays the region of the plane that is close to the origin. We see "letter" and other words.

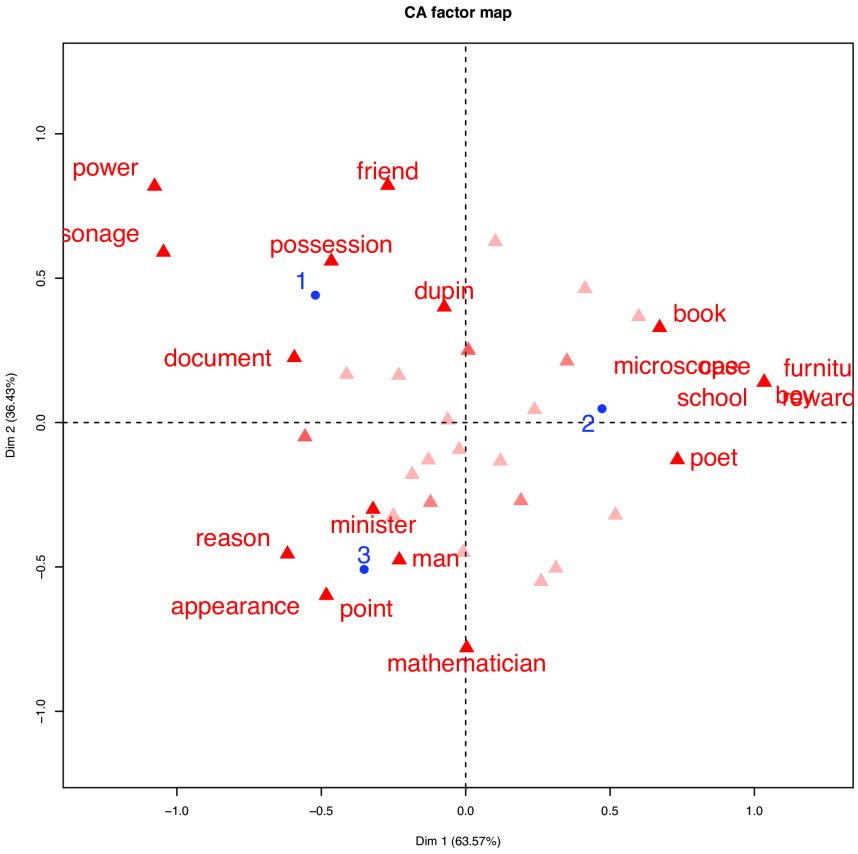

Figure 2

Correspondence Analysis, top contributing 20 words. Words with high contribution, somewhat overlapping in this display, with projections on the positive factor 1 are: case, microscope, school, reward, boy, furniture; and book, poet. Also displayed are the three acts, 1, 2, 3.

Figure 3

From Figure 2, here are shown the words that are near the origin.

We can try to investigate the internal structure of our "template" acts.
Figure **4** displays the hierarchy (using the appropriate agglomerative criterion of Ward's minimum variance) constructed in the 2-axis or 2-factor embedding of this data. From left to right here, the three clusters resulting from the dendrogram cutting, or slicing into a partition, as displayed, correspond mapping-wise to act 2, act 3, act 1. Cf. what is displayed in Figure 2.

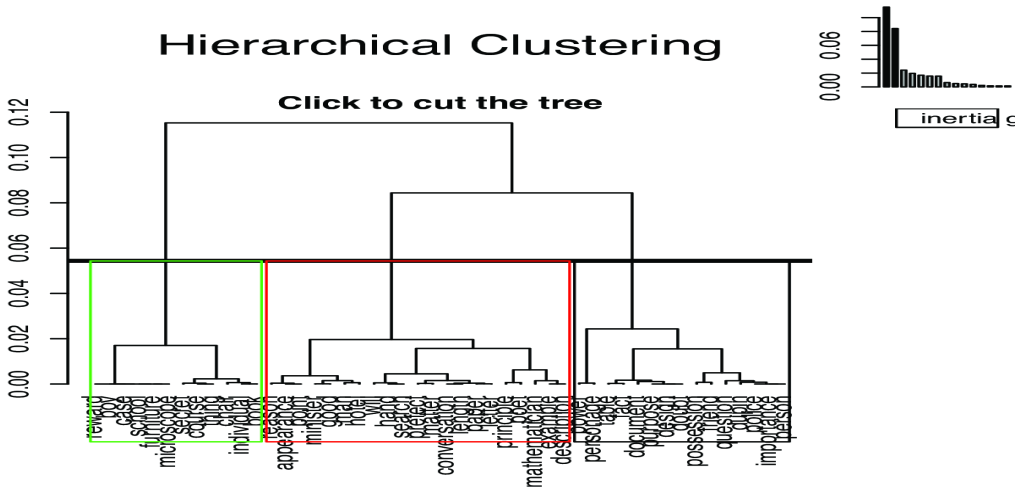

Figure 4

Hierarchical clustering of the word set, from the 2-axes, correspondence factor space, semantic mapping of this data. Here the hierarchy structure is visually displayed.

With the perspective of Lacan's registers we could look at a set of three clusters in each of these acts. Let us look at the leftmost cluster here. We can read off the following three clusters: first cluster, "reward, boy, case, school, furniture, microscope"; second cluster, "secret, course, thing"; third cluster, "chair, individual, book". This has just been reading off three fairly clearly determined clusters. Of course we can see that the second cluster and the third cluster are merged fairly early on in this agglomerations.

Rather than attempting to relate these clusters with Lacan's registers, let us instead just draw the following conclusion. In this first study, it has been shown how a template of segmentation can be easily considered. So the diachrony can be investigated. In our opinion, the retained words consisting of nouns are a good way to focus our study, and also while we succeeded well in imposing our template of the segmentation of the Poe story into three acts. However while they certainly lead to interesting perspectives, for general-purpose use of this methodology, it would be preferable to allow for a somewhat more open perspective on the data. This we do next, analysis of diachrony and of synchrony, both newly investigated.

Visualizing Lacanian Registers in the Narrative Flow

Lacanian Framework

Fundamental aspects of Lacanian methodology encompass the following (Richardson, 1985):

- Metonymy, e.g., the name of the cause is used for denoting the effect or the object; it is associated with, and expressed by, diachronicity. Diachronicity horizontally combines patterns into metonymy. Finally, metonymy is to be associated with (Freudian) unconscious displacement, shifting and moving, under the pushes or drives of desire, the various signifiers, without an end but rather aimed always at seeking the lost object (lacking for the human), which escapes every signification.
- Metaphor, e.g., a word or term is replaced with another similar or analogous term; through selection, metaphor is enabled by synchronicity. Synchronicity vertically selects patterns into metaphor. Finally, metaphor corresponds to (Freudian) unconscious condensation, which disguises and upsets meanings, until reaching the deepest unconscious levels. Metonymy and metaphor are the two main (Freudian) pathways of semantic action.
- Signifiers will constitute the symbolic register. These signifiers combine like the basic structural elements of a language. The signifiers of the symbolic register undergo the rules of metonymy and metaphor. For Lacan, the signifier dominates the signified, and not vice versa (as for Ferdinand de Saussure), through certain structural rules (similar to the linguistic ones) in which the former (signifiers) link together to give rise to signifier chains. Signifier chains are diachronic combination of signifiers synchronically selected, in which the signifiers follow each other oppositionally, like the words of a phrase. Indeed, (synchronic) selection includes the case where a signifier excludes another one but remains in relationship with that other signifier, at least negatively, according to Aristotelian logic. These signifier chains will acquire then a conscious meaning following usual grammatical rules.
- The Imaginary is a register complementary to the Symbolic one. Generally, it is the realm of images and of the sensible representations (mostly, the visual ones) which mark our own lived experience. Imaginary fantasies and representations (thing representations) belong to the imaginary register as well, which will prepare the ground for the subsequent word representation.
- The Real is not reality as this is usually meant, that is to say, the world of everyday experience, which is already characterized by images and symbolic language, but it rather deals with the primary, rough experience of what is still not symbolized or imagined, with the impossible, that is to say, what is impossible to inscribe in every symbolic system, or however represented in any possible imaging form.

Narrative Flows

All discourses, happenings, history, etc. are narratives, with one or more, and often many, narrative flows. In the narrative, there are various chronologies that may be investigated as sub-narratives. These include the sequence resulting from: (i) sections,

(ii) speaker or agent, (iii) time or date or location, (iv) statistical segmentation into sections. The latter may be through syntax and style based clustering since tool words (function words) predominate. To the above can be added: (v) sentences, (vi) paragraphs. All this, is the result of the diachronic nature of the discourse, which, therefore, is explainable through Lacanian theory. In particular, Lacan points out that, in the symbolic register, the diachronic selection axis of discourse is closely related with synchronic combination of signifiers which gives rise to the diachronic meaning, or signified, of the discourse. These combination and selection processes, taking place in the symbolic register, are greatly influenced by the real register and, especially, by the imaginary register. These latter both push on the former.

We seek the most enlightening or the most illustrative of these narrative flows. By enlightening, we intend: seeking or determining specific outcomes. By illustrative, we intend: detecting or observing dialectical movement, or Aristotelian logic, or unconscious mind processes. We are most interested in (i) metaphor, being an indicator of unconscious mind processes, for its synchronic nature, and (ii) metonymy, i.e., a term indicating diachronic employment (or use), that can be, therefore, transfer and handover. Following the mapping of the text story into a semantic space, in regard to combinations of signifiers according to Lacan, for (i) metaphor, due to its synchronic nature, we use clustering. While, for (ii) metonymy, due to its diachronic nature, we use sequence constrained, i.e., chronologically constrained clustering. In (i) our aim is close association, expressed by highly compact clusters, while in (ii), we may consider varied chronological flows. Our semantic analysis starting point is the set of all interrelations between narrative flow segments, belonging to the diachronic selection axis, and the words selected and retained, belonging to synchronic combination axis. We have that: "One terms the distribution of a word the set of its possible environments" (Benzécri, 1982).

Text Narrative Analysis: Initial Processing Stages

The Poe story, in our text formatting, consists of 321 sentences, arranged as 123 paragraphs. As noted above, paragraph here is defined as text segments that are separated by blank lines. That includes vocal expressions, perhaps with some additional explanatory text, and also it may be noted that a few of the vocal expressions can be quite short. Nonetheless it is clearly the case that the paragraphs form useful text, and narrative, segments. Next we also considered a segmentation into 8 sections, based on a reading of the Poe story. The introduction part of the story had 19 paragraphs. The initial outlining of the essential story, relating to the purloined letter, told by the Prefect with dialogue elements from the narrator and from Dupin, constituted section 2, with 26 paragraphs. Section 3, with 28 paragraphs recounted the Prefect's search of the Minister's hotel room. Section 4, with 14 paragraphs, takes place one month later, detailing the revelation that Dupin could provide the letter to the Prefect. Then section 5, with 6 paragraphs, starts off the background explanation by Dupin to the narrator. Section 6, with 16 paragraphs, continues in great detail as Dupin provides explanation to the narrator. Section 7, with 8 paragraphs, is the core of the storyline, where Dupin explains how he found the letter, how this was verified by him, and how he took hold of it in the following morning, putting what is referred to as a facsimile in its place. Finally section 8, with 6 paragraphs, is the explanation of, and justification for, the replacement of the letter by a facsimile.

Because of the consolidated and integrated description, with motivation and explanation, Dupin's explanation of all of this, in sections 5, 6, 7, 8, may be additionally considered in our analysis. We have just noted the paragraphs that correspond to these sections. Section 5 begins with sentence 172 (in the set of 321 sentences). So the Dupin explanatory sub-narrative, in dialogue with the narrator, embraces sentences 172 to 321, that is, paragraphs 88 to 123. So the Dupin sub-narrative here comprises 151 sentences, that are in 36 paragraphs. Our next step in data preprocessing is to select the word corpus that will be used. This starts with removal of all punctuation, numeric characters, and the setting of upper case to lower case.

It is reasonable here to remove tool words, also referred to as function words. In Murtagh (2005, chapter 5), and in Murtagh and Ganz (2015), the case is made for these function words in mapping emotional narrative or stylistics (e.g., to determine authorship), but these are not of direct and immediate relevance here. Instead, as outlined in the 'Introduction' section, metaphor and metonymy are the forensic indicators, or perhaps even the forensic highlights, for us. Sufficient usage of the word in the storyline is important. While very clearly the case that one-off (isolated, unique) use of a word can be very revealing, nonetheless we leave such an investigation to an alternative comparative study of storyline texts. Sufficiently frequent word usage both supports comparability between the text units we are studying, and also permits the focus of the analysis to be on inter-relationships, and not on uniqueness of word usage. Therefore we require the following for our word corpus: that a word be used at least 3 times in the overall storyline, and that this word be used in at least 3 of the text units (sentence, paragraph, section) that we are dealing with. For the 321 sentences, we start with 1742 words. There are, in total, 7089 occurrences of these words. Then, having removed stop words, and requiring that a word appear in 3 sentences and be used at least 3 times, we find that our 321 sentences are characterized by 276 words. There are 1546 occurrences, in total, of the corpus of 276 words. For the paragraphs, proceeding along the same lines, the 123-paragraph set is characterized by the 276 word set, and there are, as for the sentence set, 1546 occurrences, in total, of the corpus of 276 words. For the sections, once again proceeding along the same lines, the 8-section set is characterized by the 276 word set, and, again clearly, there are 1546 occurrences, in total, of the corpus of 276 words.

This data preprocessing and selection is carried out for the following objectives. Firstly, we will have one or more levels of text (hence, storyline) unit aggregation so that the principal factor space axes account for most of the information content. (Were it the case of having rare words in the analysis, then axes would be formed in the factor space to account for them.) We recall that for n text units, characterized by m terms, the factor space dimensionality will be $\min(n\text{-}1, m\text{-}1)$. This first point relates to the use of paragraphs and sections. Let us note that in Bécue-Bertaut et al. (2014), where the flow and evolution of narrative is the aim, our aim is a little different here, because the text units that encompass the most basic text units, the sentences, can be themselves interpretable. Cf., e.g., vocal expression on a theme being all in one paragraph. Secondly, our selection of words directly impacts the interpretation of the data.

A Preliminary Visualization of the Narrative Structure

We have here the successive sentences characterized by their constituent words, from the retained corpus. We firstly map the cloud of sentences, 321 sentence cloud in a 276-dimensional word set space, into a Correspondence Analysis factor space. Since the word set has been reduced from the original set of 1742 words, some sentences become empty. Non-empty sentences account for 310 of these 321 sentences. In Figure 5 we required words to be at least 5 characters long. This led to a corpus of 205 words, with 293 sentences not becoming empty.

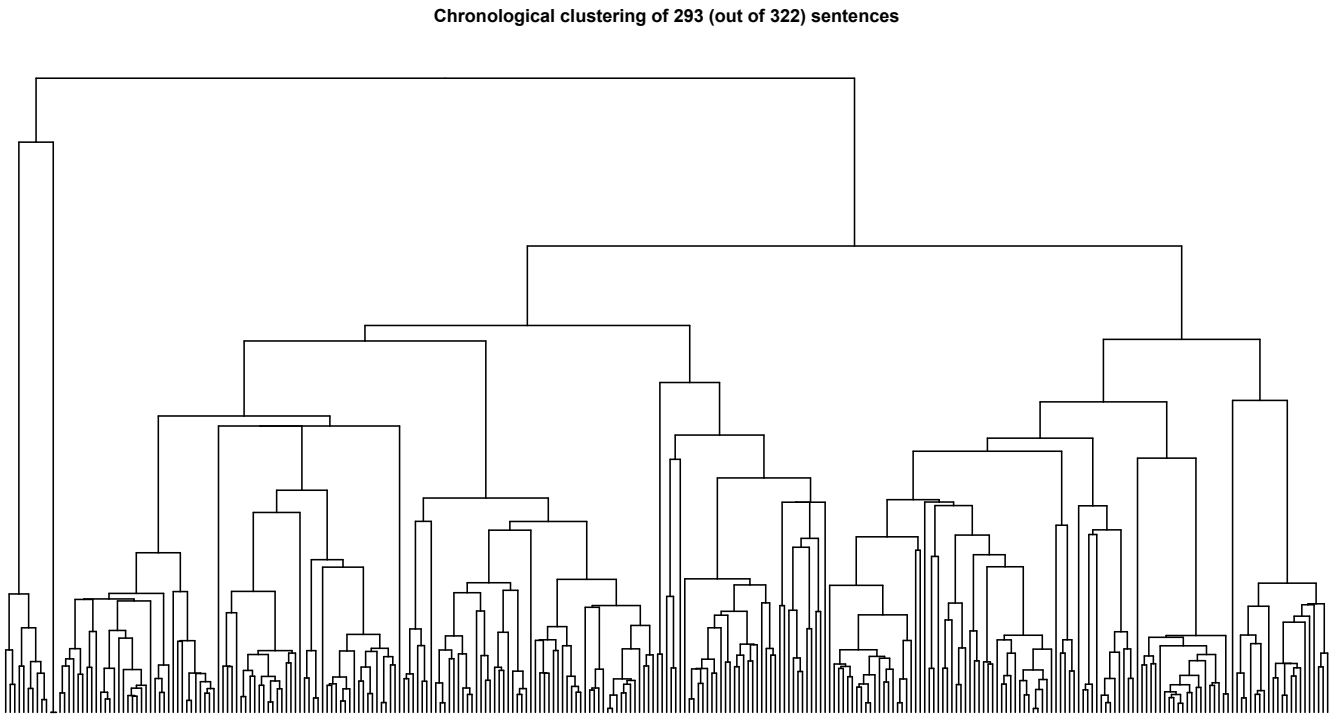

Figure 5

Contiguity-constrained, where contiguity is the chronology or timeline, hierarchical clustering of the 321 sentences. These sentences are characterized by their word set (1087 occurrences of 205 words). This hierarchy is constructed in the factor space, of dimension 5, that is endowed with the Euclidean metric. Due to the reduced word entailing that some sentences become empty, the number of sentences in the correspondence factor analysis was 293 (from the 321). Here the dendrogram structure is displayed.

In Figure 5, sentences 11 and 12 are merged very early in the sequence of agglomerations, and these sentences are found to be quite exceptional. They are as follows: Narrator: “Nothing more in the assassination way I hope? “, Prefect: “Oh, no; nothing of that nature”. The two large clusters that are merged at the 3rd last agglomeration level have the last sentence of the first large cluster, and the first sentence of the second large cluster as follows. Sentence 182: “But he perpetually errs

by being too deep or too shallow for the matter in hand; and many a school-boy is a better reasoner than he." Sentence 193: "I knew one about eight years of age, whose success at guessing in the game of 'even and odd' attracted universal admiration." This is early in what has been taken as the Dupin explanatory section of the narrative. The second very large cluster constitutes the major part of this Dupin explanatory part of the storyline.

In Bécue-Bertaut et al. (2014), it is described how the text units, taking account of the chronological order, can be statistically assessed (using a permutation-based statistical significance testing) at each agglomeration, for the agglomeration to be based on a pair of homogeneous clusters. This allows derivation of a partition of the set of text units. Since the chronological, hence contiguity, constraint applies, this partition is a statistically defined segmentation of the text units. In this particular work, we prefer to use paragraphs and sections, as described above, in view of their interpretability.

Visualization of Lacanian Registers from Semantic Analysis of Chronology Using Storyline Segments

In this section, we are most concerned with diachrony, or the evolution of the narrative. For this, we find a correspondence – what we may refer to as homology, in the sense of Bourdieu-related geometric data analysis – between a pattern that we uncover in the data, and Lacan's registers, viz. the Real, the Imaginary and the Symbolic. In the storyline here, we find an evolution, or narrative trajectory, between these registers. Lacan's registers are of value to us as an interpretive viewpoint. It has been noted above (`Lacanian Framework' subsection), how both synchrony and diachrony of the semantics of the storyline narrative are of importance here. As noted also, we can determine statistically a segmentation of the narrative. This is achieved through first mapping the narrative into the semantic factor space, taking account of all interrelationships of narrative text units and the words and terms that are associated with these text units. For interpretation, we prefer (see `Initial Processing Stages' subsection) to use what we have selected as natural segments in the narrative text. The cumulative percentages of inertia associated with factors 1 to 7 are as follows: 20.2, 38.1, 54.2, 68.8, 81.5, 92.9, 100. The principal factor plane is displayed in Figures 6, 7. The chronological trajectory is to be seen in the first of these figures. The second figure has a triangular pattern, that is a display of the narrative, with reference to the chronology of the narrative. Usually with such a triangular pattern, we look especially towards the apexes in order to understand it. Figure 7 shows the most important words.

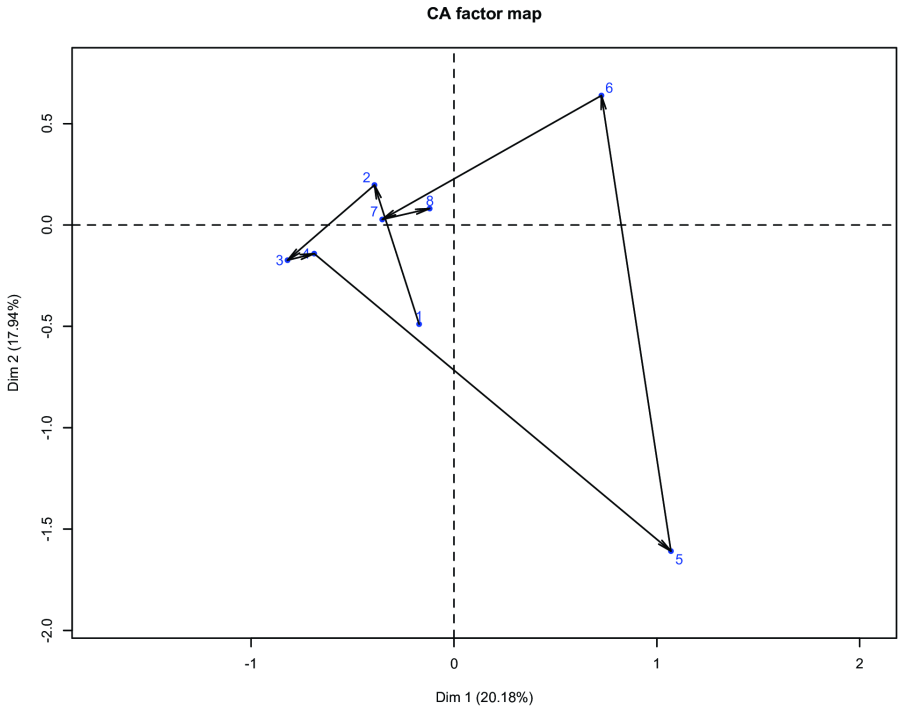

Figure 6

Principal factor plane of the 8 story segments crossed by the 1546 occurrences from the selected 276-word corpus. Arrows link the successive segments, numbered 1 to 8.

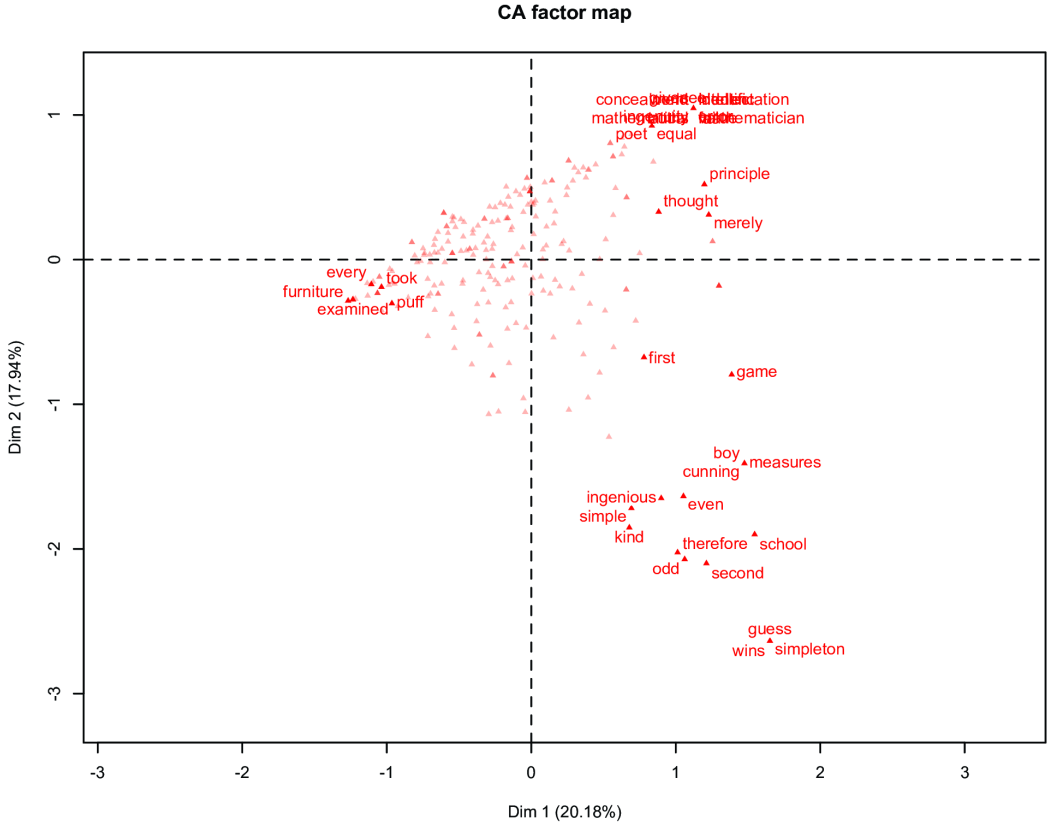

Figure 7

Displayed here are the 40 words that most contribute to the inertia of these factors, factors 1 and 2. In the upper right (beyond equal, poet), terms are: “mathematician”, “world”, “value”, “truths”, “see”, “mathematical”, “intellect”, “fail”, “error”, “ingenuity”, “identification”, “hidden”, “given”, “concealment”, “reason”, “hand”.

From this display, taking the Figures 6, 7 (not overlaid in the same figure, to make the displays clearer), we can conclude in this way: segments 1, 2, 3, 4 are gathering facts and impressions from the Real; segment 5 advances into the Imaginary; segment 6 expresses this in a Symbolic way; and that allows a consolidated, integrated, “overall picture”, core of segments 7, 8.

In Figures 8 and 9, factors 3 and 4 are displayed. If this viewpoint expressed above is acceptable, namely that segments 5 and 6 comprise the move towards the Imaginary, then towards the Symbolic, then we can draw this perspective: that the effect of these two segments in the overall narrative is to take such segments as segments 3 and 4, operating in the Real, then work through the Imaginary and Symbolic discussion, and arrive then, as a consequence, at the final, terminal and more conclusive segments, segments 7 and 8. In a way, we are drawing the conclusion, from this particular storyline, as to how the Imaginary and the Symbolic serve to be taken into (and become part of) the Real, or how the Symbolic emerges from the Real and the Imaginary.

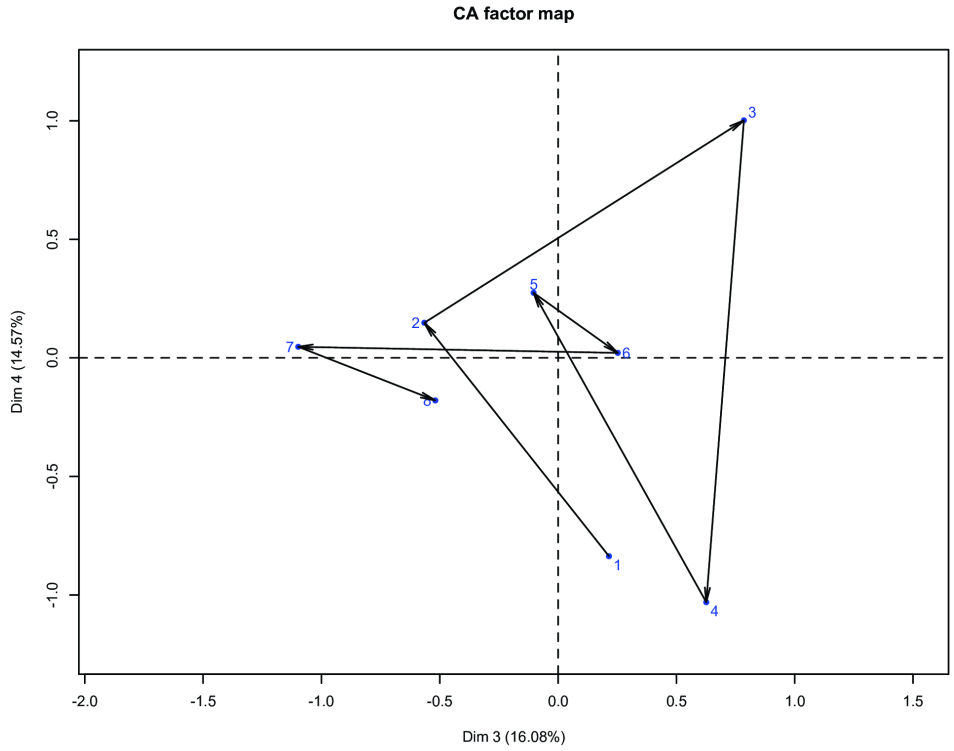

Figure 8

Plane of factors 3, 4, displaying the 8 story segments, with arrows linking the successive segments, numbered 1 to 8.

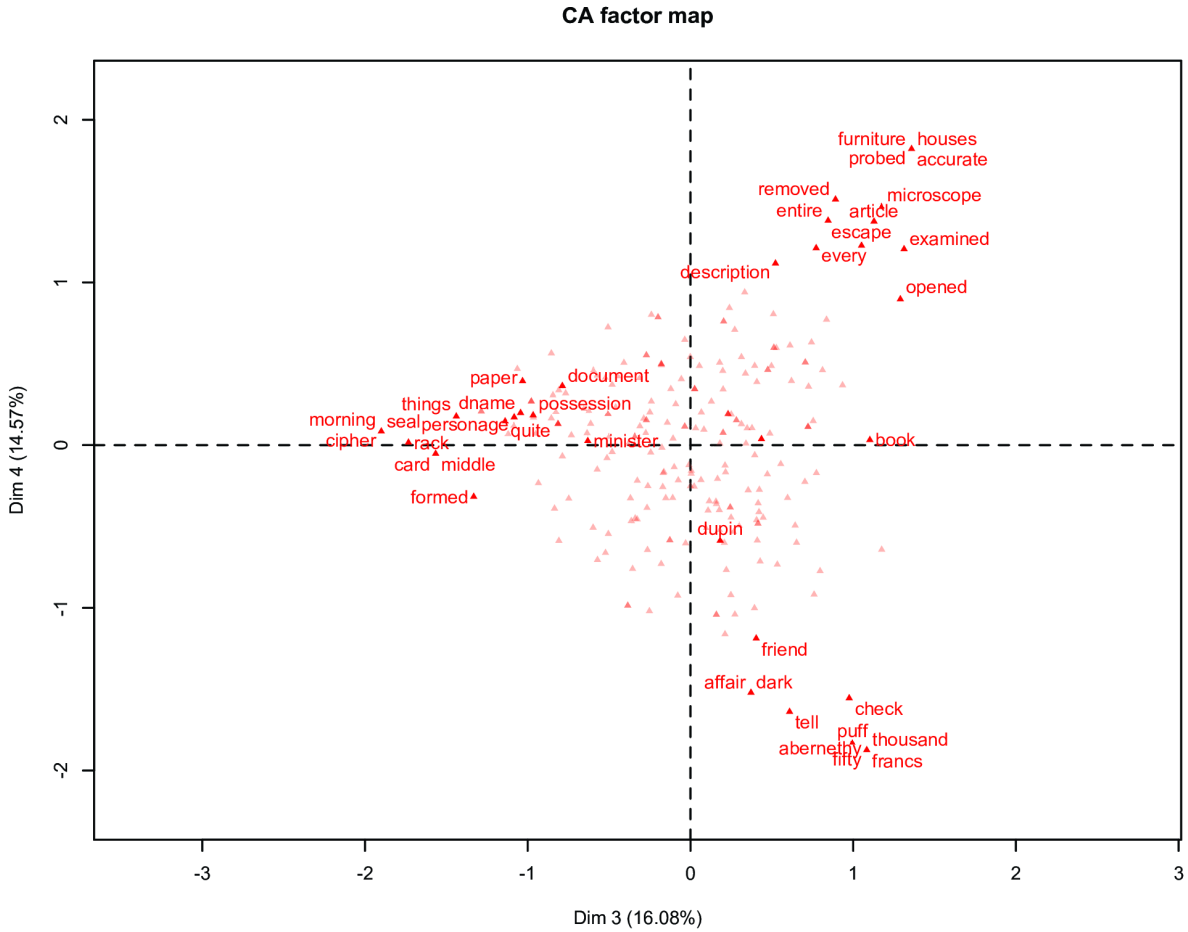

Figure 9

The 40 words that most contribute to the inertia of these factors, factors 3 and 4. The word dname is a rewritten form of "D–", i.e., Minister D. In the text, there is discussed: the Real, left here; the Imaginary, upper right; and the Symbolic, lower right.

Moving on now to the third and fourth factor plane, Figure 9, there is a more interesting and selective perspective, given our interest in having an informative visualization of Lacanian registers. We propose the following perspective on this figure, Figure 9. Take the words on the left, negative half axis of factor 3, as pertaining to a Real register. Therefore, mostly, they betoken the unknown or the unknowable. Next, take many of the words displayed in the upper right quadrant as associated with the Imaginary. This includes "furniture", "houses", "microscope" and so on. This is how we can imagine problem-solving. Thirdly, and finally, take many of the words in the lower right quadrant as betokening the Symbolic. What we have here is money, payment. In other words, in a practical setting here, the problem solving is associated with the symbolic value of money.

We conclude that Lacan's registers have been of major benefit in providing semantic-related understanding of the essential pattern that we determined in the narrative chronology. Such homology of semantic structure, i.e., morphology of narrative, is to

be sought in any domain, such as the Poe story here, that can be modelled through Lacan's registers.

Textual Data Mining as a Basis for Discovery Metaphor and Metonymy

Contextual, Semantic Clustering

In order to provide a basis for metaphor and metonymy finding, we will use the dominant words in clusters that we determine. For general data mining, a particular selection of words is used. In summary, from 'The First Exploratory Study' section, we start with the 1741 words derived from the 321 sentences in the Poe story. Firstly, in order to exclude anomalous words, because of their exceptionality, we require that a word is used in at least 5 sentences, and that the word is used at least 5 times. This will also remove the small number of French words used in the Poe story. Secondly we exclude English stopwords. That resulted in 127 words being retained. In this general data mining framework, thirdly, we decided to retain only nouns. That resulted in 48 words being retained. Some sentences become empty through removal of their words. This left us with 213 non-empty sentences, i.e., 213 sentences crossed by 48 words. In addition, to focus our data mining, we used the three acts in the Poe story, as defined in the 'First Exploratory Study' section. That aggregated the sentences comprising these three successive parts of the story. So we use two data sets, 213 sentences crossed by 48 words, and 3 acts crossed by 48 words.

Carrying out a hierarchical clustering on the full Correspondence Analysis ensures that the Euclidean metric endowed space is fully appropriate to have clustering carried out, using the minimal variance agglomerative criterion (i.e., minimal change in inertia, or variance since all masses are unity). The full factor space dimensionality is used so that there is no loss of information through reduction in dimensionality. Such is not always the best approach because it could be argued that the principal factors represent the essential interpretational information. From the 213 sentences ´48 retained set of nouns, the minimum variance (or Ward criterion) hierarchical clustering gave a partition into 10 clusters, using the greatest change in variance. For the 3 acts ´48 retained set of nouns, the same criterion gave a partition into 3 clusters.

For the first of these, there are the following non-singleton clusters: cluster 1 "boy", "school"; cluster 5 "individual", "microscope", "doubt"; cluster 7 "letter", "prefect", "dupin", "minister", "document"; cluster 8 "paper", "power", "secret"; cluster 9 "poet", "mathematician"; and cluster 10 "design", "reason". Very close semantic similarities are clear here. We may consider poet being a metaphor for mathematician, and vice versa. While letter is strongly related to paper, document, it is also metaphorically related to power and secret.

For the acts crossed by words data, there are the following clusters: cluster 1 "table", "fact", "document", "possession", "dupin"; cluster 2 "conversation", "length", "hotel", "good", "paper"; and cluster 3 "book", "individual", "boy", "case", "furniture". We interpret this output as overly concentrated, that it can be considered in relation to Lacanian registers, but that it is of less directly interpretable value compared to the previous output, described in the previous paragraph.

Another approach to addressing the discovery of metaphor, and related interpretable outcomes, is to carry out the clustering – hierarchic clustering, followed here by partitioning – on the sentences, and then to investigate the words that are statistically significant for the clusters that are found. Hypothesis testing is carried out using the v-test (Husson et al., 2011). For the acts crossed by words data, there is not great statistical significance. For the sentences crossed by words data, a most interesting set of three clusters, in the greatest change in variance partition, is obtained. Cluster 3 (with arbitrary numerical labelling of clustering) has the words reason and design. Cluster 2 has the words "poet" and "mathematician". Finally, cluster 1 has all of these words: "reason", "design", "poet" and "mathematician". Very interestingly, we find here that poet and mathematician are metaphorically related through their involvement in reason and in design. We consider that this also provides for metonymy.

We may wish to look for pointers towards the triad that defines a metaphor (e.g., poet, mathematician, and reason; poet, mathematician, and design). Consider how Ricoeur (1977, p. 276) conceptualized this: "We arrive at metaphor in the midst of examples where it is said, for instance, that a certain picture that *possesses* the colour grey expresses sadness. In other words, metaphor concerns an inverted operation of reference plus an operation of transference. Close attention must be paid, therefore, to this series – reversed reference, exemplification, (literal) possession of a predicate, expression as metaphorical possession of non-verbal predicates (e.g., a sad colour)." Thus in brief, we may consider here that x = picture, y = grey, z = sadness, and we have the proximity of x and y that we may view as comprising the vertices of the base of an isosceles triangle. A triangle that is isosceles with small base is the defining property of an ultrametric topology (i.e., representing a tree or hierarchical relationship). Such an ultrametric relationship expresses unconscious reason, cf. Murtagh (2012a, 2012b, 2014). From looking at the close semantic (i.e., based on the semantic factor space embedding) association of cluster members, we have pointers to what could play the role of metaphor, being locally and temporally, contextualized synonyms. This is together with what could, over a time line, play the role of metonymy.

A final issue addressed now is in regard to metonymy. Aspects of the imaginary and symbolic are potentially of relevance, including the poet and mathematician referred to in the purloined letter case, and symbolic rationalisation from the school boy with his marbles. Essentially, relationships are to be determined and discovered in the semantic factor space. They may be then further assessed relative to the original data. As an illustration of this, consider a selection of words retained, crossed by what we are referring to as acts in the Poe story, Table 2.

Table 2

The acts are the successive major segments of the Poe story. From the 48 words retained here, the frequency of occurrence data is shown for a selection of 11 words.

Act	letter	dupin	minister	police	power	prefect	question	reason	reward	search	secret
1	8	13	5	2	5	8	3	2	0	1	1
2	13	15	6	3	0	13	4	1	7	5	3
3	11	4	9	1	1	8	0	4	0	3	1

Further Exploration of Statistically Significant Word Associations

For close associations of words leading to either metaphor or metonymy, we adopt the following principles. Firstly, we seek such associations from the data, and we do not impose an a priori statistically-based probabilistic model or other prespecified criterion. Secondly we want to have such associations contextualized. The latter is for the seeking of associations to be in semantically-defined clusters. We also investigated the chronology based on the following: the sequence of sentences; the sequence of paragraphs, i.e., text segments, that were mostly either a continuous speech segment, or relating to an individual; a set of eight sections covering the entire story that was manually segmented, approximately in line with the timeline; and four statistical segmentations of the storyline based on combinatorial probabilistic significance levels. Successive segmentation of the storyline was, respectively, with the following numbers of segments: 321, 123, 8, 46, 26, 13, 11. It was found that these sequences were weakly correlated with the factors. As supplementary elements on the factor space planar projection, they were very close to the origin. We conclude that there is not much that carries chronological meaning in this story. That is on the global or overall level. Word associations or sequences (that could play a role in metaphor or in metonymy formation) are a different issue.

Based on the Correspondence Analysis factor space mapping, endowed with the Euclidean distance, the clustering of sentences and also of words was investigated. Although distinct in regard to the basis for the clustering, while of course using the minimum variance – hence inertia in the Euclidean-endowed factor space – agglomerative criterion, the outcomes implicitly share the 5-dimensional (used just by default as a small set of factors) input. It has already been noted how factor 1 counterposes the specifics of investigation to the ancillary small sub-narratives, relating to mathematical thinking analogies (upper right quadrant) and to the marble-playing schoolchild motivation and decision-making analogies (lower right quadrant).

The 5-class partition obtained allows us to look closely at some of the clusters. These clusters are of cardinalities, for the words: 10, 218, 5, 19, 24, and for the sentences: 8, 258, 6, 21, 17. They are in sequence of their mean value projections, from left to right on the first axis.

Let us look at low level partitions in the dendrogram in order to select small cardinality, very compact clusters. Following Husson et al. (2011, p. 151) we can use the v-test of association of the category presence values relative to the mean value of that variable. This allows for a null hypothesis test of "the average ... for [the] category ... is equal to the general average", "in other words, [the] variable does not characterise [the] category ... and can therefore calculate a p-value". A p-value not far from zero indicated rejection of that null hypothesis. That is to say, a p-value near zero indicates that the variable emphatically does characterise the category.

When we look at an 11-class partition we find classes 1 and 2 consisting of:

Class 1:

	p.value of H0 using v.test
puff	1.188185e-13
abernethy	1.097031e-03

Class 2:

	p.value for v.test
probed	1.693836e-06
looked	1.758749e-03

Class 5 with the following words, with p-values of the v-test less than 0.05 (therefore rejecting the null hypothesis here at the 95% significance level): letter, man, ordinary, gname, reward, asked (Here gname is the Prefect. There is for example the following in the Poe text: "Monsieur G – – , the Prefect of the Parisian police."). In this 11-cluster partition, class 10 is mainly about the mathematical analogies, and class 11 is about the schoolboy analogies.

In order to find some small clusters, leading to useful relationships that are semantically very close due to cluster compactness, we looked at various sized partitions derived from the hierarchical clustering dendrogram. From a 50-cluster partition, we find the following:

Cluster 40 consisted of the words "mathematician", "poet".
Cluster 43 consisted of the words "example", "analysis", "algebra".
Cluster 47 consisted of the words "reason", "mathematical".
Cluster 48 consisted of the words "truths", "general".
Cluster 50 consisted of the words "truths", "mathematical".
Cluster 15, including "letter" had these words: "possession", "letter", "premises", "still", "since", "observed", "said", "main", "far", "power".
Cluster 1 consisted of "puff", "abernathy".
Cluster 20 consisted of the words "document", "especially", "things", "point", "importance".
Cluster 27 consisted of the words "personage", "document", "royal", "thorough", "necessity", "question", "make".

Our overall objectives here are to determine potentially interesting word associations, that could then be taken as, or found to be, some triadic metaphor (synchronic) relationship, or metonymy, a diachronic relationship. Richardson (1985) has discussion of time dimension of consciousness, related to diachrony. (This relates to the Vietnam War, and is different from our work here.)

Synchrony is indicative of the contemporary presence of all three Lacanian registers in every human act. Word-wise and textually, this may be inferred only by means of metaphors. But consciousness may reflect or echo the message of only one out of these three, which therefore provides explanation in a sequential manner, parallel to the arrow of time which characterizes human consciousness. In Iurato et al. (2016), at issue is the origin of human consciousness. This is linked to time development, that gives rise to diachrony, and we refer to this for further examples of this type. In very

general analogy to the observational science of astronomy, we do not seek to statistically test the properties of what is found, but rather to obtain relevant, candidate relationships, that, as candidate relationships, will then be assessed further in other contexts. Such, we may wish to state, could be considered for the words "poet" and "mathematician" in this case.

Conclusions

In this work, we introduce for the first time quantitative text analysis in humanities, and in psychoanalysis in particular, that casts a bridge between human and what are termed natural or exact sciences. Through the semantic mapping of the storyline, we have a visualization approach for displaying how patterns found can be related to Lacanian registers.

This semantic mapping is into the Euclidean metric endowed factor space. All relationships between the units of analysis, e.g., sentences, paragraphs, text segments, and their attributes, here retained word sets, i.e., corpora, are accounted for in the mapping into the factor space, so in that sense, i.e., taking account of all interrelationships, this is a semantic mapping. The endowing of the dual spaces of text units and their attributes with the Euclidean metric in the factor space is from the initial text unit and attribute spaces that are endowed with the chi squared metric. We have then considered approaches to the clustering of semantic and contextualized data. Beyond the semantics as such, the main contextualization at issue here is relating to chronology. We considered different chronological units, including successive sentences, successive speaker-related paragraphs, story segments that can be helpful for summarizing one's understanding, and for focusing one's interpretation.

In the sense of unsupervised classification and exploratory data analysis, our approach is both "The model should follow the data, and not the reverse! " (Benzécri quotation) and "Let the data speak for themselves" (Tukey quotation). Our text analysis has pointed out the intertwining among three Lacanian registers. The storyline segments, in the semantic analysis, identify a quasi-cyclic circuit starting from the Real and the Imaginary registers to the Symbolic one.

In all the planar projection plots related to this semantic analysis of chronology by means of storyline segments, we note that Imaginary clusters are almost always placed in the centre of each diagram (clearly in Figure 8), besides to be the intermediate, hinge step between the Real (the realm of angst and fear according to Schmitz, 2015, Schmitz & Bayer, 2014) and the Symbolic (socio-symbolic domination of Schmitz). So the Symbolic roughly corresponds to Schmitz's Habitus-field intermezzo, coherently with the fact that Lacanian Symbolic corresponds to Freud's Super-Ego agency, the place in which there takes place the crucial passage from thing representation to word representation. Furthermore, we also note the prevalence of Real register in the first steps of semantic storyline, moving to Imaginary toward Symbolic, the prevalence of unconscious realm underlying conscious meaning of language.

To aid in reproducibility of our research findings, a copy of the Poe story, as a CSV (comma separated value) format with sentences on successive lines, and much of the R

code used in the analytics at issue here, have been provided at this address: http://www.narrativization.com

In conclusion, our Correspondence Analysis of Poe's story has been useful in identifying certain formal structures resembling the action of Lacan's registers in giving rise to language.

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A Multilingual Outlook: Can Awareness-Raising about Multilingualism Affect Therapists' Practice? A Mixed-Method Evaluation

Sofie Bager-Charleson[1]
Metanoia Institute London

Jean-Marc Dewaele and Beverley Costa
Birkbeck University of London

Zeynep Kasap
Metanoia Institute London

Abstract

Therapists are often unprepared to deal with their clients' use of other languages. This study focuses on therapists' experiences of having undertaken awareness-raising training about multilingualism. Did the training impact their practice? If so, in what areas? Adopting a mixed-method approach, quantitative data were initially collected via an online questionnaire with 88 therapy trainees and qualified therapists who underwent training in multilingualism, combined with interview data from 7 volunteers. Having identified the issues on which the training had had most and least impact in survey responses, the interviews were guided by our emergent interest into the impact of the training with potential relational complexities and unique, personal experiences in mind. A narrative-thematic analysis uncovered interrelated themes, relation to changes, or impact of the training, with regard to Identity and Therapeutic Theory Therapists referred to considerable transformative learning on both a personal and professional level, for instance in terms of how multilingual clients might bring different and sometimes conflicting ways of organizing events and experiences into meaningful wholes through their narratives during the session. Language switching seemed less significant in the survey, but emerged as a central theme in the interviews, especially with regard to the possibility of addressing, challenging and sometimes combining different emotional memories, cultural and existential concerns. Working across these areas triggered some therapists to consider the need for expanding their theory.

Introduction: Multilingualism in Psychotherapy

Awareness of multilingualism in therapy is a relatively new field of inquiry.[2] Many practitioners do not consider their language(s) to play any significant part of their

[1] Correspondence concerning this article should be addressed to Dr. Sofie Bager-Charleson, Metanoia Institute London. Email: sofie.bager.charleson@metanoia.ac.uk

[2] We do not make a distinction between bi- and multilinguals, so all speakers with at least some basic knowledge of more than one language will be included in the category of the multilinguals.

modality or therapeutic work. As Barden &Williams (2007, p. 8) suggest, it is "common to be fluent in a language without having to consider how it is put together or what stops it falling apart. It just is." We will consider the impact of multilingual training on therapists, using a mixed-methods approach. The training, which is evaluated in this paper has been delivered since 2010 to a variety of therapy trainees and qualified therapists. The study is situated within a new wave of research on multilingualism and psychotherapy whose main aim is to gain a better understanding of the roles of clients' languages in therapy and ways for therapists to handle and interpret code-switching appropriately and accurately.

Literature Review

Training Therapists to Consider the Impact of Multilingualism in Therapy

This research project builds on the findings and recommendations of researchers such as Costa & Dewaele (2012), Dewaele &Costa (2013), Georgiadou (2015), Kokaliari (2013) and Verdinelli & Biever (2009), for psychotherapy trainings to address the issue of multilingualism. A training programme for therapists who are both multilingual and monolingual, structured around the findings emerging from research studies: Costa (2010), Costa & Dewaele (2012), Dewaele & Costa (2013), Pavlenko (2005), Santiago-Rivera & Altarriba (2002), Tehrani &Vaughan (2009) and Verdinelli & Biever (2009) has been developed, delivered and revised as new research findings emerged. This study aims to evaluate the impact this training has had on the participating therapists and on their practice.

Georgiadou's (2014) research focused on international counselling trainees' experiences. She included a recommendation that counselling courses pay more attention to languages and difference. She builds on McKenzie-Mavinga's (2011) suggestion that students who face difficulties regarding acculturation and discrimination need opportunities for discussion. Georgiadou (2015) recommends "counsellor education programmes acknowledge the additional challenges that international trainees may encounter in practice in relation to linguistic competence and provide sufficient space and possibilities for relevant discussion with peers, tutors and supervisors" (p. 9). Skulic's (2007) research led him to conclude that a therapist's bilingualism can both promote and/or adversely affect the therapeutic process. He recommends that therapists need to be helped via training or supervision with others to be aware of their own cultural positioning, stereotypes and language related issues. More recent research conducted by Georgiadou (2015) - an exploration of international counselling trainees' training experience - discovered that trainees identified benefits in practising across languages and cultures during placement.

Research on monolingual therapists' experiences of working with multilingual clients (Bowker & Richards, 2004; Stevens & Holland, 2008) demonstrated that therapists were pushed outside of their comfort zone. Costa and Dewaele (2012, 2013) research suggested that multilingual clients may benefit from a therapeutic environment where they can use their first language, but it is the therapist's ability to grasp personal meanings of language usage (for instance switching, avoidance etc.), which is of therapeutic value. A mixed-method study, combining a survey of 101 monolingual and

multilingual therapists and interviews with three psychotherapists showed that multilingual therapists tended to view their ability to share a language, or to have a facility for languages or thinking about languages with a patient as positive with respect to their capacity for attunement with the client. They felt better equipped to help patients to feel more connected and less isolated but also pointed to the potential problem linked to increased empathy and intimacy, namely possible collusion – an issue monolingual therapists were less likely to encounter. They insisted that it was crucial to pay proper attention to the appropriate setting and maintenance of boundaries and not to overlook the issue of disclosure. The therapists agreed that having been in contact with other languages had stimulated their thinking about language use with their clients checking understanding and sometimes simplifying their language. Although they had not invited other languages into the therapy, they agreed that this had potential. The survey and the interviews seemed to have acted as a trigger for reflection. In other research studies therapists reported a distinct lack of training for multilingual work (Gonzalez et al., 2015; Trepal et al., 2014; Verdinelli, 2009) — they often felt isolated and disconnected while learning how to use the two or more languages in their personal and professional lives.

Underpinned by the findings from the research conducted by Jean-Marc Dewaele and Beverley Costa (2012, 2013) the curriculum of the training programme was developed. Although much of the research makes recommendations for specific training for multilingual therapists or monolingual therapists, this training is aimed at mixed groups of monolingual and multilingual therapists, with a view to mainstreaming rather than marginalising the subject. Dewaele and Costa's (2013) research: *"Psychotherapy across Languages: Beliefs, Attitudes and Practices of Monolingual and multilingual Therapists with their Multilingual Patients"*, is one of the few pieces of research which has targeted monolingual and multilingual therapists simultaneously.

The curriculum of the training included the following topics identified as significant in the research: the impact of multilingualism on identity, transference and projections, emotional expression, early memories, emotions and relationships, language-switching in therapy and counselling. Pavlenko (2004, 2005, 2006) argues that multilinguals can frequently feel different, behave differently and express themselves differently in their different languages. They can express different emotions in their distinct languages and this can of course impact on their sense of self and their relationships (Dewaele, 2013, 2016). The curriculum also includes: multilingual defense and protective structures, trauma and shame, treatment and repair referring to Tehrani & Vaughan's (2009) demonstration of how a multilingual client can harness their multilingualism for repair after a traumatic incident. The danger of making assumptions is also included in the curriculum as one of the topics. Antinucci (2004) identifies a common position taken by multilingual therapists with their multilingual clients of over identification or over joining with the client. These nine curriculum topics were the items chosen to be included in the questionnaire.

The training was a brief intervention comprising between 7 and 14 hours of teaching, and some or all the topics were covered depending on timing and participants' needs. It was delivered between 2010 and 2015 to a wide range of trainee and qualified monolingual and multilingual mental health clinicians in the statutory and voluntary sectors in the UK.

The Context of the Training

The Mothertongue multi-ethnic Counselling Service was a culturally and linguistically sensitive counselling service (2000-2018), which provided professional counselling to people from black and ethnic minority backgrounds in their preferred language. Mothertongue developed, revised and delivered two training initiatives and one clinical supervision initiative based on findings from research, as referenced above. Only the evaluation of the brief training intervention on multilingualism is included in this paper.

The training has been delivered to a variety of therapy trainees and qualified therapists, including IAPT trainees, CAMHs teams, trainee and trained clinical psychologists, trainees on psychotherapy training programmes, voluntary sector organisations offering psychotherapy and counselling to victims of domestic violence, asylum seekers and refugees, and parents of children in hospices. This training explores the impact of multilingualism on clients' and professionals' development including their identity, emotional expression, trauma, memory and defenses. The training considers how language issues and acculturation stress impact on people who have recently migrated as well as British born 2nd and 3rd generation migrants and refugees. The training also explores how multilingualism impacts on the therapeutic relationship.

The following topics, which incorporate the main findings from the research, are included:

- How language shapes our identity and sense of self.
- How to work safely with a client's language in the room when we do not understand it.
- How to engage with language switching to help clients with emotional expression, management of traumatic symptoms, self-soothing and repair.
- How others' or our own multilingualism impacts on us and how this shapes our reactions to our multilingual clients.

The training methodology includes a selection of the following, depending on timing and participants' needs: discussion, role play, demonstrations, hot seating, action methods - for participants to take different perspectives, DVDs, creative literature – novels, plays, poetry. Personal experiential exercises – creative writing, guided visualisations, journal writing, art exercises, autobiographical writing and reflective discussions are also used. The therapists attending the training were contacted in 2015 with an invitation to participate in the study. 88 therapists responded, covering a broad range of therapeutic approaches.

This study is an evaluation of the impact the multilingual training has had on the therapists and their practice. The research design and questionnaire obtained approval from the Ethics Committee of the School of Social Sciences, History and Philosophy at Birkbeck, University of London.

Methodological Considerations for a Mixed Methods Approach

Critical Realism with a Transcultural Interest in Narrative Truths

This study adopts a critical realist stance to knowledge, suggesting that there may be a pre-existing, mind-independent reality, but that this reality is 'mediated through and by individual experiences and representation, and is socially situated' (Finlay & Ballinger, 2006, p. 258). We view critical realism from a transcultural lens; whilst inter- and cross-cultural theories typically highlight the significance of improved understandings and dialogues between cultures, transculturalism suggests that "cultures are as much internally differentiated as they are different from other cultures" (Freudenberger, 2004, p. 39). We are interested in shared themes among therapists with regard to their experiences of multilingual training, but we are also hoping to contribute with research about unique, personal experiences in the field. Like Wittgenstein, we suggest that "the limits of my language means the limits of my world" (Wittgenstein, 1922/1960, p. 62). Whilst doing so we adhere for instance to a realist stance to language as human, physical and mental capacity which differ from animals and have evolved for at least 3000 years, possibly since the origins of homo sapiens 200,000 years ago.

We also position our research in the context of a reality where geographical, socio-economic and political factors impact directly and indirectly on reasons for migration and multilingualism. But our *critical* realism also includes the, for critical researchers underpinning "challenge of the taken for granted" (Finlay and Ballinger, 2006, p. 258). The earlier mentioned idea that the "limits of my language means the limits of my world" also involves an understanding of language as "subjective, judgement laden and culturally embedded" (Williams, 2007, p. 84). This assumption underpins our research. We aim to contribute with knowledge into what Polkinghorne (1991) refers to as 'narrative truths'. Seeking to "conceptualize the self as a narrative or story, rather than as a substance, brings to light the temporal and developmental dimension of human existence", asserts Polkinghorne (1991, p. 141). We are bringing this 'lens' on the individual's way of organising events; our own included, into the research into therapists' accounts of their experiences from training.

The study into the impact of training in multilingual therapy straddles two stages. With Critical Realism as an "umbrella foundation" (Creswell et al., 2011, p. 100) it has been conducted as a multiphase mixed method study with both fixed and emergent (Creswell et al., 2011, p. 54) aspects to its design to gain what Bryman (2001) and Brannen (2005, p. 12) refer to as "complementarity". This involves approaching therapists' experiences from two angles, expecting the two methods will help us to "generate complementary insights that together create a bigger picture" (Brannen (2005, p. 12).

Fixed methods designs involve "studies where the use of quantitative and qualitative methods is predetermined and planned at the start of the research process, and the procedures are implemented as planned" (Creswell et al., 2011, p. 54). Emergent design reflects the decision to involve "a process that is ongoing, changeable and iterative in nature" as part of a "purposeful and carefully considered' aspect, 'prior to,

during, and after, implementation", as Wright (2009, p. 63) puts it. Allowing new and emerging research questions to guide the study is not uncommon in mixed method research. Combining quantitative approaches to the data with qualitative is often legitimised because they can each answer different research questions (Creswell et al., 2011, p. 62). In this study, an example of an emergent theme is the carrying over of questions arising in the quantitative study into the qualitative inquiry. Another significant indicator of the 'ongoing, changeable and iterative' (Wright, 2009) nature of the study is the way in which the qualitative phase has developed with the subjectivity of the researchers in mind. The qualitative research phase is guided by a constructionist framework with 'relational interviewing' (Josselson, 2013) and a narrative variation of our thematic analysis (Bamberg, 2003; Braun & Clarke, 2006; Chase, 2005), which developed during our data analysis.

Quantitative and Qualitative research

Questionnaires and surveys involving Likert scales are, as Saldana (2012) concludes; "designed to collect and measure a participant's values, attitudes, and beliefs about selected subjects" (p. 93). Quantitative data transform meaning into numbers for statistical analysis into a fixed, linear string of response; from less to more as illustrated in the statistical presentation of the mean or average score determined by summing all the scores and dividing by the number of survey participants.

Qualitative inquiry aims, on the other hand, for a "three-dimensional" (Saldana, 2012, p. 93) focus; it displays varying levels of depth "with opportunities for gathering and assessing, in language-based meanings, what the participant values, believes, thinks, and feels about social life". We are interested in shared experiences among therapists regarding their multilingual training, but we are also hoping to contribute with research about unique, personal experiences in the field.

Quantitative Study

Participants in the Quantitative Study

Over 15 organisations which had commissioned the training for their therapists were asked to pass the invitation on to their therapists, (approximately 200 in total), who had undergone the training. The therapists were sent an invitation to complete the survey relating to specified therapeutic aspects which could/could not have been impacted by the training.

A total of 88 participants (70 females, 16 males) completed the survey. Eighty-seven participants took part in the training between 2013 and 2015 and 1 took part in 2012. Participants' ages ranged from 22 to 68 (Mean = 42.2, SD = 13.4). They included a majority of psychotherapists, counselors and psychological wellbeing practitioners - some of whom were still in training. Seventy-six participants reported having English as a first language, other first languages included British Sign Language, French, German, Greek, Gujarati, Hindi, Italian, Polish, Portuguese, Punjabi, Russian, Spanish and Swahili. A majority (n = 64, 72.7%) reported using English exclusively in therapy, the remaining participants reported using other languages at their disposal. Seventy-nine participants (90%) reported having been

trained in English, with the remaining participants having been trained in British Sign Language, Gujarati or Spanish.

Instruments

The main questionnaire was exploratory in nature. It contained 18 items in the form of statements with 5-point Likert scales (ranging from "strongly disagree" to "strongly agree") and six open-ended text box questions. Not all the items were applicable to all the participants. The items covered the training in: therapy with multilingual clients; interpreter-mediated therapy and participants' experiences of supervision for multilingual therapists. Only the evaluation of the training in therapy with multilingual clients is considered in this paper. The questionnaire was pilot-tested with 3 therapists. This led to the deletion of some items and the reformulation of others. The final version of the questionnaire was put on-line on Google forms. Organisations which had participated in the training were enlisted to recruit participants. The questionnaire was anonymous but the last item allowed participants to leave an email address if they agreed to be interviewed on the issues covered in the questionnaire.

First question

The first question invited participants to pick a value reflecting their agreement to the following question: *"Has the training to work with multilingualism in therapy impacted on the way you work therapeutically with the multilingualism in the room with reference to…?"*:

- Identity including transference and projections
- Emotional expression
- Defense
- Trauma
- Repair
- Code-switching
- Shame
- Early memories, emotions and relationships
- The danger of making assumptions

The nine categories represented a mixture of epistemic approaches to multilingualism, ranging from linguistic (code-switching) to psychoanalytic (defense, trauma, early memories, countertransference) and systemic (assumptions) which reflected the pluralist training structure. These closed questions were followed by an open question, allowing participants to add a comment in an open-ended text box.

Results of Quantitative Data

Descriptive Statistics

1. Impact of training on therapeutic work

Mean scores were calculated for every item. Items were then sorted according to the amount of impact reported on participants' therapeutic work (see Figure 1).

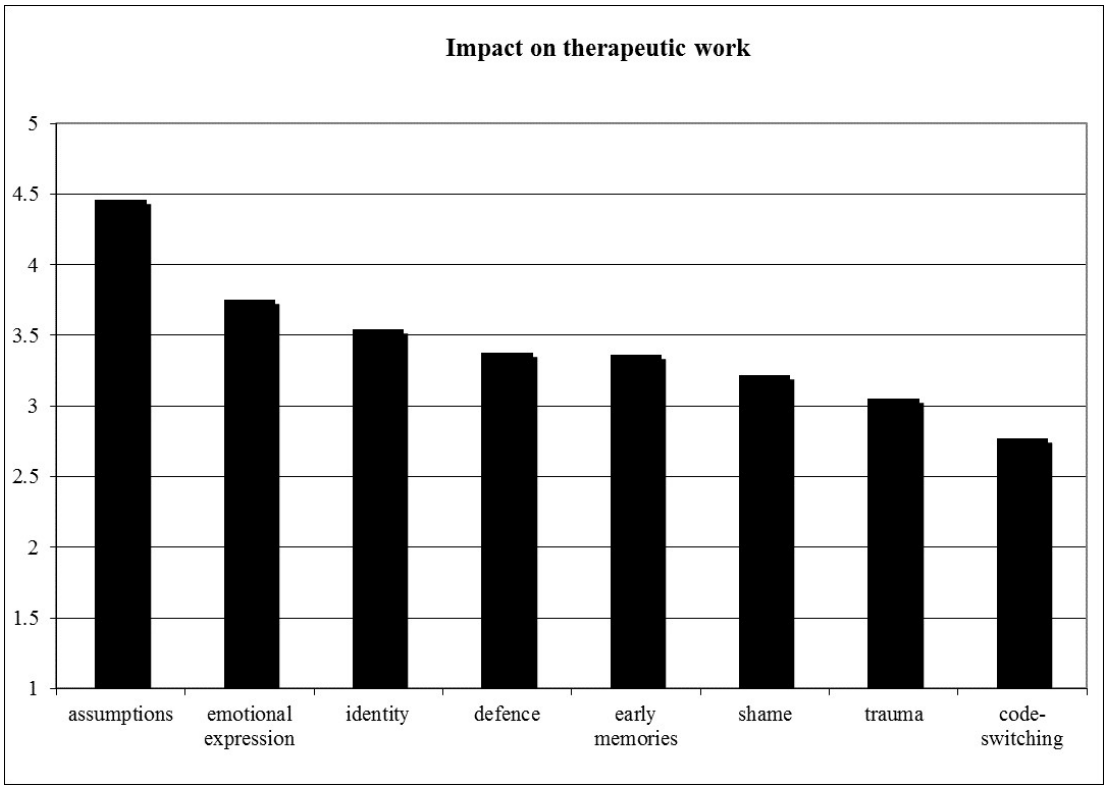

Figure 1

Impact of training on therapeutic work

The participants rated the impact of the training highest with regard to the danger of making assumptions, with a mean value situated between "quite a lot" and "very much". The items "emotional expression" and "identity" had a mean score situated half-way between "so-so" and "quite a lot". The items "defense", "early memories, emotions and relationships", "shame" and "trauma" were closer towards the "so-so" value. The training seemed to have had least impact on code-switching, with a mean score hovering between "not especially" and "so-so". In other words, the training had not had much impact on therapists' interest in or ability to engage with code-switching in therapy.

2. New Emergent Questions

The analysis of the quantitative data provided some insights into how the participants related to the nine different key components of their training. This revealed, as mentioned, for instance that the training was reported to have had least impact on code switching, and the highest score for impact was the danger of making assumptions.

Qualitative Study

Qualitative Data Questions

Our next aim was to move deeply into each category addressed in the quantitative study. Our focus shifted from what was being shared to participants' unique, individual ways of organizing events and experiences from their training.

Participants in the Qualitative Study

The overarching emerging question into the next stage was what – if at all, the different training components had meant to the individual therapist and his/her clients. 7 participants who had previously completed the online survey offered to meet for an hour long in-depth interview. We followed up all 7 offers. Participants' ages ranged from 30 to 59 (Mean = 47.8, SD = 9.6). They worked across a variety of modalities, including psychodynamic, person-centred, transactional analytical and cognitive behavioural therapy. The majority selected English as their primary language, even though all but one participant was multilingual. They were all trained in English and used English as the main language in their psychotherapy practice.

Relational Interviews

The interviews were structured with Josselson's (2013) relational model in mind. The aim was to "to understand how people construct or interpret their experiences, rather than piecing together views of an external event" (2013, p. 7). Although we were curious to learn more about how individual therapists may relate to the nine categories from the survey, we did not want to assume that the topics raised in the survey were at the forefront of the therapists' lasting experiences from their training. We agreed to approach the participants in as open way as possible, with some space towards the end of the interview to tentatively explore the categories from the survey. Our earlier mentioned epistemological positioning for the project in terms of critical realism was extended into this second stage. In our interviews, we pursued a philosophical position which acknowledged a pre-existing reality, but also assumed that this reality was mediated "through and by experience and representation, and is socially situated" (Finlay & Ballinger 2006, p. 258). Relational interviews assume in accordance that "we do not have the direct access to another's experience; we deal with ambiguous representations of it – talk, text, interaction and interpretation", as Hollway and Jefferson (2001, p. 3) put it. It also meant that we understood the interviews as attempts to "elicit narratives of lived experience in a two-person setting" (Josselson, 2013, p. 12) with the interviewer and participant dynamics as part of the data.

Analysis of the Qualitative Data

Reflexive Pair-Reading

Having agreed on the relational approach to the interviews, which were conducted by Zeynep, the interviews were interpreted by two researchers with different backgrounds. Sofie is originally trained as a psychodynamic couple therapist and has remained working within an integrative framework. As a researcher, she is anchored

within qualitative research with a special focus on reflexivity (Bager-Charleson, 2014, 2016). Zeynep is originally trained within neurobiology, and arrived at research from another angle but with an interest in deepening her phenomenological thinking as part of her MSc studies in Person-Centred psychotherapy.

Thematic Analysis

Thematic analysis is a "method for identifying, analysing, and reporting patterns (themes)" (Braun & Clarke, 2006, p. 7). It is not wedded to any specific theory and can be "applied across a range of theoretical and epistemological approaches" (p. 5). Our first stage of the process involved reading through the transcripts several times, whilst "jotting down ideas and potential coding schemes" (p. 86) based on what 'stood out' to us. This 'coding' stage involved identifying freestanding textual units of the content in ways, which Braun and Clarke (2006) compare with looking for 'individual bricks and tiles'. A 'theme' is compared to the 'load baring walls' and represents rather "any level of patterned response or meaning within the data set" (Braun & Clarke, 2006, p. 82). Qualitative researchers 'only gain control of their projects by first allowing themselves to lose it' suggest Kleinman et al. (1993, p. 3). This was certainly the case for us. Our analysis seemed to generate endless threads, each fitting into different code clusters and themes. Our aim was to highlight references to the earlier mentioned categories - anything and everything which might be deemed of relevance to the enquiry. Reading the transcripts as a pair facilitated a discussion about hoping to register 'anything and everything' in a reflexive (Alvesson & Skoldberg, 2000) context. This process is elaborated upon in other contexts, focusing on research reflexivity (Bager-Charleson & Kasap, 2017).

The transcripts were not easy to access, and we spent considerable time exploring what prevented us from connecting with some of the participants' voices and accounts. There was both a practical and a personal aspect to our initial level of "not hearing". Several participants struggled to find the words: *"And I spoke with her and about the research that she's doing and, ummm, one of my interests is also trying which I haven't finalised but it's trying to to do research also on my own to try to put my two fields of interest together (Z: Uh huh) so I spoke with her also in this (Z: Ok) respect" (Therapists No 3:2).*

Both of us experienced strong emotions during our readings. We both initially tapped into a keen desire to create order – and experienced a sense of personal, deep seated culturally tinted failure over being unable to 'find' that order. Sofie registered enactments in terms of irritation and explored these in her clinical supervision as potential embodied responses to the research. Supervision facilitated space to explore emotional responses. Sofie also used creative writing (Richardson & St Pierre, 2005) to explore embodied responses ranging from excitement to despair.

Narrative-Thematic Analysis

The interviews were analysed for codes and themes in both what Braun and Clarke (2006, p. 84) refer to as 'latent' and 'explicit' or 'semantic' level' of reading. Typical for the semantic/explicit approach is the focus on themes linked to direct or indirect responses to our research question. We were also interested in what Braun and Clarke

refer to as a 'latent' focus on new, different and maybe 'conflicting' themes. Our thematic analysis gravitated towards an interest into 'latent themes' linked to the participants' 'narrative knowing'. 'Narrative knowing' (Polkinghorne, 1991; Ricoeur, 1981) focuses on narratives as means for people to "conceptualize the self by linking diverse events of their lives into unified and understandable wholes" (Polkinghorne, 1991, p. 136).

Narrative approaches differ (see for instance see Pavlenko, 2007) but share an interest in how participants impose or express order on the flow of experience through their narratives about experiences and events in their lives. Riessman (2008) proposes a typology of the four main types of analysis, namely thematic, structural, dialogic and visual. The thematic narrative analysis moves, as Chase (2005, p. 662) suggests 'away from traditional theme-orientated methods in qualitative research'. It 'extends the narrator-listener relationship' into an interpretive process (Chase, 2005, p. 662) which approaches narratives as told in a context. What Chase refers to as an attempt to elicit the 'complexity and multiplicity within narrators' voices' (2005, p. 663) felt like a valuable and realistic target for our reading. It made sense to us both as psychotherapists to listen to the narrators' voices 'with an interest in the subject's positions, interpret practices, ambiguities, and complexities – within each narrator's story' Chase (2005, p. 663). Chase's reference to Bamberg (1997) was helpful; he proposes three levels of narrative positioning, namely:

- how narrators position themselves in relation to others in their narratives
- how the narrators position self in relation to an audience
- how the narrators position 'themselves to themselves' (Bamberg in Chase, 2005, p. 663)

Ethical Implications

The qualitative section has been guided by ethical considerations to honor the research relationship within which certain personal disclosures have been encouraged and made. To protect the anonymity of the participants and their clients we have changed details tracing to specific persons in terms of language, modality and in some cases gender.

Results of the qualitative data

The participants referred to some considerable transformative learning. We interpreted two main areas in which the participants (addressed as therapists in this section) were referring to being affected by their training, namely:

1. **Identity**
   1.1. Working with clients' different sets of narrative knowing
   1.2. Changes of the therapists' own narratives selves
2. **Therapeutic Theory**
   2.1. A Need to Expand theory
   2.2. A Growing Sense of Clinical Authority
   2.3. Work in progress

1. Identity

One therapist addressed how the training had resulted in her viewing language as a path into *"a whole world of understanding and experiences"* (4:4). Another therapist referred to being profoundly affected by the training in terms of: *"I felt it [the training] changed me as a person, it changed my attitude to people" (5:4).*

In this section we will refer to different angles of this level of transformative learning.

The client's different sets of narrative knowing

Many therapists reflected on talking therapy from new angles after their training in multilingualism. For psychotherapy, the underpinning principles of free association and narrative knowing (e.g. the way the client organize events and experiences into meaningful wholes through their narratives during the session) seemed to have been challenged for some therapists in different ways. One therapist said: *"There was a whole world of understanding and experience that we ... actually mainly unconsciously couldn't go to because his [the client] experience wasn't translated"* (4:1).

We interpreted the therapist's use of 'translating' as something, which had more to do with the client's narrative knowing than it having an actual linguistic or semantic meaning. The same therapist referred to language as a *whole way of thinking and shaping the world and seeing the world.* We understood this to mean that therapy can approach languages to explore different sets of personal as well as cultural values, beliefs and ways of relating to the world – and how these are impacting the client's sense of self: *"If you learn...in two languages you are exposed to two way of thinking […] language isn't just language but a whole way of thinking and shaping the world and seeing the world. So, you can't just translate things from one language into another […] language can help us to express a ... different part of our personality" (4:7).*

Therapist 3 spoke about languages as different sets of arranging events and experiences in terms of 'paradigmas': *"Expressing yourself in different languages helps also… about considering where your ideas about things kind of originates ... it's complex, working with different languages is looking at different paradigmas about the world" (3:3).*

We interpreted this again as reflecting how the training had triggered the therapists to consider how multilingual clients might bring different and sometimes conflicting sets of narrative knowing about the Self. For the therapist to actually speak different languages or to try to help the clients to translate different sentences literally, seemed less significant than to facilitate explorations around underpinning personal and cultural values and beliefs about Self and Others in their narratives. One therapist spoke in terms of reconciling different sides of self. Therapist 3 described some post-training work with a client whose native language was German. The therapist did not speak German herself, but felt that her client had benefitted from language switching: *"She [the client] was keeping her two selves separate. She has a cut off German side and her English self ... for her it was difficult to reconnect that German side ... [so it was] good when she started to bring German words" (3:3).*

The emotional meaning of language is stressed as important. Therapist 3 referred to her German client's seemingly emotionally barren mother tongue, and to how English had provided emotionally richer narratives to organise her experiences and understanding about the self within. Language switching facilitated, in turn, an opportunity for the client to understand more about this contrast, including as the therapist said; to 'connect with her German cut off side'. The same therapist continued: *"I think about the broader implications of language on people's understanding of different emotional meaning, that's so important (3:2).*

The therapist's own narrative knowing

Some therapists had begun to explore their own selves in different languages after the training. Therapist 5 was surprised that she 'had not considered language so much earlier'. She continued *"I'm not a monolingual person ... I'm thinking, my brain doesn't work in one language exclusively"* (5:6).

Another therapist said: *"And now you know, above all, again after the weekend with Beverley, it's not about being me better understood but maybe some stuff would come up in French that doesn't come up in English" (4:7).*

This therapist had reviewed her own use of language in personal therapy:*"I don't know why I had this kind of strong thing that oh no it wasn't a good idea ... I just never considered the impact of language [and]I thought my English was good enough to do [personal] therapy, I never thought I would be better understood in [my native language] it didn't cross my mind" (4:3).*

The training had illuminated some of the therapists' own troubled identities, and some of the seemingly powerful learning was still being either processed during the actual interview, by for instance adding midsentence (when talking about her client): *"...saying that ... when I was a baby my mum used to talk to me in German [second language]"* (6.3).

Language awareness was reflected upon, as mentioned, as a path into early relationships and therapist 4 expressed in this sense the impact of the training as having begun to consider what being an infant to a mother who changed language after her birth might have meant. What happened to the mother after her narrative configuration or ways of arranging diverse events into meaningful wholes in her narratives changed; and how night that have impact her (the therapist) as a baby? Another therapist said *"... and now I am wondering, thinking about how French is my mother tongue, my dad is from Belgium [and] my mum's from Switzerland from the German-speaking part, but I was never fluent in German" (6:7).*

2. Therapeutic Theory

Another impact of the training seemed to be reflected in the way in which some therapists referred to their original therapeutic modality being expanded. Another therapist said: *"I never considered the impact of language […] I started thinking about, you know, do I do my reactions in terms of countertransference, could it actually be culturally influenced?" (5:3).*

The above participant had begun to explore the psychoanalytic concept countertransference in a social constructionist perspective, e.g. as a collectively represented, social phenomena.

Another CBT trained therapist evidenced a newly developed interest in existential perspectives with an openness for the unknown': *"I do [normally] work very, ummm, in a CBT way – always have an agenda…[But] I kept thinking, I don't have an answer, I just know it's going to be painful whatever you do it's going to be very tough ... it's difficult being in-between" (2:4).*

A further CBT therapist referred to psychoanalytic thinking and the importance of using language with a 'timeline' in mind 'to help the client access his early, emotional memories'. The therapist said: *"What surprises me as a CBT therapist is I wouldn't really think much about defense ... but the greatest importance [is] the time lines and the early memories" (5:7).*

One therapist said: *"it changed how I work with people from ethnic minorities […] feeling displaced, we are all from different backgrounds"* (2:8). Another therapist said *"I always considered therapy as middleclass ... on a personal level I feel a bit ashamed of myself"* (7:11).

The training had triggered the earlier mentioned psychoanalytically anchored therapist to consider concepts like defence, transference and identification in terms of culturally introjected values and potential blind spots. She considered biases both in terms of avoiding and being overly drawn to certain cultures. Working with a person from the same culture in a new country for both created a setting ripe for fantasies about the other. Therapist 5 commented upon the value of challenging perceived similarities in such relationships: *"Being more finely attuned to the differences but also the similarities, [the training] brought that home. That the perceived similarities can also be differences ... Languages is a whole reference system ... childhood, culture, class and different understandings. Having an awareness of different languages [is] also about considering where your thinking comes from…for us as therapists too"* (5:12).

Budding clinical authority

The therapists spoke tentatively of a new confidence in their multilingual work. The references to the importance of drawing from different languages were not put into action during the interviews by any of the therapists, and we have interpreted this partly as an omission from our part; language switching is something, which we could have encouraged and learnt more about through the interviews. We also consider it as a potential indication that the learning about multilingualism is relatively new and maybe still taking shape. There is an indication of not knowing where to turn to consolidate the learning. One therapist refers to having become interested in the theme of multilingualism, but feeling uncertain of how to pursue the training: *"At first you know when I first got into the weekend I thought, arghhh a whole day of working with [this]… hmmm not interested thank you very much. And I, but I did change my mind completely ... But if we had more time you know, maybe we could have two events to think about your own language and how it affects you, and then the second [part] could be related to your clients" (4:9).*

Discussion

Our aim with this mixed-method study has been to explore the impact of the training as described by therapists. The first stage involved a survey which addressed nine key components of the training. This survey was completed by 88 therapy trainees and the key findings from this part of the research were revealed in the scores given by the participants to each of the nine components. The highest score was attributed to raising their awareness about the danger of making assumptions. The lowest score was attributed to increased awareness about the importance of code-switching in therapy. The attention to language switching stood out more in the interviews than it had in the survey results; it was a theme in most of the narratives, although not always using the actual terms of 'code-switching'. Languages were described as reference systems, emotionally, socially and cognitively; and language awareness was referred to as a means of integrating and engaging dialectically with the two 'systems' or aspects of the self.

Transformative Learning in Progress

Assumptions were indeed a dominating theme; it seeped into most areas of life. As one therapist said: *"I felt it changed me as a person, it changed my attitude to people"*. The therapists expressed overall a considerable degree of transformative learning as a result of their training. Much attention was paid to the therapists' client work, focusing on the clients' ability to free-associate, narrative knowing and self-discovery. As therapist 5 said; "*Languages is a whole reference system … childhood, culture, class and different understandings".* The therapists reflected also, in the interviews, about how the training had affected their thinking around how using different languages might have impacted their own sense of self. One reflected over her own mother having stopped using her native language. Another therapist became curious about what she could explore about her sense of self in personal therapy drawing more from her native language. Interestingly, none of the therapists used language-switching in the interviews. The therapists spoke about having had to revise and expand their original theoretical frameworks. One psychoanalytic therapist incorporated a new systemic thinking in her practice, one family therapist spoke about incorporating psychoanalytic attachment theory and neuroscience, one CBT therapists spoke about an interest in existentialism and another CBT therapist incorporated psychoanalytic perspectives into his practice after the multilingual training. Social constructionist, Psychoanalytic, Existential and CBT frameworks were considered from different angles with new questions in mind, largely integrated around a social constructionist approach to language with an interest in a client's developing and sometimes conflicting narrative knowing. From having been considered a problem, multilingualism is being referred to as a potential therapeutic asset by the interviewed therapists. The learning feels new and exciting and enriching in most therapists' cases. The interviews suggest, however, that therapists would have benefitted from further training, maybe a two-staged training with; as one therapist suggested - one event *"to think about your own language and how it affects you"* and a *"second part, related to your clients"* (4:9).

Limitations of the Research

With hindsight we think that the interviews would have been a valuable opportunity to explore the potential impact that language switching may have had on the therapists. We approached the interviews with the low scoring from the survey for code-switching in mind, and had – as outsiders- paid little attention to the area of study ourselves beforehand. We noticed from the way the therapists talked *about* language switching that it had been a significant part of their learning, but wonder what encouraging the therapists to draw from different languages during the interviews might have evidenced.

Another limitation in our study, is that one of the authors was directly involved with the training. A decision was taken to include this author as she was the access point for the training participants. She was also one of the authors of the original research, which informed the training curriculum. This author was involved at the access stage, original questionnaire design and the description of the training and was not involved at any stage in analysing the quantitative data, in interviewing participants or listening to the transcripts. With the inclusion of the other researchers and authors, it was decided that there was some useful learning that had emerged from the research which validated its dissemination more widely.

Further Research

Although the sample size of 88 therapists in the survey and 7 therapists in the interviews was a reasonable size, only one set of training was evaluated. It would be useful to evaluate other trainings from different organisers and to include therapy for couples, families and groups. It would also be useful to research the experiences of clients who have received therapy from multilingually trained therapists to consider other angles to the impact of the training on the ultimate beneficiaries. The therapists in this study refer to language awareness as a therapeutic tool to explore multilingual clients' opportunities to free associative explorations of their different sets of narrative knowing. We would like to see more research into the lived experience of language switching to understand multilingual clients' understanding, challenging and potential reconstruction of their narrative selves.

Conclusion

In psychotherapy, the therapist is typically expected to facilitate the client to freely associate around events and experiences, and rely on language as a means to organize events and experiences into meaningful wholes through narratives, which can be explored, challenged and potentially restricted during the therapeutic relationship and session. The therapists in our survey (n = 88) suggested that their training in multilingualism had challenged their assumptions to a high degree. Our interview participants (n = 7) evidenced transformative learning on a professional as well as personal level. Based on the findings of the present study, we suggest that training about multilingualism as a means of understanding multilingual clients' different and sometimes conflicting 'narrative knowing' and sense of self, be integrated in core psychotherapy courses. Based on the interviews in particular such training should include more space to include both personal and professional development components to allow trainees to consider the impact of multilingualism on their lives

and on the lives of their clients.

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Authors' Biographical Note

Dr. Sofie Bager-Charleson is the Director of Studies on the MPhil/PhD at Metanoia. She also teaches and supervises research students on the Professional Doctorate programme, DPsych and on the TA MSc at Metanoia/Middlesex University. She has published widely in the field of research reflexivity, including the text book *Practice-based Research in Therapy: A Reflexive Approach* (Sage, 2014) and acting as guest editor in the UKCP journal *the Psychotherapist* (2016) about Creative Use of Self in Research. She researches into Psychotherapy research (Bager-Charleson, du Plock & McBeath 2018 in press) and is the co-founder of *IMPACT*, a research network headed by Professor du Plock at the Metanoia Institute, aimed to encourage the generation and exchange of ideas and knowledge within and beyond the Institute. Sofie is a UKCP and BACP registered psychotherapist and supervisor. She holds a PhD from Lund University in Sweden, specialising in attachment issues within families and reflective practice amongst teachers.

Dr. Jean-Marc Dewaele is Professor of Applied Linguistics and Multilingualism at Birkbeck, University of London. He does research on individual differences in Second Language Acquisition and Multilingualism. He has published over 210 papers and chapters, co-edited five books and six special issues. He is the author of a monograph *Emotions in Multiple Languages* in 2010 (2nd edition in 2013) and co-author of *Raising Multilingual Children* (2017). He is president of the *International Association of Multilingualism*, Convenor of the *AILA Research Network Multilingualism*, and former president of the *European Second Language Association*. He is General Editor of the *International Journal of Bilingual Education and Bilingualism*. He won the Equality and Diversity Research Award with Beverley Costa from the *British Association for Counselling and Psychotherapy* (2013) and the Robert C. Gardner Award for Excellence in Second Language and Bilingualism Research (2016) from the *International Association of Language and Social Psychology*.

Dr. Beverley Costa, a psychotherapist, set up Mothertongue multi-ethnic counselling service in 2000. Mothertongue also runs a dedicated Mental Health Interpreting Service. In 2009 Mothertongue won The Queen's Award for Volunteering. Beverley is an Honorary Research Fellow at Birkbeck, University of London and has written a number of papers and chapters on therapy across languages. Together with Jean-Marc Dewaele, their paper: *Psychotherapy across Languages: beliefs, attitudes and practices of monolingual and multilingual therapists with their multilingual patients*, won the 2013 *BACP* Equality and Diversity Research Award. She established *Colleagues Across Borders* in 2013, which offers pro bono peer support and training to refugee psychosocial workers based in the Middle East. She set up the *Bilingual Therapist and Mental Health Interpreter Forum* in 2010. This meets twice a year in London. She produced the world premiere of the play about a cross language couple

The Session in 2015 at The Soho Theatre, London. She is currently producing an Arts Council England funded play about interpreters.

Dr. Zeynep Kasap, graduated with a BSc in Biological Sciences and Bioengineering from Sabanci University in Istanbul, Turkey in 2005. Following a one-year MSc in Cell Biology in Bordeaux, France, she moved to Italy to pursue a PhD in Neurobiology. Zeynep obtained her PhD in Neurobiology from SISSA institute in Trieste, Italy in 2010. She had a brief post-doctoral research experience in neurobiology at University College London, and became interested in psychotherapy. She is now on her second year at Metanoia Institute, pursuing an MSc in Contemporary Person-Centred psychotherapy.

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Regulating Affective Involvement in In-Session Verbal Interaction by Shifting Perspective: A Longitudinal Study of One Client-Therapist Dyad in Psychodynamic Psychotherapy

Eszter Berán[1]
Pázmány Péter Catholic University, Institute of Psychology

Czobor Pál
Semmelweis University, Psychiatric and Psychotherapy Clinic

Unoka Zsolt
Semmelweis University, Psychiatric and Psychotherapy Clinic

Abstract

Our study examined in-session affect regulation as a self-regulatory process as well as a process of interpersonal regulation during the psychoanalytical therapeutic session. We used a novel approach for studying affective involvement by analyzing narrative perspective (NP) taken by client and analyst. In a longitudinal study of 18 months we observed the interaction of one client—therapist dyad during the psychoanalytic session in the early and working phases of psychotherapy. Transcribed sessions were segmented into intonation units, and participants' use of NP was then coded for each intonation unit line based on six linguistic variables shown to signal affective involvement in earlier studies: verb tense, subject number and person, diegesis, focalization, and discourse level. We found that affective involvement on the part of both speakers was higher at the working phase. The client's involvement was higher than the therapist's. We describe an affect-regulation cycle characteristic of the interaction. Our approach proves to be useful in analyzing regulation of affective involvement and its long term change. Differences were detectable in the self and interactive regulatory strategies of affective involvement.

Introduction

Affect regulation in the psychotherapeutic setting has been linked to effective treatment outcomes (Bradley, 2003; Sloan & Kring, 2007; Watson, McMullen, Prosser, & Bedard, 2011) in various forms of psychotherapies. By affect regulation – following Watson and colleagues (Watson et al., 2011) — we mean the capability to process, modulate, and express affective experience. In-session affect regulation has been measured based on verbatim transcriptions of the therapeutic session–among other methods — showing that affectively rich and less emotional but rather abstract,

[1] Correspondence concerning this article should be addressed to Eszter Berán, Department of Developmental and Clinical Child Psychology, Pázmány Péter Catholic University, Budapest, Hungary, 1088 Budapest, Mikszáth tér. 1. Email: eszter_beran@yahoo.com

reflective sequences of talk during the psychoanalytic session differ in terms of their function in the therapeutic process (Mergenthaler, 1996; Buchheim & Mergenthaler, 2000; Bucci, 1995; Bucci, 2001; Thoma & Kachele, 2006). Affective involvement and regulation strategies of client and therapist may also change from the beginning of treatment over time, predicting, for example, emotional processing during working phases of therapy as well as outcome (Watson et al., 2011; Berking et al., 2008). The purpose of the current study is to introduce a novel method for examining regulation of affective involvement during the psychoanalytic session. We assess affective involvement by examining structural characteristics of self–narratives jointly constructed by client and analyst during the session, based on the full verbatim transcripts of talk. We show how change in regulation of affective involvement can be assessed in the talk of one client-therapist dyad at two therapy sessions taking place 18 months apart, one from the beginning, and one from the working phase of treatment. We compare sessions by analyzing shifts in narrative perspective (NP) of the speakers.

NP is the point of view from which the narrator presents actions, events, and characters of the narrative to listeners (Genette & Lewin, 1983; Uspensky, 1973). Previous studies have shown that linguistically based aspects of NP – for instance verb tense, subject number or person — vary in terms of expressing emotional involvement of the narrator (Schiffrin, 1981; Wolfson, 1979; Tannen, 1989; McIsaac & Eich, 2002; McIsaac & Eich, 2004; Sutin & Robins, 2008). Since NP of speakers shifts continuously during interaction (Uspensky, 1973; Chafe, 1994), levels of affective involvement of speakers also vary along with shifts in perspective. We conceptualize this process as a mechanism used for regulating affective involvement on the part of the speakers during in-session interaction either by the speaker's self-regulation, or through interactive or interpersonal regulation. We define interpersonal regulation of the speakers by assuming that they influence each-other's perspective shifts, through a coordination of perspectives (Garrod & Pickering, 2009; Berán & Unoka, 2005).We make a case that this method can be used for measuring expression of affective involvement of the speakers, analyzing both self-regulative aspects and interactive aspects of regulation.

Measures of In-Session Regulation of Affective Involvement

Since various psychotherapy approaches aim to develop and improve skills for emotional functioning (Berking et al., 2008), it is important that clinical research focuses on various aspects of this process, such as experience, regulation, and awareness (Sloan & Kring, 2007). Affect regulation — including processing, modulating and expressing emotion experience — has been traditionally measured by self-report questionnaires (Alpers, Wilhelm, & Roth, 2005; Gross & John, 1997; Kring, Smith, & Neale, 1994; Watson, Clark, & Tellegen, 1988), coding of facial emotion expressions (Kring & Sloan, 2007), as well as online physiological measures (Alpers et al., 2005). Several methodological considerations suggest, however, that the method of audio recording and transcribing sessions could be a useful way of examining in-session affect regulation (Sloan & Kring, 2007; Thoma & Kachele, 2006; Wallerstein, 1988; Wallerstein, 2005; Watson et al., 2011). The argument for analyzing psychotherapy transcripts with such a goal involves problems presented by other methods. For example, in case of post-session self-report questionnaires estimations of affective intensity may not be exact, and the person responding to the

questionnaire may not only be influenced by recent affective experience, but also by the knowledge of how s/he is supposed to feel in such situations (Robinson & Clore, 2002). In the case of facial coding of emotion expression the training of coders is a long and expensive process, and in addition, video recording may interfere with the natural processes of psychotherapy (Sloan & Kring, 2007). Another, more intrusive measure is the online measure of physiological variables, which is not widely used by clinicians, since again, it may interfere with the psychotherapy process. Audio recording of sessions is a less intrusive method of data collection, and there is no technical personnel needed to be present at the sessions. In addition, verbatim transcripts give an immediate direct insight into the events of the session as opposed to post-session self-report questionnaires.

The literature of analyzing in-session transcripts has been ever growing (Luborsky, 1977; Perakyla, Antaki, Vehvilainen, & Leudar, 2008; Price & Jones, 1998), but in fact only in a handful of cases was this method used for analyzing affect regulation of the speakers (Bucci, 1995; Bucci, 2001; Mergenthaler, 1996; Thoma & Kachele, 2006). These studies have focused on psychoanalytic psychotherapies. Mergenthaler (1996) identified key moments or breakthroughs in in-session interaction by first differentiating sequences of talk rich in emotional expression, and sequences focusing on more abstract topics using content analysis. The emotion-abstraction cycles of the therapy allowed him to locate key moments of treatment. Bucci (2001) in a somewhat similar line of thought used the concept of referential activity to relate language use at the session to unconscious or conscious imagery, body and emotion experience. Thomä and Kächele (2006) in their computerized content analysis method analyzed emotionality of words and expressions distinguishing positive and negative affect related to the self or to the other.

In our study, we use a novel approach for the narrative analysis of regulating affective involvement, examining NP patterns used by the speakers. NP, as we mentioned earlier, refers to the narrator's point of view, expressing the narrator's relationship to events and characters of the narrative. NP is measured by linguistic variables, expressing affective involvement of narrators. Our method for choosing variables of NP expressing affective involvement has been based on previous experimental studies mainly from the cognitive and autobiographical memory literature.

Affective Involvement Expressed in NP

Previous studies examining structural characteristics of narratives showed that affective involvement during reading and listening to stories is related to structure as much as to content of narratives. For example, stories of severe loss (death of a close relative) result in stronger affective reaction in listeners than a less severe loss (death of a pet) (Habermas & Diel, 2010). At the same time, experience of remembering of past events and affective involvement in narrating past experiences is also expressed in the particular wording (Barclay, 1996), and formal structural elements of narratives, such as the perspective of speaker/narrator (Berán & Unoka, 2005; Berán & Unoka, 2012; Habermas & Diel, 2010; Pólya, Kis, Naszódi, & László, 2007). Thus, evidence suggests that affective involvement of the self is expressed in various aspects of perspective: use of verb tense (Pólya et al., 2007; Schiffrin, 1981; Tannen, 1989; Wolfson, 1979), subject person and number (Gambini, Barbieri, & Scarone,

2004; Jackson, Meltzoff, & Decety, 2006; McIsaac & Eich, 2002; Sutin & Robins, 2008), description of emotions and mental contents (Habermas, 2006; Sabatinelli, Lang, Bradley, & Flaisch, 2006), as well as detail and specificity of description (Baumeister & Newman, 1994; Raes, Hermans, de Decker, Eelen, & Williams, 2003), and the episodic character of the remembered story as opposed to general or semantic knowledge (Barclay, 1996; Conway & Pleydell-Pearce, 2000; Conway, 2009).

The varied use of verb tense has been related to expression of affect intensity in personal narratives (Pólya et al., 2007; Wolfson, 1979). Shifting to present tense while narrating past events dramatizes expression, making it more vivid (Schiffrin, 1981; Tannen, 1989), resulting in an impression of increased emotional intensity and involvement (Pillemer, Desrochers, & Ebanks, 1998; Pólya et al., 2007), as well as honesty perceived by listeners (Habermas & Diel, 2010). In addition, in narrative terms the self is experienced as a flow of consciousness making sense of the world moment by moment in the actual present time, and hence we considered the verbal use of present tense to be closer to this actual self-experience. Therefore, in our model of NP variables we use verb tense to assess affective involvement of the self. Using present tense is treated as signaling more intense emotional involvement in comparison to past tense verbs, or the very rarely used future tense (Berán et al., 2011).

A deeper involvement is suggested when the narrator is part of the story world he/she is describing, compared to when he/she is recounting events from an outsider's point of view (Kenny et al., 2009; Sutin & Robins, 2008). The narrator's talking in first person singular in contrast to third person has also been shown to express greater self-involvement (Gambini et al., 2004; Jackson et al., 2006; McIsaac & Eich, 2002; Rice & Rubin, 2009; Sutin & Robins, 2008). We use three variables to express subjective position of the narrator in order to capture the above mentioned aspects: inside or outside narrator position (diegesis variable), and subject number and person variables. We consider first person singular subject and inside narrator position to express more intense affective involvement of the speaker.

A more intense emotional expression and involvement characterize narrators when they include mental state descriptions such as affective states, emotions, feelings, intentions, desires, thoughts (Habermas, 2006; Sabatinelli et al., 2006) – as opposed to describing events and behaviors without reference to mental states. Description of mental states may include the narrator's own mental states or mental states of other characters in the narrative manifesting what has been referred to as intentional stance (Dennett, 1989), theory of mind (Fletcher et al., 1995), or a mentalizing attitude (Fonagy, 2006) towards self and/or others. In our model we used the variable "focalization" to capture this aspect of NP. In focalization we distinguished a) internal focalization: where the narrator included reference to mental states of self and/or others, and b) external focalization when he/she did not refer to mental states, only giving information on events and overt behavior of self and/or characters in a given unit of analysis. Internal focalization is considered to be more affectively rich than external focalization.

Narrating a concrete, specific life episode in more detail as opposed to talking about general life experience, or summarizing over lengthy time periods of the life story suggests deeper self-involvement of the narrator (Baumeister & Newman, 1994; Raes

et al., 2003). Giving a more detailed description of events expresses more intense involvement than vague statements and lack of detail (Bucci, 2001; Conway, 2009). According to Barclay (1996) emotional intensity characterizing episodic memories can be traced in verbal expressions of emotion, greater cohesion of memory, shorter expansion of time period described by the memory, presence of spatial temporal contextual information, and causal expressions, richer perceptual detail. In our conceptualization of NP we used the discourse level variable to capture these distinctions. This variable differentiates three positions of the person narrating the story: 1. discourse position, referring to the here and now of the therapeutic situation, 2. narrator position, referring to the taking of the position of the narrator of the story, 3. character position, referring to the taking the position of a character in the story: the narrator's formal self, or another character. These three positions differ in terms of subjective knowledge, and affective involvement. The first level differentiates the narrative from other discourse activities at the session referring to the here-and-now of the actual situation. The narrator and character positions differ in terms of autobiographic memory type: in the former position the speaker recounts memories that are more general, refer to longer periods of the life story, whereas the character position refers to unique episodes (Conway, 2009). This latter position requires more intense affective involvement of the self.

Affect Regulation During Joint Construction of Narratives

Construction, reconstruction and transformation of the client's self-narratives is part of the therapeutic process in various types of psychotherapies, including psychoanalysis (Angus & McLeod, 2004). The therapist's interventions and other contributions (e.g. listening clues to the client) are also part of this process. Thus, we can talk of the joint construction of narratives by client and therapist in the therapy session, emphasizing this interactive facet of treatment, and the fact that the newly reconstructed and transformed narratives of the client are partially attributed to the therapist's contributions. In the joint construction of narratives during psychotherapy, we describe two types of affect regulation processes: self-regulation, and interpersonal regulation, both detectable in shifting of NP.

The first kind, self-regulation is expressed in continuous talk of each participant, when shifting from one NP to the next. The second type, interpersonal regulation, is expressed in the segment of talk of one participant following the other speaker, for instance the client following the therapist's intonation unit, and shifting to the perspective of the previous speaker. In this case, the shift in perspective is attributed to the coordination of perspectives between the speakers (Berán & Unoka, 2012). The cognitive background of the interpersonal regulation process is similar to the coordination and alignment of other discourse phenomena, such as bodily posture, grammatical structures, choice of wording (Garrod & Pickering, 2009). In the joint attention situation at the session, the speakers direct each-others attention to certain aspects of the narrative (Berán & Unoka, 2005; Chafe, 1994; MacWhinney, 2005; Nelson & Fivush, 2004). The directing of attention is realized while the speaker's and listener's attention is jointly focused at telling of and listening to the narrative.

In our study, we suggest that both self and interpersonal regulation has a role in regulating affective involvement of the self. We examine long-term changes in affect

regulation of one client-therapist dyad by comparing use of NP patterns of the speakers from the initial and working phases of therapy. Specifically we hypothesize that expression of affective involvement will be more intensive over time, so that both the therapist's and the client's expression will be more affect intensive by the working phase of therapy compared to the beginning phase. We hypothesize that this will be detectable overall and by the individual variables measured. The increase of affective involvement is a sign that the participants have developed trust and emotional attachment towards each other, which makes it possible to tell stories that reflect deeper involvement, which is related to alliance as well (Levy et al., 2006). We also hypothesize that the client's affective involvement will be more intense than the therapist's, due to the differing roles they play in therapeutic discourse: the client telling his own stories showing higher affective involvement, whereas the therapist trying to keep affective involvement at an optimal level for the purposes of therapeutic work. Hence, we expect that the therapist typically down-regulates affect, whereas the client up-regulates. Assessing self and interactive regulation of the participants we also describe the affect regulation cycle characterizing the session.

Methods

Data Collection and Sampling

The data for the current study has been collected between 2004 and 2006 as part of the Budapest Psychotherapy Data-base by two of the authors, in Budapest, Hungary, in Hungarian language. 15 audio-recorded sessions of long term psychoanalytic therapeutic treatment were recorded with the given client-therapist dyad for a period of 18 months into treatment from the onset of therapy. Sessions were recorded during three time periods: five consecutive sessions at the beginning phase of treatment, five consecutive sessions in the middle of the observation period (working phase of therapy) and five consecutive sessions at the end of the observation period (working phase of therapy). The current study uses the recorded text of two 50 minutes long therapy sessions with a male therapist - male client dyad. One session examined here is randomly selected from the beginning phase of psychotherapy, a few months after its onset (referred to as early session). We compare this session, which we consider the base-line, with another session randomly selected from the working phase of therapy, after 1.5 years (referred to as the late session).

Participants

Participants were volunteers, and received no compensation for participating in the study. The therapist participating in the study is a trained and licensed clinical psychologist and psychoanalyst in Budapest, Hungary. He is a member of the Hungarian Psychoanalytic Association and the International Psychoanalytic Association. The treatment method applied was psychoanalysis, more specifically object relation theory. Treatment was applied three or four times a week. The client in the study is a middle aged (41 yrs) high level professional, unemployed at the time, previously working in state bureaucracy. He lived in Budapest, Hungary at the time of his treatment. His family background is middle class, he had a university degree, and was single at the time. His diagnosis assessed by his analyst indicated on DSM-IV-R included Axis I: Dysthymia, and Panic disorder, Axis II: Obsessive, Paranoid Personality disorder with Narcissistic traits. He had no axis III disorders, and on Axis

IV: mild stress. His medical history included suicide attempts; on one occasion he needed medical help because of his suicide, and he had been previously admitted to inpatient psychiatric treatment.

Ethical Considerations

The study was approved by the board of Semmelweis University Regional and Institutional Committee of Science and Research Ethics, Budapest. Participants have signed the informed consent form in which they agreed to the anonymous use of their material for scientific and educational purposes. Also, participants had the chance to resign at any point of the observation period, if they felt uncomfortable. Since recordings were carried out by the therapist, the researchers did not meet the client personally. In order to preserve privacy of the client and therapist by keeping their identity anonymous we deleted all personal information from the text-files, such as names of persons and places, dates of events, and replaced by fictive names and dates, etc.

Data Transcription

As described in Berán and Unoka (2015): Audio-recorded therapy sessions were transcribed by the first author using the transcription codes of the Child Language Data Exchange System (MacWhinney & Snow, 1990). Talk at the session was transcribed verbatim, segmenting the speech flow into intonation units, as defined by Chafe (1994) in English, and by Németh (1996) in Hungarian. According to this, an intonation unit was defined as a group of words bounded by silence, a short pause or final intonation contour to signal question, period, or exclamation. Single words, sentence fragments could also be considered separate or fragmented intonation units. One typical 50 minutes session consists of about 1000 intonation units.

Coding of NP

Coding of NP was based on the original transcript in Hungarian, according to the system described in the Handbook of Coding Narrative Perspective (Berán, 2009). We used the following variables in coding NP for each individual intonation unit line:

1. Verb tense: the grammatical verb tense in Hungarian includes three categories: past (1), present (2), and future (3), signaled in the verb suffix. In case there was no verb in the given intonation unit, or syntactically related clause, we coded non-applicable (0).
2. The narrator/character's relation to the story world (i.e., "diegesis"), where narrated events take place. The narrator him or herself may be part of the story world, by participating in events of the story: inside-narrator or homo-diegesis, (1), or may not be participating in it, rather looking at it from the outside: outside-narrator or hetero-diegesis (2). For example, in the following dialogue between the client (C) and therapist (T), the client uses the inside narrator position, whereas the therapist uses the outside position:

   C: *for example, when last time we talked about this, about the children and everything, my brain like like it did not stop about it when I left here.*
   T: *and what came to your mind?*

The third (rather rarely used) category is the so called pseudo-narrator position or pseudo-diegesis (3), when the narrator identifies with a character of the story, and shifts to their point of view. This is accomplished usually with direct quotation. For example, in the following monologue of the client we find a shift from hetero to pseudo-diegesis. The client is talking about difficulties of raising children: *"That they can take it lightly. You know 'cause 'they are fine, no need to worry about them', I don't know."* Here the 'they are fine, no need to worry about them' is a direct quotation of those kind of parents' thinking or speaking who take it lightly. The client illustrates his argument by directly expressing their point of view. In case the diegesis variable could not be applied to a given intonation unit (for instance due to fragmentation of the unit), we used the non-applicable (0) category.

3. Grammatical subject: number. This is the same in Hungarian as in English, except that in Hungarian the subject number may also be placed in the verb suffix. The subject could be singular (1) or plural (2). In case there was no subject in a given intonation unit or syntactically related clause, we used the non-applicable category (0). For example, in the following quote from the client: *"not only that I have never experienced, but I have not ever heard such a thing from anybody"* is a singular subject.
4. Grammatical subject: person. This is the same in Hungarian and in English. The subject could be first (1), second (2), or third (3) person. We also distinguished impersonal (general) subject (4), or used the non-applicable category if there was no subject present in a given intonation unit or syntactically related clause (0). For instance, using the above example: *"not only that I have never experienced, but I have not ever heard such a thing from anybody"*, we coded first person, because the subject was the *'I'*.
5. Mode of focalization: The narrator's way of perceiving his/her own, and other character's inner world, his/her knowledge or lock of knowledge of it. Describing feelings, thoughts, desires or just overt behavior. We differentiated intonation units which only describe overt behavior and events, called external mode of focalization (1), from those expressing mental contents (emotions, desires, intentions, etc.), called internal mode of focalization (2). Also, we used the non-applicable category (0) if focalization could not be interpreted on a given intonation unit or syntactically related clause (for instance, in case of fragmented intonation units).
6. Discourse level: Positions the narrator in terms of whether he/she is telling the story in the *here and now* of the therapeutic session, talking about the thoughts and feelings related to what is happening in the present: 'here and now of the therapeutic session' (1); or recalling general autobiographical information referring to repeated, or typical events, or extended life-time periods (Conway, & Pleydell-Pearce, 2000): 'narrator's level' (2); or recalling autobiographical information related to a specific episode, a one-time event in the speaker's past life: 'character's level' (3). We used the non-applicable (0) category when discourse level could not be determined, for example, in case of fragmented intonation units. Let us look at the following dialogue, in which the client is talking about his humiliation at his former workplace:

   C: *well and after that it followed that when they handed out rewards, which of course you know that it's called a reward in the administration, but it is like everyone gets that.*

T: *Yes*.
C: *so it is practically an extension of your sellary. And then what happened was that everyone got it, but me. And this was even especially emphasized at the meeting, like because S. does not get it.*

At the beginning of the dialogue the client is talking about general information related to autobiographical events that repeatedly and typically occurred during the period he was working at the given institute. Therefore intonation units here were coded as narrator's level. From the point of *"And then what happened…"* he shifts into a concrete life-episode describing how he was mistreated and then humiliated at the meeting at one time. Therefore, intonation units in this section were coded as character's level. The level of the „therapeutic here-and-now" often takes the form of the therapist's interpretations or interventions. Let us look at the following dialogue:

T: *so we may even think that that has been an ideal situation, because there was no female boss.*
C: *that's right.*

Intonation units of the dialogue were coded as therapeutic-here-and-now, because it refers to the current situation, what we may think of previous events now, in retrospect.

Coding for the two sessions was carried out by the first author, inter-rater reliability was computed based on 300 intonation units of the total transcript coded by two independent raters. Cohen's kappa was 0.63, which shows a substantial level of agreement.

Measures of Affective Involvement and Affect Regulation

To measure affective involvement of the self expressed in talk we created a 7 point scale using the following variable values: inside narrator, present tense, first person, singular, character level, internal focalization — each representing one point on the "affective involvement of the self" scale. We computed values for each intonation unit for affective involvement. Regarding affect levels we distinguished sequences based intonation units (self vs. interactive regulation), testing regulative role of NP accomplished by shifting. We distinguished four types of intonation units, based on intonation unit sequences, always analyzing the first unit after the change of speaker:

1) Intonation unit produced by the client was followed by another intonation unit also produced by the client (CC unit);
2) Intonation unit produced by the therapist preceded by client's intonation unit (CT unit), analyzing units 'T';
3) Intonation unit produced by therapist followed by another also produced by the therapist (TT unit);
4) Intonation unit produced by the client preceded by the therapist's intonation unit (TC unit), analyzing units 'C'. We also computed level of affective involvement for each sequence based unit, using the same method as described above.

Statistical Analysis

For statistical analysis we used the Statistical Analysis System (SAS) 9.4 package. In the statistical analysis of sequence based units we found that much of the therapist's contribution consisted in giving listening clues to the client, in other words short feedback ensuring the client that the therapist is there, paying attention to what he says. Such listening clues include *"hm"*, *"aha"*, *"uhm"*, yes, although highly important in therapy, however, could not be coded in terms of expressing a specific NP. Therefore they were coded as Not-Applicable (NA). This category also included intonation unit fragments that would stand outside of contextual meaning, not expressing any interpretable perspective.

In our analysis we created cross-tabulations in order to investigate the distribution of variable categories. Due to large number of intonation units, in the categories we typically had a high number of cases. We used Generalized Linear Integrated Mixed Model analysis (GLIMMIX procedure, SAS 9.4 version) to identify significant differences in distributions according to categories. This model allows for handling repeated measures and clustered, dependent data (Liang, & Zeger, 1986; Lin, & Breslow, 1996), such as those observed between the therapist and client across the repeated intonation units. Furthermore, it makes possible to investigate variables that deviate from Gaussian distribution, including polychotomous categorical data that are measured at a nominal scale (Koch, Carr, Amara, Stokes, & Uryniak, 1990) (e.g., verb tense, diegesis, subject number, focalization, person, discourse level). Categorical variables measured at a nominal scale were tested in our study using the multinomial distribution with the generalized logit function; ordered categorical data (such as level of affective involvement), were tested using the multinomial distribution with the cumulative logit function.

Results

Descriptive Statistics

In order to examine distribution of speech among client and therapist, we assessed distribution of intonation units between client and therapist as shown in Table 1. Data suggest that the client talked about four times as much as the therapist at both sessions.

Table 1

Distribution of intonation units by speaker and session

Who speaks?	Frequency	Percent
Early session		
Client	740	80.2
Therapist	183	19.8
Late session		
Client	1113	88.3
Therapist	147	11.7

Testing of Hypotheses

According to our hypothesis, we expect affective involvement to increase by the late session. In order to test whether there was a difference in affective involvement at the sessions we used our seven point scale described above measuring affective involvement of the speakers and used the Generalized Linear Integrated Mixed Model analysis (GLIMMIX) to determine the difference of involvement at the early and late sessions by speaker. This model allows for handling repeated measures data, and variables that deviate from Gaussian distribution. There was a main effect for session, $F (3, 2183) = 39. 23$, $p < 0.0001$, with mean values (M) indicating that affective involvement was higher at the late session (for the early session M = 2.97, SD = 1.29; for the late session M = 3.30, SD = 1.11), thus confirming our hypothesis. In order to test whether the client's involvement was higher than the therapist's – as we stated in our hypothesis — we also compared affective involvement between client and therapist. There was a main effect for speaker, $F (3, 2183) = 81.65$, $p < 0.0001$, with mean values indicating that the client's affective involvement was higher than the therapist's (for the client M = 3.19, SD = 1.19; for the therapist M = 2.48, SD = 1.20. There was no interaction between speaker and session, $F (3, 2183) = 0.04$, $p = 0.83$ (for the early session, for the client M = 2.92, SD = 1.29, for the therapist M = 2.29, SD = 1.17; for the late session for the client M = 3.37, SD = 1.08, for the therapist M = 2.72, SD = 19).

In order to examine distribution of NP variables among speakers at the two sessions, we performed a GLIMMIX analysis between the categories of each NP variable in order to test whether there was an association between session type (early and late) and NP patterns for each speaker. Table 2 shows the distribution of the six NP variables according to speaker by session as well as GLIMMIX test results for comparisons of early and late sessions.

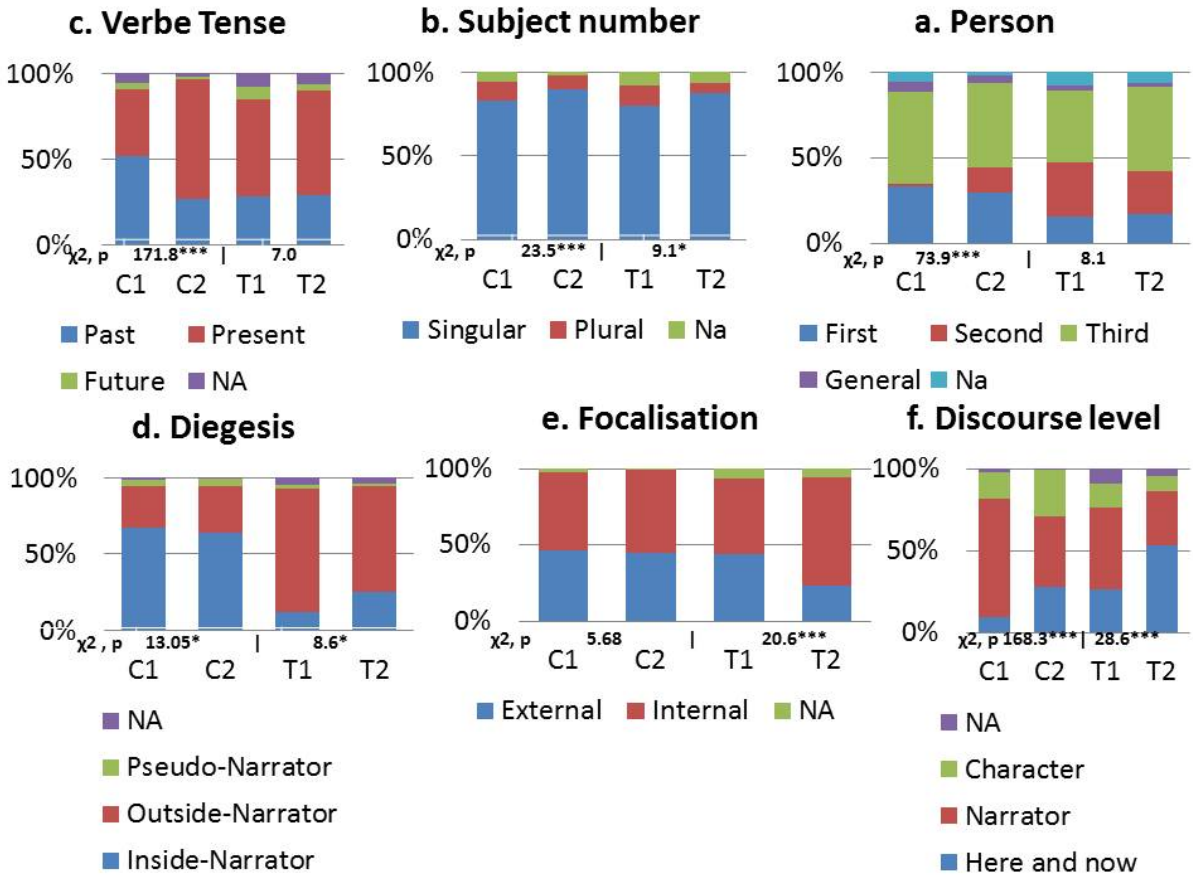

Figure 1

Distribution of the six NP variables in intonation units by speaker and session

Note. C1 = the client's intonation units at the early session; C2 = the client's intonation units at the late session; T1 = the therapist's intonation units at the early session; T2 = the therapist's intonation units at the late session; NA = non-applicable. *p<0.05, **p<0.01, ***p<0.0001

Results of GLIMMIX tests show that in the client's talk there was a significant difference between NP patterns used at the early and late sessions in case of four variables: verb tense, subject number and person, and discourse level. Thus, in case of these variables, there was a relationship between early and late session and distribution patterns. In the therapist's talk, the variables of diegesis, focalization, discourse level, and subject number showed significantly different patterns of distribution between sessions.

We used sequence-based intonation units to measure potential effects of affect regulation of the speakers. For this, we used the four types of sequence-based units described above. In total, there were 1577 CC units (589 at the early, and 988 at the late session), 276 CT units (152 at the early, and 124 at the late session), 277 TC units (151 at the early, and 126 at the late session), and 172 TT units (110 at the early, and 62 at the late session).

In order to understand distribution of sequence based intonation units, we used again a GLIMMIX analysis. Figure 2 shows the distribution of the six variables of NP for the four types of sequence based intonation units by session. We tested if there was a difference in NP distribution patterns among the sequence based unit types at a given session. We found a significant difference among sequence based unit types both at the early, and at the late sessions, except for focalization at the early, and verb tense at the late session, which were not significant.

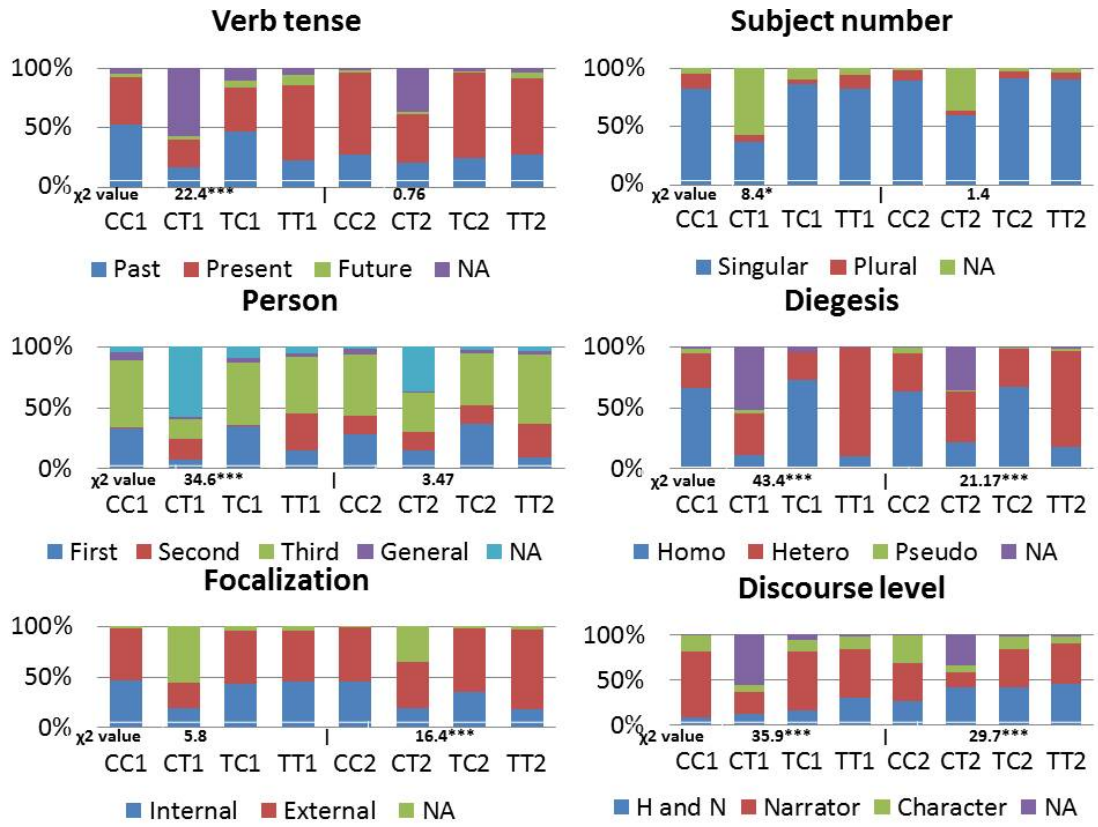

Figure 2

Distribution of the six NP variables for sequence-based intonation unit by session

Note. CC = sequence based unit where the client's intonation unit is preceded by another of the client's intonation unit; CT = sequence based intonation unit where the therapist's unit is preceded by the client's unit; TC = sequence based unit where the client's unit is preceded by the therapist's intonation unit; TT = sequence based intonation unit, where the therapist's unit is preceded by another of the therapist's unit; C1 = the client's intonation units at the early session; C2 = the client's intonation units at the late session; T1 = the therapist's intonation units at the early session; T2 = the therapist's intonation units at the late session; NA = non-applicable. *** $p<.0001$

To test the difference in affective involvement based on our seven point scale between sequence based unit types in total, we used the GLIMMIX procedure since this variable (total) represents ordinal-scale measure. We characterized self regulation of

the speakers by CC and TT unit types, and interactive regulation by CT (interactive effect of the client on the therapist's speech) and TC (interactive regulation effect of the therapist on the client) unit types. There was a significant difference among sequence based unit types overall $F(7, 20301) = 148.86$, $p < 0.0001$. Table 2 shows the significance of differences among unit types. CC and TC type units showed the most affective involvement, and there was no significant difference between them (for CC units M = 3.18, SD = 1.17; for TC units M = 3.20, SD = 1.3). TT units showed the next highest level of involvement (M = 2.48, SD = 1.05), and CT type units showed the lowest (M = 1.47, SD = 1.58).

Table 2

Significance of differences in affective involvement[a] among types of sequence based intonation units over the two sessions

	CC	CT	TC
CC			
CT	$<.0001^{C}$		
TC	0.2412	$<.0001^{R}$	
TT	$<.0001^{C}$	$<.0001^{R}$	$<.0001^{C}$

Note. [a]: affective involvement was measured on a 7-point scale
CC = sequence based unit where the client's intonation unit is preceded by another of the client's intonation unit; CT = sequence based intonation unit where the therapist's unit is preceded by the client's unit; TC = sequence based unit where the client's unit is preceded by the therapist's intonation unit; TT = sequence based intonation unit, where the therapist's unit is preceded by another of the therapist's unit; index letters C and R indicate whether the column or row sequence-based unit showed higher level of affective involvement, respectively.

Table 3 shows that this same pattern was the case for both sessions: for the early session, the Mean for CC units was 2.90 (*SD* = 1.28), for TC it was 2.98 (*SD* = 1.32), for TT it was 2.35 (*SD* = 1.08), and for CT it was 1.11 (*SD* = 1.40). For the late session the Mean for CC units was 3.35 (*SD* = 1.06), for TC it was 3.46 (*SD* = 1.23), for TT it was 2.69 (*SD* = 0.96), and for CT it was 1.90 (*SD* = 1.68).

Table 3

Significance levels for differences in affective involvement[a] among types of sequence based units by session

		Early session				Late session		
		CC	CT	TC	TT	CC	CT	TC
Early session	CC							
	CT	$<.0001^{C}$						
	TC	0.4491	$<.0001^{R}$					
	TT	$<.0001^{C}$	$<.0001^{R}$	$<.0001^{C}$				
Late session	CC	$<.0001^{R}$	$<.0001^{R}$	0.0004^{R}	$<.0001^{R}$			
	CT	$<.0001^{C}$	$<.0001^{R}$	$<.0001^{C}$	0.0045	$<.0001^{C}$		
	TC	$<.0001^{R}$	$<.0001^{R}$	$<.0010^{R}$	$<.0001^{R}$	0.3690	$<.0001^{R}$	
	TT	0.2101	$<.0001^{R}$	0.1171	0.0783	$<.0001^{C}$	$<.0001^{R}$	$<.0001^{C}$

Note. [a]: affective involvement was measured on a 7-point scale

CC = sequence based unit where the client's intonation unit is preceded by another of the client's intonation unit; CT = sequence based intonation unit where the therapist's unit is preceded by the client's unit; TC = sequence based unit where the client's unit is preceded by the therapist's intonation unit; TT = sequence based intonation unit, where the therapist's unit is preceded by another of the therapist's unit; index letters C and R indicate whether the column or row sequence-based unit showed higher level of affective involvement, respectively.

We also calculated LS means and standard errors for sequence based unit types by session. At the early session LS mean for CC units was 2.90 (SE = 0.05), for TC it was 2.98 (SE = 0.10), for TT it was 2.35 (SE = 0.12), and for CT it was 1.11 (SE = 0.10). For the late session LS mean for CC unit was 3.36 (SE = 0.04), for TC it was 3.46 (SE = 0.11), for TT it was 2.69 (SE = 0.15), and for CT it was 1.9 (SE = 0.11).

Discussion

The goal of our study was to introduce a novel method for studying regulation of affective involvement in psychoanalytical psychotherapy, and show its usefulness of application by examining regulation of affective involvement in two psychoanalytic sessions taking place 1.5 years apart. We defined affect regulation as the capability to process, modulate, and express affective experience (Watson et al., 2011) and we argued that studying verbatim transcripts of therapeutic sessions allows for identification of narrative structures that have different levels of affective involvement; shifting between these levels reflects a regulation of affective involvement. Our study provides evidence that this approach to examining in-session affective involvement can be useful for understanding self – and interactive aspects of affect regulation. Our results show in general the support of our main hypotheses regarding differences of affective involvement between the sessions, as well as the speakers.

Based on the number of intonation units uttered by speakers we found that the client used four times more intonation units than the therapist. Since this pattern was similar at both sessions, in the case of this client-analyst dyad we found this pattern fitting into the popular image of psychoanalytic discourse where the client does much of the talking, and the therapist's role requires him/her mainly to listen.

Affective involvement for both speakers was higher at the late session, after the client has been in analysis for 18 months. This supports our hypothesis that after being in therapy for a substantial period of time, telling of stories that express higher affective involvement becomes possible for the client, since this requires trust and emotional attachment between the participants (Levy et al., 2006). In addition, in certain type of therapies (e.g. experiential treatment) deeper emotional processing – defined as an integration of cognitive and affective aspects of emotion experience — is viewed as the most important therapeutic task, goal, and part of the change process (Greenberg & Pascual-Leone, 1995; Missirlian, Toukmanian, Warwar, & Greenberg, 2005; Watson & Greenberg, 1996; Watson, Greenberg, & Lietaer, 1998). In line with this, Pos, Greenberg, Goldman and Corman (2003) demonstrated that emotional processing independently predicted improvement in case of depressed clients in brief experiential therapy.

In psychoanalytic therapy Freud (1926/1959) emphasized that regulation of anxiety and in general negative affect arising from conflicts between the ego and reality, as well as from conflicts between the ego and super-ego or the id was an important part of the therapeutic process. According to Mergenthaler's therapeutic cycles model of psychoanalytic therapy (1996, 2004) there are phases of treatment (or session) that show increased affect levels, and its function in the analysis is emotional experiencing on the client's part. Thus, it may be the case that increase of affective involvement on the client's part contributes to improved emotional experiencing and processing in psychoanalytic therapy as well.

Our finding that the mean levels of affective involvement in the client's intonation units were higher at both sessions than the analyst's, further emphasizes the importance of in depth emotional processing on the client's part. It also suggests that in our case, client's and therapist's roles differ in terms of affect regulating strategies in the session, as we discuss it below when describing the affect regulation cycle characteristic of the examined sessions.

Our statistical analysis showed that change of affective involvement over time in case of both speakers displayed a similar overall pattern. We suggest that this overall change may show a coordination of affective involvement between the speakers; in other words, it may be the result of interpersonal regulation. At the same time, coordination of change in affective involvement-level of the speakers may also be informative about the alliance (Gaston, 1990) between client and analyst. In order to show coordination of affective involvement they must pay close attention to each-other's level of involvement (i.e. have a high affective attunement), which may be a sign of good alliance. Along a similar line Owens, Haddock and Berry (2012) found good alliance to be associated with better emotion regulation in patients with psychosis. Furthermore, Cloitre, Stovall-McClough, Miranda and Chemtob (2004)

found that good alliance predicting positive outcome in PTSD patients with childhood abuse was mediated by an improved capacity to regulate negative affect states.

Examining the six variables of the affective involvement scale, we found significant differences of NP patterns used by both speakers at the two sessions. The client's use of verb tense, subject number and person, and discourse level differed at the early and late sessions. Looking at verb tense, the overwhelming proportion of past tense the client used at the early session shifted to an overwhelming present tense use by the late session. Since our coding system did not differentiate between the use of present and historical present (recounting a past event in the present tense), this result may suggest that the client recounted life episodes using present tense, which represents a more intense affective involvement of the self into the narrative (Schiffrin, 1981; Pillemer, Desrochers, & Ebanks, 1998; Pólya, Kis, Naszódi, & László, 2007), or that he was using more present tense in his in session discussions with the therapist.

Changes in other variables also show an increase of affective involvement. The discourse level variable shows that use of character position (signaling episodic memories) has doubled by the late session in case of the client, whereas the use of narrator level (signaling memories of repeated events or extended life-time periods) which dominated the early session, decreased by half by the late session. These findings are interpreted as more intense affective involvement. At the same time this could be the sign of trust on the part of the client, since he is able to disclose emotionally richer material (episodic memory) to his therapist.

In the subject number and person variables we expected an increase of first person and singular for the late session in the client's talk. However, our results suggest that there was an increase of singular and second person proportion for the late session instead. This result suggests a more intense interaction orientation of the client, directly talking to the analyst. In addition, in the discourse level variable, the proportion of therapeutic here-and-now tripled by the late session, suggesting increased interactivity referring to the therapeutic situation. Thus, both affective involvement and more intense interaction played a role in changes in the client's talk by the late session, which again, may be related to alliance.

In the analyst's talk the use of diegesis, focalization, discourse level, and subject number variables changed from the early to the late session. These changes suggest a more intense self involvement on the therapist's part. The analyst took the inside narrator position twice as often, and used the outside narrator position less often at the late session. These changes suggest that being part of the client's story world was one way the therapist expressed his involvement in the late session. We also found that the therapist used substantially (about 20%) more internal focalization, talking of mental content: emotions, intentions, and less frequently used merely behavioral descriptions at the late session. This also suggests more intense affective involvement by the late session. Looking at the discourse level variable, we expected the analyst to use more character position at the late session, expressing his involvement in the client's narratives. However, he used half as much character position at the late session than at the early one. At the same time, he used almost twice as much the level of here-and now of the session, as well as using more singular subjects. These results are similar to what we find at the client, and we also interpret it as a sign of increased relationship

orientation by the late session. The increased relationship orientation on the part of both participants may also signal better alliance (Luborsky, 1976).

Looking at sequence type based units, in our analysis overall there was a difference among sequence type based units in terms of affective involvement. CC and TC units had the highest affect level followed by TT units, and CT had the lowest level of affect. There was no statistical interaction between session and sequence type based units, meaning that within the two individual sessions we had the same ordering of sequence type based units in terms of affect levels. An "ideal" sequence of affect regulation can be described as follows: Reacting to the client's affect-intense talk (CC) the therapist typically uses lower level affect (CT), down-regulating affective intensity. Continuously talking (TT), the therapist expresses medium-level affect, somewhat higher compared to CT, which could be called a balanced level of affective involvement. The client, reacting to the therapist's talk in TC, again uses higher levels of affect. Thus, typically, the client up-regulates, while the therapist down-regulates in interpersonal regulation, and keeps a balanced level in self regulation. This affect regulation cycle suggests that the therapist's interventions had no overall significant down-regulating effect on the client's talk, since CC and TC units showed no significant difference in affective involvement of the client, despite the therapist's down-regulating activity.

However, we must note, that in the case of individual variables both speakers may diverse from the typical regulative strategy, thus, in some cases the therapist may up-regulate, and the client may down-regulate affective involvement — for example, in case of the focalization variable at the late session. Another important finding about sequence based units was that in case of four of the six variables all units differed from each other in terms of affective involvement, showing that they played a differing function in affect regulation.

Limitations of the Study and Future Directions

Our study consists of the analysis of the talk of one client-therapist dyad in psychoanalytic psychotherapy, using two sessions, which could be considered a quantitative case-study. Therefore, our results may not be generalizable to other cases, for example, to clients and therapists with different gender or different kinds of psychotherapies even within the psychoanalytic tradition. However, our novel approach for analyzing affective involvement and its regulation could be a useful method for studying other dyads and more sessions in the future.

In the current study we delineated in-session affect regulation, both self and interactive, as expressed in various linguistic variables of NP. Using variables of NP offers a potentially useful method for describing affective involvement of the client and therapist dyad, which can be applied to future studies of therapeutic interaction. Our method makes it possible to compare different affect regulation strategies used by various client-therapist dyads.

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Protocol

Presentations of Complex Mental Illness in Media and Medical Discourses: A Protocol for a Corpus-Assisted Study

Laura A. Cariola[1]
University of Edinburgh

Abstract

This study aims to conduct an in-depth corpus-assisted discourse analysis to explore how complex mental illnesses are presented in UK newspaper articles and medical case studies. Attention will be given to the identification of discursive presentation that create and reinforce stigma against mental illness. This study is funded by the Institute for Advanced Studies in the Humanities, University of Edinburgh.

Rational and background to the study

This study aims to conduct an in-depth corpus-assisted discourse analysis to explore how complex mental illnesses, including schizophrenia and bipolar disorder, are presented in UK newspaper articles and medical case studies. Special attention is given to identify how discourse types compare in their communication of stereotypes and prejudices that create and reinforce existing social stigma against individuals affected by mental illness.

Individuals with mental illness are one of the most vulnerable groups in society. For example, one in four people in the UK will experience a mental health problem in any given year (Mental Health Foundation, 2015). It is also a well-known fact that a vast majority of people with mental health issues are exposed to stigma and discrimination, which substantially impacts on their quality of life and recovery (Reavley, Morgan & Jorm, 2016). Although the Equality Act 2010 makes it illegal to discriminate directly or indirectly against people with mental health issues, the media often links complex mental illness with violence, or portrays people with mental health issues as dangerous, or very disabled and unable to live normal, fulfilled lives (Mental Health Foundation, 2015) – for example, in a large public survey, when asked how to describe someone who has a mental illness, nearly 40% agreed that they are prone to violence, when in reality people with mental illness are far more likely to be the victims of crime rather than the perpetrator (TNS BMRB, 2015). As such, public discourses are complicit in perpetuating stigma, which impacts on help-seeking behaviour and marginalises people with mental health issues as an "undesirable" out-group within our society (e.g., Clement et al., 2015; Mestdagh & Hansen, 2013).

[1] Correspondence concerning this article should be addressed to Dr. Laura A. Cariola, School of Health in the Social Sciences, University of Edinburgh, Teviot Place, Edinburgh EH8 9AG. E-mail: laura.cariola@ed.ac.uk

Such stigma has been also identified in a pilot corpus-assisted study that explored discourses of borderline personality disorder in UK newspaper articles (Cariola, 2017). Although early parental losses and trauma were reported in both women and men, the results identified highly gendered discourses with significantly more references to women who were portrayed as suicidal and offenders of matricide, and whose identities were constructed through unresolved familial conflicts and dependencies. This alludes to parental conflicts as the cause of developing borderline personality disorder (Whalen et al., 2014). Women were also characterised in relation simplistic life-death existential themes and as passive victims of others' coercive or destructive behaviour. A sample of medical case studies of borderline personality disorders also used gendered discourses where female patients were discussed twice as often than male patients. Such stereotypical gender-based perceptions of borderline personality disorder reinforce the public's negative attitudes towards mental illness and may also interact with clinical perceptions (Benson, Donnellan & Morey, 2017).

Societal Importance

Around 13 million people will have a common diagnosable mental disorder in any given year (GOV, 2017) and stigma towards mental health is affecting a large proportion of society. Although public awareness of mental illness has grown and stigma has been reduced, it continues to exist, preventing vulnerable people in need of mental health care from receiving the help they need. Out of this context, the study is timely in addressing a current issue of great societal impact. The exploration of stigma of mental illness, and how it is affecting and shaping the lives of those affected by it, is of great relevance to the field of social science, including clinical psychology (Thoits, 2016).

Methodology and Analysis

This study is novel in using in-depth corpus-based discourse analysis to examine how UK newspaper articles and medical texts represent discourses of complex mental illness, including schizophrenia and bipolar disorder. It does this by quantitatively identifying semantic content and linguistic patterns in mental health discourses with the use of semantic annotation software packages, such as Wmatrix (Rayson, 2008). Such a semantic analysis provides insight into how word combinations are used to create and reinforce positive and negative connotations, as well as attitudinal and evaluative meanings that impact on public beliefs and stereotypes towards mental illness. Given that violent incidents (such as suicide and homicide) associated with mental health become media headlines, this study will also identify newsworthiness (Bednarek & Caple, 2017) and its implications to ordinary mental health suffering and recovery. Press articles will be sourced using the web-based library platform LexisNexis that hosts an archive of national newspapers. Medical case studies will be sourced from medical online databases. To provide a representative sample of media publications, this study will focus on UK Broadsheet and Tabloid newspapers of the last 20 years (1997-2017) to explore discursive presentations of mental health and diachronic changes of these discourses. These will be contrasted with discourses of published medical case studies that explore autobiographical case histories of patients.

Ethics and Dissemination

This study has been ethically approved by the University of Edinburgh. The results of this study will be disseminated through publication in peer-reviewed journals as well as via professional conferences and public engagement events. The results of this study will be also discussed in relation to mental health policies and guidelines, and also implications for future research.

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Conflict of Interests

The author has no conflict of interest.

Data Sharing Statement

This is a study protocol.

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Book Review

Review of *Family Secrets and the Psychoanalysis of Narrative* by Esther Rashkin. Princeton, NJ: Princeton University Press, 2016 (Originally published 1992), 222 pages, ISBN 978-691633749 (hbk).

Reviewed by Dianne M. Hunter[1]
Trinity College, Connecticut, USA

In an era priding itself on transparency but inundated by lies, a reading technique that demonstrates the unveiling of secrets belongs to the zeitgeist. Originally a dissertation for a doctoral degree in French from Yale University in New Haven, Connecticut, this brilliant book by the psychoanalyst and literary detective Esther Rashkin has the classic form of six chapters, plus an Introduction, a conclusion, notes, and an index. Chapter One sets out Nicolas Abraham and Maria Torok's work on ancestral haunting. Subsequent chapters demonstrate how fictive characters in five stories have been driven into existence by a "need to preserve intact while making unintelligible an unspeakable family drama" (p. 160). Rashkin identifies and unravels conundrums in Joseph Conrad's *The Secret Sharer* (1909), Auguste de Villiers de l'Isle Adam's *Intersignum* (1899), Honoré de Balzac's *Facino Cane* (1836), Henry James's *The Jolly Corner* (1908), and Edgar Allan Poe's *The Fall of the House of Usher* (1839).

Several decades old, this book is arguably more useful now than ever not only for psychoanalytic and feminist studies but for family history, given the current boom in ancestry studies evident in the possibilities of DNA testing and the popular television series *Who Do you Think You Are?* and *Finding Your Roots*. It is somehow appropriate that Rashkin teaches at the University of Utah, for this state is home to the genealogical records amassed by the Mormon Church and now owned by ancestry.com, the largest for-profit genealogical enterprise in the world.

Basing her readings on Abraham and Torok's dual unity theory of development and their studies of cryptonyms (words that hide), Esther Rashkin performs detailed and astounding explications of puzzling textual anomalies and character enigmas. Through very close and clever readings, often multilingual, Rashkin persuasively discloses intergenerational transmission of silenced traumas in narratives that reveal but in revealing hide a secret. She discloses hidden scenes that complement and clarify unconscious dynamics of the way enigmatic characters behave and the way in which literature communicates unspeakable secrets.

The book comes to a persuasive climax in the explication of ancestral dramas mutely informing James's *The Jolly Corner* and Poe's *The Fall of the House of Usher*, both ghost stories of sorts that communicate via phantom voices. She conjectures that her method of reading has implications for finding hidden histories of women as well as "group pathologies that emerge in response to traumatic political dramas" (p. 165), a theme Rashkin has taken up in her second book, *Unspeakable Secrets and the Psychoanalysis of Culture* (2008).

[1] Correspondence concerning this article should be addressed to Prof. Dianne Hunter. Email: dianne.hunter1@gmail.com

Unlike Freud and Lacan, the Hungarian-born Parisian psychoanalysts Abraham and Torok theorize no fixed schema such as oral, anal, phallic, oedipal stages or transition from the Imaginary to the Symbolic for individuation, but see individuals as forever in symbolic unity with aspects of the mother and the mother's mind. "Every child's emergence as an individual is distinctive, constituted by repressions of uniquely charged pieces-of-the-mother, each bearing affects specifically related to the singular circumstances and psychic traumas of the mother's life. Moreover, since every mother is also the child of another mother, she must herself be understood as always already carrying the contents of another's unconscious. That is why Abraham refers to the dual unity as the 'genealogical concept par excellence'. We are all the psychic products of our infinitely regressive family histories" (Rashkin, p. 18). Literary transmissions of these histories share their secrets with their readers or hearers, who may receive them unwittingly. This concept of the relationship between deep family history, psychic history, silenced trauma, and repression elaborates a radical shift from previous psychoanalytic views of "the Other" as a capitalized, generalizable notion. Anasemic analysis and identification of phantom presences allow Rashkin to excavate the "other" in certain narratives as a specific entity, situated beyond the subject, who holds that subject in a dual unity. This "other" is "a text-specific identity whose concealment of a drama" Rashkin reconstructs from "particular, linguistically decipherable elements" (p. 158).

Rashkin thinks Edgar Allan Poe's *The Fall of the House of Usher* shows how a concealed ancestral secret gets shared via phantom transmission. Co-active with the story's epigraph, plus Roderick Usher's incoherent manner and cryptic speech, and the titles in his esoteric library, and the inserted tale *Mad Trist*, the poem *The Haunted Palace*, embedded in the text, co-symbolizes the overall text, which communicates to the narrator and thus to the reader a scene of rape and mental decapitation. This scene constitutes a "supposititious force" communicating the unspoken story of the infiltration of the Usher family line by a fraudulent heir conceived violently. Madeline (a version of the woman who made-the-line), says Rashkin, embodies the part of the mother wanting to keep intact the head of her family. Roderick's behavior parallels the other half of the struggle: her battle to voice the secret and expose the fraudulent heir. This struggle becomes evident the moment the narrator arrives at the mansion and gets ushered into Roderick's presence. Roderick seems to be agitated by "some oppressive secret, to divulge which he struggled". Rashkin calls the cadaverous, nervous Roderick, inhabited by the dead, "the living incarnation of the deceased person who created an oppressive secret and fought to divulge it" (p. 143). He is the part of the lady-who-made-the-line that struggled to speak.

Roderick's agitation infects the narrator, who feels upon his heart an incubus of creeping alarm overpowering him with horror. The narrator flees the mansion "aghast." Although the narrator's reading aloud the *Mad Trist* has brought the family trauma to Roderick's mind, the narrator has no awareness of having done so; he remains a bewildered observer. Rashkin sees him as an unconscious exorcist who gets an entombed family phantom to speak without himself understanding the psychic drama he has conjured or making Roderick cognizant of what has been revealed.

Rashkin claims this infectious haunting of the narrator by a ghostly secret can be a model for the dynamics of what goes on for the reader of certain kinds of uncanny texts. She writes, "Not only is the phantom inhabiting the Usher race shared or

divided between two heirs, but a figure outside the line is infected by it" (p. 151). "Readers, [Poe's] text tells us, may at times function like the narrator: as unknowing 'voicers of things hidden' who successfully bring out, conjure, or 'exorcise' dramas concealed within narratives but who are unable to hear the ciphered content of these dramas or articulate their significance" (p. 152). Thus readers may share unconscious knowledge of a family secret transmitted by a character and text that remain enigmatic.

Unlike Poe's narrator who makes a phantom speak in *The Fall of the House of Usher*, Alice Staverton in Henry James's *The Jolly Corner* puts a phantom to sleep, deflecting Spencer Brydon's haunting by his cuckolded grandfather and alter ego, who witnessed a scene revealing how he kept in the thing he loved a corner for another's uses. Just returned to New York City from a long sojourn in Europe, Spencer sees himself as belonging to a world of apparitions. Heir to an empty family house near Washington Square, he roams it late at night as what Rashkin calls "one single seat of consciousness within which reside, mingle, and intertwine several ghostly incarnations, having nothing to do with him per se, that have returned from a buried part of his family history to haunt him" (p. 96). As in Poe's House of Usher, multiple presences within a psyche bear witness to infiltration of a line of forebears. By identifying the mechanisms by which Spencer Brydon's character and speech thwart comprehension, Rashkin teases out the hidden principle of coherence in what is otherwise opaque. Miss Staverton, claiming an intimate relationship with Spencer, puts a family phantom to rest in a cryptic ambiguity that verbally joins him with his alter ego.

In the chapter titled *Legacies of Gold*, analyzing another tale of secret patrimony, Rashkin takes a cue from the eponymous narrator's remark in Balzac's *Facino Cane* that during her pregnancy his mother had a passion for gold. The narrator declares himself "the victim of a monomania, of a craving for gold which must be gratified". The possibility that Facino Cane's obsession has been inherited prompts Rashkin to conjecture a phantom at work in the narrative. The bizarre events of the story "emerge as parts of a concealed but identifiable drama. A secret has been created concerning Facino Cane's origins, a secret concealed by his mother upon his conception or birth and transmitted to him as a passion for gold". What his mother could not say gets expressed through Cane's behavior. Ostensibly a story of a man obsessed by gold, Rashkin shows Facino Cane to be "the tale of a man possessed by a phantom, by the secret of his Jewish origins that has been transmitted to him by his mother as his psychic inheritance" (p. 86). Cane "creates his life as the cryptic narrative of the tale his mother could not utter" (p. 91). Having received a phantom from his mother, Cane repeatedly exposes himself to imprisonment and exile, tacitly, says Rashkin, identifying "himself with the captives in exile in Babylon; he acts out his father's—and hence his own—unspeakable identity as Jewish. The seemingly fantastical, impulsive, self-destructive behavior constituting his existence can thus be understood as a function of the symbolic re-creation of the secret drama of his origins, which he alternately reenacts and seeks to know" (p. 88).

Contrasted with possible Freudian or Lacanian interpretations, Rashkin's semiological method of analysis offers a "nondevelopmental, nonphallocentric view of behavior that does not assume as its core a system of substitutions based on either incest and castration or the Imaginary and the Symbolic". Rashkin links "influences outside

Cane's own lived experience with the creation of a specific symptom that preserves intact an unspeakable secret while cryptically revealing its contents" (p. 86).

In an "admittedly surprising" reading of Villiers de L'Isle Adam's *Intersignum*, a tale of premonition, Rashkin detects through ingenious discovery of homonyms, traces, and obscure correspondences yet another case of illegitimate paternity that has been hidden. The narrator Xavier "becomes the unknowing caretaker of his father's secret." He is a man living "with the ghostly presence of his true father encrypted within the words of his tale" (p. 78). Xavier's last name, given as "de la V***," points to "délavé," which points to "de l'ave," which points to "de l'abbé," that is, to the priest who secretly fathered Xavier de la V. Hallucinating, Xavier is "caught in a double structure in which something is both hidden and exposed, in which he is simultaneously shown something frightening and made to remain ignorant of it" (p.68).

To interpret Xavier's tale, says Rashkin, is "to reveal the various (and theoretically infinite) techniques by which meanings are carried or borne from one place, state, or form to another. It means recognizing that the *intersigne* of the text's title, while it may on one level signify an announcement or premonition of death, also refers to 'the sign within,' to the encrypted signs hidden within and elided from between the words constitutive of the text's substance and its enigma. The 'intersign' of the title is an interred sign, the sign inscribed and enshrouded within the narrative that reveals Xavier's buried identity, his unspoken yet audible name" (p. 79).

Rashkin detects haunting by a murderous drama in the captain's unsettled feelings and behavior in Conrad's *The Secret Sharer*. The captain cannot state the scene of violence because, deduces Rashkin, it lodges unwittingly within him as "knowledge kept secret by someone else and transmitted to him as a phantom" (p. 59). "By concealing Leggatt in his stateroom and transforming his ghostly presence and specific drama of murder into an artificial secret, the captain creates a situation in which he can symbolically act out sharing the unspeakable killing beyond his ken" (p. 60). The captain's creation of fictitious scenarios of sharing declare in cipher form his estrangement from the unspeakable secret of murder. This particular kind of symbol-formation Rashkin sees as an "allegory of the phantom structure" (p. 61).

The only one of Rashkin's chosen stories not to harbor a concealed illegitimate birth, *The Secret Sharer* "is a narrative constituted by the captain's unrecognized drive to invent external, imaginary dramas of secret sharing that duplicate and allegorize, by virtue of the lie of sharing at their core, the internal, psychic configuration specific to the phantom". The captain hallucinates and lives out a semblance of dual unity in which he falsely shares a secret with Leggatt obliquely pointing to the pathological dual unity or phantom structure in which he is trapped and in which, by definition, a secret cannot be shared. Rashkin writes, "The constellation at the core of psychic distress in all the texts in this study—the inability to share a secret—is thus transformed, in *The Secret Sharer*, into a hallucinatory symptom whose obsessive repetition becomes the fundamental substance of the narrative itself" (p. 61).

Rashkin's semiological decryptions contribute not only case histories but family histories, and as such contribute to the field of studying what is hidden in history. She concludes that using the analytic concepts of symbol and cryptonomy enable us to

understand how certain characters' expressions of estrangement are "symptomatic of their individual work of self-creation as 'other' in response to their (unrecognized) need to preserve intact someone else's secret" (p. 159). This connects Rashkin's work to what the Parisian psychoanalyst Haydée Faimberg calls "the telescoping of generations", in which children, captured and ruled by internal parents, become depositories of repudiated aspects of their family histories. These children Rashkin calls guardians or "conservators of dramas or signifieds that have to be cut off from the signifying chain because they are too shameful to be revealed". Characters haunted by phantoms, Rashkin writes, "transform themselves into symbolic or cryptonymic accounts of what could not and must not be said. Through speech and behavior unwittingly created to defy cognition, they become themselves ciphered sagas of how and why particular signifieds were hidden and made inaccessible and of the psychic topography that ensured these signifieds' continued concealment" (p. 159). Her work excavates unconscious histories.

Rashkin has added to the domain of family history and to character studies in literature a way of unveiling genealogies of enigmatic behaviors. Her reading procedure involves cultivating awareness of a "narrative's potential susceptibility to transtexual analysis. It means recognizing that textual fragments or symbols in certain narratives have to be joined to their absent co-symbols across a disruption or discontinuity in a transgenerational saga which, while not readily apparent, anchors the unfolding of the narrative". Transtexts function as readable traces "characteristic of phantom-texts in which their significance emerges as they are carried back across a gap or silence inherited by a character and are rejoined to a missing part of that character's unspoken family history. Reading transtextually is thus a process of bridging a 'generation gap' embedded in a fictive narrative. It involves reuniting with their informing complements textual elements whose separation is the result of an ancestor's refusal to speak, and whose reunion makes it possible to hear what was silenced" (p. 162). This offers a new dimension to the idea of literature as a form of ancestor worship, suggesting that certain uncanny texts can be read as totems.

Family history became a preoccupation in the 1970s as part of feminism's many challenges to the "Great Man" theory of history. Seeing the world from a woman's point of view means paying attention to the cultural history of the family because women by tradition have mainly worked in situations compatible with their caring for children. The field of study suggested by Lawrence Stone's (1977) landmark book *The Family, Sex and Marriage in England, 1500-1800* helped open the way for the emergence family histories as important public literary forms during the last decades of the twentieth century.

BBC television's genealogical research program *Who Do You Think You Are?* began as a way of doing history from the point of view of particular families. In producing the show, Alex Graham hoped a compendium of family genealogies would add up to history of Britain alternative to those broadcast by academics such as Simon Schama (*A History of Britain*, BBC TV, 2000) and David Starkey (*Monarchy*, BBC TV, 2004-2006). Graham's first program originated with the idea of describing the Industrial Revolution from the bottom rather than from the more-usual point of view of its tycoons. For this, Graham chose a protagonist who came from a family of mill workers in Birmingham. But the program turned out instead to be about Britain's treatment of mad people because the story of the protagonist's mother, who had been

institutionalized for mental illness, had been unknown to him before the show was researched. The drama of this program was less the story of the mad woman than the unfolding of the truth about his mother in the mind of her son, Bill Oddie.

In listening to what was silenced, Rashkin's work has implications for feminist scholarship because psychoanalytic feminists seek "alternatives to phallocentric models of interpretation for articulating and explaining the roles of women, gender, and the suppression of the female voice in literature". In Rashkin's reading of the Balzac story, Facino Cane's mother's secret gets voiced cryptically through her son. Similarly, Rashkin shows how the brother and sister in Poe's tale are driven "by a secret rape and illegitimacy kept silent by a woman centuries earlier." Thus Poe is telling the story of this woman's suppressed history, kept silent in her family but oozing through the Usher house, from which it finally rushes like a ghastly river in a whirlwind. Of interest therefore for feminism, Rashkin's method of reading invites conjectures about how absent women's voices may be heard across time as "transmitted by someone of a different sex, class, culture, or nationality" (p. 164).

Author's Biographical Note

Dianne M. Hunter, Emeritus Professor of English at Trinity College in Connecticut, USA, edited Seduction and Theory (1989) and The Makings of Dr. Charcot's Hysteria Shows (1998). She has published essays on hysteria, seduction, psychoanalytic and feminist theory, Juliet Mitchell, Virginia Woolf, Mary Wollstonecraft, Mary Godwin Shelley, Edgar Allan Poe, Shakespeare, Ted Hughes, Sylvia Plath, Adrienne Rich, Bertha Pappenheim, LeRoi Jones/Amiri Baraka, Toni Dove, and Carolee Schneemann.

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