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Parallel worlds on the British stage: distorted reality or renewed realism?

Solange Ayache¹

The conflict between the nature of reality and its perception, its interpretation, and possibly its distortion, is a source of dramatic tension that is at the core of the interpretive models developed by psychology and psychiatry, as they look at the inner processes of the human mind and how it interacts with its environment. On the other hand, as modern science – and the groundbreaking advent of quantum physics in particular – has completely transformed our understanding not of the functioning of the mind, but of the nature of reality itself, this conflict between the objective nature of reality and the subjective world of the psyche has become all the more complex.

In this article, I propose to examine the way cognitive distortion² is represented in contemporary British drama and how it impacts stage realism, by looking at two plays: *Polar Bears* by Mark Haddon, which was created at the Donmar Warehouse in April 2010, and *Constellations* by Nick Payne, which premiered at the Royal Court Theatre Upstairs in January 2012. Both plays revolve around the encounter and romance between two characters, and question the reality of our experiences by exploring the minds of women suffering from cognitive disturbances, either due to a psychological disorder or a neurological disease. In Haddon's play, Kay, an artist, is bipolar; in Payne's play, Marianne, a scientist, has a brain tumour. The two pieces highlight our sense of reality as a construct, using poetic structures which break with the traditional dramatic linearity of the conventional play. Instead of providing a rather deterministic *succession of coherent scenes*, as does the 'well-made play', the drama emerges from a random *alternation of contradictory scenarios*, obeying a principle of repetition-variation or of inclusion. This gives a sense of the protagonists' mental confusion by deconstructing the world of the play and making everything they say and do fundamentally uncertain. Indeed, each scene or scenario is either repeated and altered, or denied in the next scene or scenario. Instead of merely registering a given narrative, the reader-spectator is thus invited to imagine the many different ways the story could (or does indeed) develop, as they are presented with a number of parallel versions, conflicting points of view,

¹ The published version of this final draft is available at: Solange Ayache, 'Parallel worlds on the British stage: distorted reality or renewed realism?', in *Distorsions cognitives : formes, récits, imaginaires (domaine anglophone)*, ed. by Nathalie Vincent-Arnaud and Blandine Pennec, Toulouse, Presses Universitaires du Midi, 2021, p. 58-71.

² Cognitive distortions have been defined as 'errors in both cognitive processing and content that result in maladaptive or unhelpful interpretations of incoming stimuli'. See Brad A. Alford and Aaron T. Beck, *The integrative power of cognitive therapy*, New York, Guilford Press, 1997, quoted in Shari Jager-Hyman *et alii*, 'Cognitive Distortions and Suicide Attempts', *Cognitive Therapy and Research*, 38.4 (2014), 369-74, p. 369, <http://doi.org/10.1007/s10608-014-9613-0>. A number of irrational thought patterns have thus been identified, such as black and white thinking, overgeneralisation, minimisation, blaming, and mental filtering, to name but a few. Generally speaking, cognitive distortions are opposed to accurate perceptions of reality, and it is mainly in this broader sense of the term that the notion will be addressed in this paper.

and rival possibilities for the same event. In addition, the scenes are mixed-up, and largely disregard our common sense of time and chronology – the first scene in *Polar Bears*, for instance, where the main character, Kay, has just been killed by her husband, could, or maybe should, actually be the last scene of the play. The result is that it is impossible to say whether the scenes portray the objective reality actually experienced by the characters, or display the fantasies taking place in their minds. Actually, it is not even possible to maintain such a distinction. From a cognitive point of view, reality can no longer be an object of accurate knowledge: all its possible ‘distortions’ are equally *real*.

The deconstruction of the ‘well-made play’ is obviously a structural metaphor for the female characters’ pathological condition in *Constellations* as well as in *Polar Bears*, at the same time as it allows the plays to reflect on the process of their own writing and points out their artificiality. Most of all, Payne and Haddon encourage us to question our perception of reality as a pre-existing ‘given’, unique and objective – a view contradicted by the revolutionary discoveries of modern physics, which have led to a profound paradigm shift. In *Constellations*, Marianne explains one of the two main interpretations of quantum mechanics, Hugh Everett’s multiverse theory – also called the ‘Many-Worlds’ interpretation – when she says, ‘In the quantum universe, every choice, every decision you’ve ever and never made exists in an unimaginable vast ensemble of parallel universes’³, which the play illustrates. What is particularly interesting is that in *Polar Bears*, although there is no explicit reference or allusion to quantum theory, it is as though Kay is experiencing Everett’s Many-Worlds from a first-person perspective, as she exclaims ‘We think there’s only one world. [...] But there are so many worlds, aren’t there, one laid over the other. [...] It’s so beautiful it makes me want to cry.’⁴ As we will see, the fact that *Polar Bears* shares a number of similarities with *Constellations* is all the more striking as it focuses on bipolar personality disorder and defense mechanisms of distortion, yet results in a poetics which is quite similar to that of Payne’s quantum play.

The purpose of this paper is thus to show how Payne and Haddon suggest that the ‘disordered’ mind, whether it suffers from brain tumour or psychotic episodes, implies, or creates, parallel worlds which appear poetically analogous to the many worlds of quantum mechanics, and which have inspired these plays to develop what could be called a ‘quantum psychopoetics’ of the stage. In the psyche as in quantum physics, where reality corresponds to probabilities, everything exists in multiple versions of itself or in ‘superposed states’ (a quantum concept). The counter-intuitive accounts of the world by quantum physics indeed give a ‘crazy’ picture of reality⁵, where everything possible, even the most

³ Nick Payne, *Constellations*, London, Faber and Faber, 2012, p. 17. Further references to this edition are given after quotations in the text.

⁴ Mark Haddon, *Polar Bears*, London, Methuen Drama, 2010, p. 45. Further references to this edition are given after quotations in the text.

⁵ Einstein famously used the phrase ‘spooky action at a distance’ [*spukhafte Fernwirkung*] to express his disbelief in the weird phenomenon of quantum entanglement – which implies that what affects one particle within a two-particle system *immediately* affects the other, even if they are spatially separated – and to call for a complete theory of physics ‘whose objects, connected by laws, are not probabilities but considered facts’. Albert Einstein, ‘Letter to Max Born, 3 March 1947’, in *Born-Einstein Letters, 1916-1955: Friendship, Politics and Physics in Uncertain Times*, trans. by Irene Born, London, Macmillan, 1971, p. 158. Reflecting on this remark, physicist Daniel

improbable event, must have played out, is playing out, and will play out simultaneously in an infinite number of real universes that coexist in parallel to each other. In the imaginary worlds of our dreams and fantasies, our imagination allows us to envision multiple outcomes for the same event, which may indeed take place in parallel universes, according to the Many-Worlds. In the space of the multiverse as well as in the space of the female protagonists' minds, the distinction between fiction and reality is thus seriously challenged, invalidated even, by this weird identification of the real with the sum of all things possible. In Payne's and Haddon's plays, the dramatic space becomes a place where quantum *descriptions of reality* and pathological *distortions of reality* converge, as what may appear as cognitive distortions in a classical world provides equally valid representations of a reality that may be fundamentally *plural*. A result of this is that, as instances of a 'Theatre of Possibilities' – the expression is borrowed from Jean-Pierre Sarrazac⁶ – *Polar Bears* and *Constellations* explore mind and brain disorders in a way that allows for a form of new realism to take place. They shape and make visible both the mindscape of female subjects facing life and death choices and the developments of parallel universes, thus making room for theatrical realism to be reinvented from the very matter of what should intuitively appear as the most delusional imaginings. In other words, what seems to be the most contradictory, incoherent, and impossible dramatic developments actually provides a rather accurate, realistic poetic image both of the inner world of psychopathology and of the outer world of quanta.

1. Iteration and alter(n)ation on the quantum stage of Nick Payne's *Constellations*

Payne's *Constellations*, which received the Evening Standard Award for Best Play, uses quantum physics explicitly, as a thematic and structural metaphor, to envision parallel worlds in a way that addresses the consequences of our life choices. As Marianne, an astrophysicist, and Roland, a beekeeper, look at the uncertainty of their decisions in the present and at the indeterminacy of their future together, the play gives us a sense of all the things that *could be* or that are actually happening in different universes. The stage is (almost) entirely bare and the action unfolds in a nonreferential 'blank', an undefined elsewhere – the play's minimalism suggesting that the real drama is non-local (non-locality being a quantum principle⁷), taking place in a space of uncertainty which corresponds to the way

Greenberger notes, 'Einstein said that if quantum mechanics is correct then the world would be crazy. Einstein was right – the world is crazy.' Daniel Greenberger, quoted in Amir Aczel, *Entanglement: The Unlikely Story of How Scientists, Mathematicians, and Philosophers Proved Einstein's Spookiest Theory*, New York, Plume, 2003, p. 203.

⁶ 'Un théâtre des possibles.' Jean-Pierre Sarrazac, *Poétique du drame moderne : de Henrik Ibsen à Bernard-Marie Koltès*, Paris, Seuil, 2012, p. 386. See p. 382-91: 'Des possibles aux "possibilités"'.

⁷ Non-locality is the principle that supports the phenomenon of quantum entanglement and a quality of entangled particles. It refers to the weird fact that information is transmitted *simultaneously* between a pair of particles from the same system: even though they are *spatially separated* from each other, the second particle is *immediately* affected (its intrinsic properties are altered) as the first is being observed or measured. This correlation contradicts the principle of locality, which implies that spatial separation is incompatible with the possibility for a particle to be affected by anything done to another that is spatially separated from it. In Payne's *Constellations*, the scenes

particles exist in the subatomic world. For its world premiere, stage director Michael Longhurst and set designer Tom Scutt used white helium balloons on an otherwise empty set. The constellation of balloons floating on the ceiling somehow provided a mirror image to the rival fantasies and scenarios multiplying like bubbles in the characters' heads, while also illustrating the parallel worlds that Marianne describes to Roland as she explains the multiverse theory. The balloons visually drew a poetic parallelism between physical space and mental space, creating a metaphorical collusion between the quantum description of reality and the human experience of thought.

In the French production of the play at the Théâtre du Petit Saint Martin in April 2016, Marc Paquien did not use balloons but paid particular attention to the floor. What attracted the eye on the bare stage was the smooth, reflective black surface on which the bodies of the actors were duplicated, as if in a mirror, providing them with vertical doubles – a case of visual distortion – in addition to their horizontal shadows. It created a ghostly stage image where they seemed to be stepping, sliding, dancing and tiptoeing on their reversed selves, living a parallel, symmetrical life in the virtual space opened by the floor setup. The reflective and diffracting action of light could be seen while also alluding to that which cannot be seen – superposed states or parallel realities that cannot be perceived by our senses or observed by our consciousness – in a setting evocative of what stage director Claude Régy advocates in his book *L'État d'incertitude*. Reflecting on the quantum revolution as a poetic, dramaturgical and philosophical resource for contemporary theatre, he underlines the importance of 'extend[ing] our means of perception until we can see what is not shown, hear what is not audible'.⁸ From this perspective, it appears necessary to resort to light, whose property is to silently 'connect things together' and 'take us beyond the limits'.⁹ Régy notes:

If we work with it, light can make us question the nature of the real. If there are several states of the real it means that there is not one reality. From which the question must be asked: does the real exist?¹⁰

On this black surface which blurred the boundaries between the real and the unreal, the actual and the virtual, two fine white lines were drawn, forming the circumferences of two concentric circles which created the image of a vinyl record on which the two actors walked. They suggested the embedment, or entanglement, of the characters' mental spaces (as well as planetary orbits), while pointing out the absence of progression of the action and the reflective state of the characters. An efficient image of the

are separated from each other, but the several dramatic fragments that illustrate a specific episode can be read as possible variations of the same 'non-local' key moment, all happening simultaneously.

⁸ 'Ne peut-on vraiment pas étendre nos moyens de perception jusqu'à voir ce qui n'est pas montré, jusqu'à entendre ce qui n'est pas audible.' Claude Régy, *L'État d'incertitude*, Besançon, Les Solitaires Intempestifs, 2002, p. 34.

⁹ 'Un des aspects de la lumière, c'est qu'elle relie les choses ensemble. [...] | Il est de sa nature de conduire au-delà des limites.' Ibid., p. 36.

¹⁰ 'La lumière, si on travaille avec elle, peut faire qu'on s'interroge sur la nature du réel. S'il y a plusieurs États du réel cela veut dire qu'il n'y a pas un seul réel. A partir de quoi se pose la question : le réel existe-t-il ?' Ibid., p. 27.

structure of the play, these circles reflected the way the story of Marianne and Roland is told, in a nonlinear, fragmentary, and above all repetitive fashion, evocative of a broken record. The play is divided into short scenes separated in the script by indented rules that ‘indicate a change in universe’ (p. 2), thus inscribing on the page the phenomenon of ‘quantum decoherence’¹¹, which allows us to experience reality in its single and determined form, despite its existence in an infinity of superposed states. Each dramatic fragment thus takes place in an alternate world, following the Many-Worlds approach, which Marianne has in mind when she tells Roland that ‘a by-product of every single one of these theories – almost entirely by accident – is the possibility that we’re part of a multiverse’ (p. 16), adding that ‘at any given moment, several outcomes can co-exist simultaneously’ (p. 17).

A patchwork of possibilities, Payne’s drama goes in fits and starts, slowly spiralling forward as the two characters go back and forth on the stage like dancing planets in orbit, getting to know each other and entangling their lives as they fall in love and go through a number of crises. They replay the same scenes repeatedly with more or less substantial variations, making different choices and trying multiple alternate ways of bouncing back off each other’s words, thus taking the dialogue and their story in a different direction every time. These decisions provide several possible narratives for eight distinct key scenes or episodes of their relationship, which are, by order of appearance: the first encounter, in which Roland and Marianne meet at a barbecue (this moment is explored in five different scenarios); the first date, in which they enjoy a drink and get to know each other (eight scenarios); the break-up, in which they alternately announce that they’ve cheated on each other (seven scenarios); the second encounter, in which they meet at a dance lesson (nine scenarios, plus an additional one separated from the others and put at the very end of the play); the proposal, in which Roland reads a speech and asks Marianne to be his wife (five scenarios); the bad news, in which Marianne tells Roland the results of her biopsy (five scenarios); and the departure, in which they wait for a taxi to leave for the airport and go to a euthanasia clinic abroad (four scenarios). These scenarios both take place in parallel worlds as alternate realities, and in the characters’ mental spaces as possible memories, projections, or fantasies – as cognitive distortions or possible choices, varying as Marianne and Roland change their minds.

As a result, *Constellations* mainly uses a tree-like form to explore all the possible ways that the characters may respond to a given situation. The drama thus unfolds on a paradigmatic axis on several

¹¹ Decoherence is a key concept in modern science. It partially explains why we experience reality in one single perceptible form that can be described by classical physics, even though quantum physics shows that it exists in an infinite amount of superposed states before being observed (as a wave function, which thus collapses into a unique and determined outcome, according to the Copenhagen interpretation), and even though other realities may exist simultaneously in parallel universes (if one rejects the idea that the wave function ever collapses, as the Many-Worlds interpretation does). As physicist Werner Heisenberg put it in his famous uncertainty paper, ‘everything observed is a selection from a plenitude of possibilities and a limitation on what is possible in the future’. See Werner Heisenberg, quoted in Mara Beller, *Quantum Dialogue: The Making of a Revolution*, Chicago, Chicago University Press, 1999, p. 67. In the words of physicist Wojciech Zurek, quantum decoherence ‘imposes, in effect, the required “embargo” on the potential outcomes by allowing the observer to maintain records of alternatives but to be aware of only one of the branches’. See Wojciech H. Zurek, ‘Decoherence and the Transition from Quantum to Classical – Revisited’, *Los Alamos Science*, 27 (2002), 86-109 (p. 89).

different scales – the word, the sentence, the cue, the entire dialogue or scene – repeating itself just to try out a different synonym in a sentence, for instance, in order to find the best image to convey a message, or engaging in an alternate scenario to see how a certain situation may play out. This is the case for instance when the play provides several alternate endings of Marianne and Roland’s first date, in which their love story either starts or aborts:

Roland: You want me to leave?
Marianne: Not in a bad way, but yeah.
Roland: Have I done something wrong?
Marianne: No.
Roland: Have I said something, have I offended you?
Marianne: No.
Roland: Then I don’t understand?
Marianne: I’m not asking you to understand, I’m asking you to leave.
Roland: Bit fucking rich, isn’t it? [...] (p. 11-12)

Roland: I should probably make a move.
Marianne: You don’t – I mean, don’t feel you have to.
Roland: I’ve got a very early start.
Marianne: How early’s early?
Roland: Six.
Marianne: You could – I mean – you could – Not in a like ‘welcome to my lair’ way or anything, but – If you wanted, you could. Stay.
Roland: I should probably head back. (p. 12)

Gradually, the following versions show Marianne and Roland more and more comfortable with each other, more and more talkative – the stage directions actually indicate that they are more and more ‘drunk’ (p. 14-15). In one of them they kiss, and in the last one, although ‘sober’ again (p. 18), Roland finally stays at her place, as if they had found a reasonable compromise:

Marianne: Look, I’ve had a really enjoyable evening.
Roland: No, yeah, me –
Marianne: I haven’t really made up my mind, though, whether or not I’d like you to stay. [...] I’d just sort of get into bed and go to sleep. But I’m completely happy to go and get you a sleeping bag and a couple of towels.
Roland: Okay.
Marianne: But – I mean, just to be clear, I’m not being coy. I’m not sort of saying no to sex but yes to all the other stuff. We’re going to go to sleep, separately, and then we’re going to wake up and then we’re going to have some toast. Or, I mean, whatever. You don’t have to have toast.

Roland: Floor's fine, honestly. (p. 19)

As we can see, Payne's play stages what physicist Nick Herbert calls 'quantum randomness', referring to the 'fundamental lawlessness at the heart of nature' by which 'identical physical situations give rise to different outcomes'.¹² The audience is thus left to experiment subjectively a state of 'quantum ignorance', as possibilities and probabilities make for all there ever is and constitute the very material of the play, which never seems to pick an option over another but leave them all open.

Consequently, as it undertakes to dramatise the findings of modern science on a physical level and the dilemmas of the protagonists on an ethical level, it appears that the structure of *Constellations* is not only metaphorical but, in a sense, as realistic as it can get. It develops a probabilistic form of realism opposed to mimetic realism, which renders the descriptions of quantum mechanics as accurately as possible. While mimetic representation, which is at the root of classical realism, is fundamentally *intuitive* – i.e. based on our experience of the world – the probabilistic theory on which quantum physics is founded (which derives from mathematical equations and is confirmed by scientific experiments) makes for a modern form of representation which is fundamentally *counter-intuitive* – i.e. in conflict with our conscious perceptions of the world in everyday life, and at odds with classical logic. The probabilistic approach to the story taking place in *Constellations* is even more realistic than a mimetic approach, as it goes beyond the visible and the conceivable to reach and encompass the bewildering properties of reality that quantum mechanics has uncovered, while letting us into the minds of the characters to hear what they will not say. While classical realism is only concerned with representing that which we are familiar with and which matches our experience, this subversive form of dramatic realism includes a larger spectrum of objects, allowing audiences to access invisible realities. It entails and manifests a radical paradigm shift that corresponds to the quantum revolution, while also illustrating the functioning of the human psyche and how our inner hesitations, mental corrections and cognitive distortions form parallel dramas 'behind the scenes'.

Deriving from this, the fragmented structure of the play acts out the characters' multiple possible life paths, questioning their free will and thus displacing the main issue onto philosophical and ethical grounds. Marianne's description of the quantum universe, where 'every choice, every decision you've ever and never made exists in an unimaginable vast ensemble of parallel universes', echoes quantum physicist Brian Greene's account of the theory of the 'Quilted Multiverse', made of an infinite number of parallel universes called 'patches'. In his book *Hidden Reality*, which Payne has read, Greene draws the following conclusion:

Every decision you've ever made is tantamount to a particular particle arrangement. If you turned left, your particles went one way; if you turned right, your particles went the other. If

¹² Nick Herbert, *Quantum Reality Beyond the New Physics: An Excursion into Metaphysics and the Meaning of Reality*, New York, Anchor Books, 1985, p. 119.

you said yes, the particles in your brain, lips, and vocal cords proceeded through one pattern; if you said no, they proceeded through a different pattern. And so every possible action, every choice you've made and every option you've discarded, will be played out in one patch or another. In some, your worst fears about yourself, your family, and life on earth have been realized. In others, your wildest dreams have come to pass. In others still, the differences arising from the close but distinct particle arrangements have combined to yield an unrecognizable environment. And in most patches, the particle complexion would not include the highly specialized arrangements we recognize as living organisms, so the patches would be lifeless, or at least devoid of life as we know it.¹³

Pointing out the diverging philosophical and ethical consequences of the conflicting paradigms of classical and modern physics, Marianne proposes to see the Many-Worlds interpretation as a justification for the existence of free will. In a metadramatic comment which reveals Payne's enterprise of dramatisation of quantum theory, she says:

Let's say that ours really is the only universe that exists. There's only one unique me and one unique you. If that were true, then there could only ever really be one choice. But if every possible future exists, then the decisions we do and don't make will determine which of these futures we actually end up experiencing. (p. 17)

Ultimately, the concept of freedom of choice, derived in the play from the quantum principle of indeterminacy¹⁴, is explored in Marianne's desire to be able to decide whether or not to commit assisted suicide, instead of letting her cognitive abilities decrease irremediably and the illness take her life. The form of the play also stands as a metaphor for Marianne's brain cancer and for the intensifying symptoms that she suffers from, especially her growing speech and language disorder. Like all advanced cancer patients, Marianne enters a mode of existence in which she consciously 'vascillate[s]' between existential

¹³ Brian Greene, *Hidden Reality: Parallel Universes and the Deep Laws of the Cosmos*, New York, Vintage Books, 2001, p. 35.

¹⁴ Quantum mechanics has shown that nature is, in and of itself, impossible to know completely. Inherently, the properties of physical entities, such as position and speed, can never be measured together at the same time with absolute accuracy, but can only be apprehended through a probabilistic approach, even in theory. As Greene explains, 'the uncertainty principle establishes that regardless of what equipment you use or what techniques you employ, if you increase the resolution of your measurement of one property, there is an unavoidable cost: you necessarily reduce how accurately you can measure a complementary property.' See Greene, p. 31. A key concept in the Copenhagen interpretation of quantum physics formulated by Werner Heisenberg, this uncertainty principle (relying on Niels Bohr's complementarity) is not a mere feature of quantum states, but a revolutionary discovery which thwarts the most profound epistemic ambitions of science. The concept of indeterminacy is related to this uncertainty principle and has rekindled the debate around the issue of free will, which is a crucial and recurring question among the philosophers of modern science – as many books on quantum theory show, frequently including chapters on this topic. A number of metaphysical interpretations of quantum mechanics tend to support indeterminism, in contrast with the deterministic view of classical mechanics.

uncertainty and certainty'.¹⁵ The play's 'realistic' quantum poetics is, therefore, also a 'psychopoetics', as Marianne's neurological impairment caused by her brain tumour and her growing anxiety also finds an image in the mixed-up scenes and causes the reduction of the play's alternative scenarios. In the end, *Constellations* looks at our mental and emotional states in the face of death and explores the dissolution of the self in a subject confronted with the decline and alteration of their mental processes and the limitation of their choice possibilities. Quantum theory is used here in a tragically ironic way, to question the relevance of the probabilistic, indeterministic nature of reality in the face of death as the certain and unavoidable outcome of all things. No matter how many alternative realities take place in parallel universes, or in how many superposed states a particle exists, there is no alternative to death in the reality that we are experiencing. Through Marianne and Roland's discussion about her euthanasia, the play thus engages in the philosophical and ethical debate brought back to the fore by modern physics around the ideas of free will, choice and consciousness. Even though Roland maintains, 'we can do whatever we want' (p. 10), in a more pessimistic scenario Marianne suggests that 'we might *think* that the choices we make will have some say in the [outcome]' (p. 18), but it may just be a delusion and a form of wishful thinking, as these choices may only exist in our heads.

In *Constellations*, modern science thus allows the story to be told in what could otherwise be seen as a psychopathological form of storytelling. From an external point of view, the paradigm shift induced by the quantum approach to reality resembles an extreme case of cognitive distortion; it is indeed reminiscent of the psychotic 'creation of a new reality which no longer raises the same objections as the old one that has been given up',¹⁶ which is manifested in the play by the systemic negation of the scenarios by new dramatic developments. Based on mechanisms of denial and 'the desire for power of the id, which will not allow itself to be dictated to by reality', Freud explains that psychosis entails 'a rebellion on the part of the id against the external world' and results in 'a piece of reality [to be] remodelled'.¹⁷ Although Marianne does not appear psychotic in the least, a reading of the play based on the conservation of a classic, linear paradigm would see in the psychotic paramnesias, delusions and hallucinations studied by Freud a good analogy to its 'crazy' progression. While not an expression from the id but from a healthy ego, Marianne's refusal to entirely surrender to the predictable outcome of her disease and her desire to keep looking for alternatives is certainly mirrored in the play's constant 'process of remodelling' reality,¹⁸ which in turns places the reader-spectator in a position of co-creating the narrative of the play.

¹⁵ Magdalena Karlsson and others, 'Meanings of existential uncertainty and certainty for people diagnosed with cancer and receiving palliative treatment: a life-world phenomenological study', *BMC Palliative Care*, 13.28 (2014), <<http://doi.org/10.1186/1472-684X-13-28>>.

¹⁶ Sigmund Freud, 'The Loss of Reality in Neurosis and Psychosis', in *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, trans. and ed. by James Strachey, 24 vols, London, Hogarth Press and the Institute of Psychoanalysis, 1953-1974, xix: *The Ego and the Id and Other Works* (1923-1925), 1961; new edn, London, Vintage, 2001, p. 189-97, p. 193.

¹⁷ *Ibid.*, p. 194.

¹⁸ *Ibid.*

2. Undecidability and contradiction on the psychotic stage of Mark Haddon's *Polar Bears*

Mark Haddon's psychotic play *Polar Bears* offers a similar parallelism between a chaotic, non-chronological and fragmented structure evoking the disordered mind of a female character who suffers from cognitive disturbances, here in the form of psychopathological delusions. Just like Payne's play, it requires us to recreate, or co-create the narrative of the drama, as the protagonist herself – and her partner – is falling apart. The play tells the love story of Kay, an (aspiring) children's author and illustrator, and John, a philosophy lecturer. Here, the non-linear plot is divided into nineteen scenes succeeding each other randomly, reflecting the bipolar disorder of the young woman and the growing nervous instability of her husband.

While in *Constellations*, Marianne, as a physicist, is able to understand intellectually and explain objectively the 'many worlds' described by modern science on the basis of the mathematical equations that underlie quantum theory, in *Polar Bears*, Kay, in the manic phase of her illness, seems to intimately 'realise' the plural nature of reality, experiencing it personally through all of her heightened senses and feelings. In what could be a response to Marianne, Kay enounces, with her own words, the principle of superposition¹⁹ that underlies not so much quantum theory as her own subjective human experience and disturbed sense of reality, through the distorting lens of her mental disorder. She says: 'We think there's only one world. [...] But there are so many worlds, aren't there, one laid over the other. Palimpsest. Writing over writing. Pentimento. Painting over painting'. After spending the night outside in the rain to 'dr[i]nk it all down', she explains her understanding of reality from a first-person perspective:

¹⁹ Superposition is another key principle in quantum physics, which refers to the existence of a particle in an infinite number of superposed states, corresponding to a probability wave, until it is measured (or observed). It can be explained using Schrödinger's cat paradox, which applies quantum superposition to everyday objects, in the macroscopic world. In Schrödinger's 1935 thought experiment, a live cat is placed in a sealed box with a flask filled with poison gas, a radioactive source like uranium, and a detector of radioactive particles; the detector is switched on only briefly so that there is a fifty-fifty chance that it may detect a radioactive particle, whose decay occurs entirely by chance and is known to be unpredictable. If it is detected, the apparatus is so arranged that the poison flask is crushed and the cat dies; if not, nothing happens and the cat lives. As in the famous double-slit experiment where there are equal probabilities for a quantum particle to go through either one or the other slit that are placed on its trajectory, the outcome of Schrödinger's thought experiment (including the cat) exists in a superposition of states that cannot be observed: as long as the sealed box remains unopened and no one looks inside of it, the cat is neither dead or alive but exists 'in a nether-world, between life and death, the sum of the wave describing a dead cat with the wave of a live cat'.¹⁹ John Gribbin notes that 'the superposition is "real" until we look at the experiment, and that only at the instant of observation does the wave function collapse into one of the two states', so that one of the two possibilities becomes the one reality observed: 'Until we look inside, there is a radioactive sample that has both decayed and not decayed, a glass vessel of poison that is neither broken nor unbroken, and a cat that is both dead and alive, neither alive nor dead'. See John Gribbin, *In Search of Schrödinger's Cat*, New York, Bantam Books, 1984, p. 203-05.

It's so beautiful it makes me want to cry. [...] People don't see this. People don't feel it, they don't taste it and hear it and smell it. And I thought if I could fill myself up and take it away, then maybe I could share it, I could make people realise how many worlds there are. (p. 45)

Indeed, these 'many worlds' that other people are unable to perceive – this hidden reality – may not have much to do with those posited by Hugh Everett. One may argue that such statements result exclusively from the delusional visions of a euphoric, delirious psyche, breaking with reality. As a result, the multiple contradictory narratives that play out at the level of the play's structure are possibly a product of Kay's imagination only. Interestingly however, her 'many worlds' provide a poetic, pathological echo to the scientific descriptions of the world by quantum physics. A reviewer of the play pointed out that 'by the back-and-forth jumps and juxtaposition [in Haddon's play], episodes sometimes contradict each other or shift from the objective to the subjective'²⁰ – indeed, they do so in a way that is reminiscent, to a certain extent, of Payne's *Constellations*. The female protagonists of both plays somehow experience these parallel worlds through their pathology – Kay's psychiatric condition parallels Marianne's neurological condition in that both raise the crucial issues of control, power and consciousness which are at the core of human identity. Here however, the jolting dramatic structure mirrors Kay's switches back and forth between the manic and depressive phases that constitute the two complementary aspects of her disease. It provides a poetic translation of some of the main symptoms of the pathology, namely distractibility, restlessness, indecisiveness, impulsiveness, agitation, and jumping from one thought to another when talking. The result is a deconstructed narrative in which the protagonists' mental spaces and their divergent, more or less delusional approaches to reality overlap and blend to form the dramatic (mental) space of the play.

With an echo to the word 'bipolar', the play's title alludes to the mental disorder and, in more general terms, hints at the alteration of reality and the creation of parallel possible worlds through imagination, fantasies and, on a more severe pathological level, hallucinations. Playing with different levels of confusion, the drama proceeds according to Kay's delusions of grandeur and John's wish to either put an end to it all, or remain in a delusional state himself, denying the taxing reality of Kay's illness. Shedding light on the protective role of cognitive distortions, he confesses: 'I wish I could look at the shadows on the wall and stop trying to turn my head', like the men in Plato's cave (p. 75). Although a source of comic relief, the inclusion of improbable scenes makes John's exhaustion understandable. In Scene Four, Kay meets with Jesus at a café table in a train station, who tells her about his experience of isolation and his visual hallucinations in the desert:

John: After forty days of bitter herbs and rainwater pretty much everything starts appearing to you. The polar bears. They were the ones that really freaked me out.

Kay: Did they hurt you?

²⁰ Paul Taylor, 'Review of *Polar Bears*, Donmar Warehouse, London', *Independent*, 8 April 2010.

John: It was the desert, Kay. There were no polar bears. (p. 21)

Drawing a comic parallel between Kay's bipolar condition and the incongruous visions of Christ during the episode of His temptation, the motif of the polar bears is used as a metaphor for one's fears and demons and one's distorted sense of reality, pointing at the possibility that no element in the play may be 'more real' than others. In particular, Kay raises the question of the difference between real and imagined perception in the context of suffering, especially as she feels trapped in her own mental space – which turns out to be the only place where the actual drama can be located:

There's this fear. It comes out of nowhere. And I know it's just chemicals. I know the whole thing is chemicals. Love. Grief. That ache in your chest when you see a baby. But it feels so real, doesn't it? And when you're in the grip of the black stuff, it feels so real, too. Because you're inside this head. There's nowhere else to be... (p. 22)

Haddon's play indeed questions the thin border between normality and pathology, the grey zone between accurate experience and distorted perception, the undecidability between fiction and reality, and addresses the enactment of fantasies, the notions of free will and choice, and the foundations at the basis of one's sense of self and reality, while its main theme is 'the difficulty of coping, on a domestic level, with mental illness'.²¹ Here too, despite the mixed-up scenes, the reader-spectator can try and put Kay and John's love story back into chronological order, at least to a certain extent, and spot the following episodes: their first encounter (Scene Fourteen); their first after-sex talk, at the end of which Kay tells him about her mental condition (Scene Twelve); John's first meeting with Kay's family (Scene Three). Then, however, it becomes difficult to identify with certainty when exactly the remaining scenes take place, and if they actually even occur at all, as they start to contradict each other and appear suspended in time as possible memories, dreams, or fantasies – the possible staging of the protagonists' cognitive distortions and dissociations.

Scene Five, for instance, is when Kay tells John that her book is going to be published and she shows him her artwork. While '*we can't see it*', as the stage direction indicates, and we cannot, therefore, assess or measure Kay's actual abilities, John is thrilled and very appreciative of her work. She explains to him that her mother, too, was an artist, but a more conventional one, and that they do not speak the same language, which leaves her feeling misunderstood: 'I used to think she was a genius when I was little because she never went over the lines. She could draw a circle without using a compass. She looks at this and she doesn't get it' (p. 25). John suggests she might not want her daughter to be an artist. But when Margaret, in Scene Thirteen, shows John some of the paintings that Kay did a year ago, they look like they were made by a child and reveal that 'she can't paint [...]. She can't draw. She just thinks she can' because 'she wants to illustrate. She wants to write books for children' (p. 59). At that point, John

²¹ Michael Billington, 'Review of *Polar Bears*, Donmar Warehouse, London', *Guardian*, 7 April 2010.

seems to see Kay's artwork for the first time and is horrified as he realises that she has been fooling herself – and him, too – under the grip of her grandeur delusions. And while Kay has become a published children's book illustrator in Scene Eleven, a contradictory hint to point the reader-spectator in the opposite direction is again given in Scene Ten, when she complains: 'I pick up a pen or a paintbrush and it's all there, in my head. But as soon as I put something down on the paper I see how clumsy it is, how small, how laughable. It's just words. It's just lines. It's just colours. How can I possibly –' (p. 45). It becomes actually impossible to decide whether this is Kay being realistic or if it is an instance of twisted thinking called 'discounting' or 'disqualifying the positive'²² – a form of cognitive distortion symptomatic of the depressive phase of bipolar disorder. The aposiopesis after the modifier 'possibly' opens the horizon of all the possible beliefs and delusions of Kay, which constitute the material of many of the other scenes, but also translates the irreconcilable dimension of the distorted perceptions between which she tries to navigate. This suspended linguistic space of the unsaid meets her mental space – 'it's all there, in my head' – as the space of all dramatic possibilities, which are explored in contradictory scenes distributed randomly throughout the play.

Finally, the minimalistic Scene Sixteen, which consists only of the following stage direction, could succeed immediately to Scene Ten, as Kay, destroying her artwork, seems to reach the bottom of her depressive phase: '*Darkness. Kay burns her illustrations. Arctic wind. A bear in the distance, perhaps*' (p. 70). Along with the motif of the polar bear itself, the adverb 'perhaps', on which the description of the scene ends, renews the status of stage directions by inscribing indecisiveness and uncertainty not only within the storyworld, as a pathological symptom of Kay's character who cannot distinguish between reality and delusion, but also in the storytelling, as a defining, self-reflective feature of the narrative itself. The addition of the modifier 'perhaps', placed after a comma at the end of the segment like an after-thought, half-denies the existence of the polar bear just mentioned and somehow spectralises it, superimposing a world where it does not exist upon a world where it does, resulting in a palimpsestic vision. The presence or absence of the bear arguably stands as a metaphor for Kay's mental state and relation to reality, which is left to the appreciation of the director or of the reader. The stage direction suggests that, depending on whether the animal is eventually represented or not on the stage (a director's choice), this dramatic moment may or may not be taking place: given as it is, the text posits that Kay's burning of her illustrations may be either real or a fantasy, with an equal probability of either interpretation being right – much like the life and death of Schrödinger's cat. This undecidable dramatic space corresponds, in a way, to the suspended linguistic space of the many possible processes unexpressed after 'possibly' in Kay's unfinished sentence quoted above: whether they are expressed or unexpressed, described or undescribed, visible or invisible, the dramatic elements of the play lie in a

²² According to Burns, 'disqualifying the positive' means that 'you reject positive experiences by insisting they "don't count." If you do a good job, you may tell yourself that it wasn't good enough or that anyone could have done as well. Discounting the positive takes the joy out of life and makes you feel inadequate and unrewarded.' See David Burns, *The Feeling Good Handbook*, rev. ed., New York, Plume, 1999, p. 8.

sort of cognitive and existential limbo, in superposed states. Because it creates a possible world within the storyworld, ‘perhaps’ also turns indeterminacy and doubt into a constitutive and self-exhibitory feature of the writing process. The stage *direction* is thus turned into a stage *suggestion*, blurring the boundaries between the intradiegetic and the extradiegetic (the point of view of the protagonist and the point of view of the narrator). In *L’État d’incertitude*, Régy reflects on this adverb too, which stands as the linguistic emblem of his entire dramaturgy and approach to the stage. Summing up Wittgenstein’s main proposition in ‘On Certainty’, in which the philosopher tackles epistemological issues and addresses the notion and practice of doubt, Régy writes:

According to Wittgenstein, ‘one should not say a chair, but a perhaps-chair’.

I often think about this ‘perhaps’.

We are face to a wall. Looking for the moment when faith in reality ceases.

Then everything starts to shake. [...]

No sooner has one thing been brought forth than its opposite presents itself.²³

Blurring the boundaries between the fictional and the real, blending objective and subjective perspectives, cancelling the notion of time and multiplying the possibilities, the play offers two alternate endings to the drama, as a result of the contradictory scenes distributed throughout the play. Kay’s superposed ‘many worlds’ and palimpsestic perception of reality are thus actualised and translated into the bipolar form of the piece which, ‘like the heroine, is in two minds about what actually happens as events in the outside world and in her head conflict’.²⁴ The play indeed explores two possible consequences of her announcement, in the last scene, that she is going to Oslo on the invitation of her publisher to do interviews, visit schools and sign books. Considering its final position, Scene Nineteen thus appears to be the last scene of the play but not of the drama, as it actually introduces its major turning point, just before the story splits into two parallel scenarios: it is a pivotal moment, one of the few stable, univocal scenes of the play. After this event, it is uncertain whether Kay is dead or alive – again, like Schrödinger’s cat – as the two superimposed versions co-exist in the silence and blank space at the end of the script, and in the preceding scenes. In Scene One – which corresponds to the play’s first possible ending – John tells Sandy, her brother, that he did not let her go to Oslo, but killed her; yet in Scene Eleven, pregnant and a successful children’s author, she tells John that he saved her life. Both scenes may either be real or a mental picture, playing out a nervously worn-out John’s terrible fantasy to murder his wife in the case of Scene One, and a manically excited Kay’s delusion to be cured of her illness and to succeed in all areas of her life in the case of Scene Eleven, or, conversely, playing out

²³ ‘Selon Wittgenstein, “*on ne devrait pas dire une chaise, mais une peut-être-chaise.*” / Je pense souvent à ce “*peut-être.*” / On est devant un mur. Chercher le moment où cesse la foi en la réalité. / Alors tout se met à trembler. [...] / Une chose à peine avancée, son contraire se présente.’ Régy, p. 15. The French ‘*peut-être*’ translates Wittgenstein’s ‘*vielleicht*’ (‘maybe’ or ‘perhaps’).

²⁴ Taylor.

Kay's delusional fear of being killed by her husband, and John's fantasy of seeing his wife healthy and successful.

The figure of Edvard Munch's painting, *The Scream*, which Kay goes to see in Oslo, also evokes her own uncertain status between fiction and reality. In the play, she quotes an extract from Munch's famous poem which is associated with the painting. In the integral version, Munch wrote:

I was walking along a path with two friends—the sun was setting—suddenly the sky turned blood red—I paused, feeling exhausted, and leaned on the fence—there was blood and tongues of fire above the blue-black fjord and the city—my friends walked on, and I stood there trembling with anxiety—and I sensed an infinite scream passing through nature.²⁵

Munch's poem, completed by Kay's description of 'the man standing on the bridge doing that Janet Leigh pose from *Psycho* [and] these two dark figures in the background', echoes a conversation between Sandy and John:

Sandy: If she'd wanted to kill herself she might have tried a bit harder. It's a cry for attention.

John: And if you're walking beside a river and you see someone drowning and they're calling out for help, what do you say, Sandy? It's just a cry for attention? Some people need attention. Some people really are drowning. (p. 31)

Kay, the living portrait of Munch's screaming silhouette standing on the bridge while her brother and husband walk on in the background, lives in this indeterminate state, on the constant verge of jumping and drowning in the river, leaving everyone around her equally uncertain what to do. The deafening silence of this scream stemming from Munch's artwork echoes one's loss of voice in the stifling anxiety induced by the mental disorder, and is an image of this existential uncertainty. Looking at 'Depersonalization in Literature and Philosophy' in their book *Feeling Unreal: Depersonalization Disorder and the Loss of the Self*, Daphne Simeon and Jeffrey Abugel mention *The Scream* as a painting depicting 'the essence of a private hell and detachment from all things outside of one's self',²⁶ characteristic of subjective experiences of depersonalisation, as defined by psychiatry. Interestingly, the authors reflect on the deep distortion of one's sense of self in the grip of the mental disorder by recalling that the idea of the objective nature of the world is not a universally shared concept, as proved by Buddhism's immemorial understanding of the decisive role of our mind and consciousness in the construction of reality:

²⁵ Edvard Munch, *Journal*, 22 January 1892, quoted in Scott Wilson, *Stop Making Sense: Music from the Perspective of the Real*, London, Karnac, 2015, p. xix.

²⁶ Daphne Simeon and Jeffrey Abugel, *Feeling Unreal: Depersonalization Disorder and the Loss of the Self*, Oxford, Oxford University Press, 2008, p. 127.

The idea that reality is subjective, constructed from our own perceptions, is quite an ancient concept. 'We are what we think. All that we are arises with our thoughts. With our thoughts, we make the world', said the Buddha. Depersonalisation, a serious disruption in a person's thoughts or sensations about their individual self, understandably alters their entire world.²⁷

It is well known that the philosophical ideas of the Buddhist approach aroused the interest of a number of early quantum theorists and physicists, as well as that of psychoanalyst Carl Jung.

In the end, Simeon and Abugel's final remark can be viewed as an accurate description of Kay's undecidable state, presenting her aspiration to become an artist in terms of probabilities, as a 'perhaps':

People may find themselves in a Never Neverland with an altered sense of self, or a distinct sensation of having no self at all. Struggling with this mental change can lead down many paths, sometimes implying a spiritual awakening, while at other times the path may lead to anxiety, fruitless rumination, and, on occasion, works of art.²⁸

Conclusion

To conclude, both quantum theory and mind and brain disorders inform the unconventional structures of *Constellations* and *Polar Bears*, in an attempt to portray our cognitive processes and, more specifically, to conjure up the reality of pathological subjective experience in a way that strangely converges with the most mind-blowing descriptions of nature by modern science, thus validating the inner struggles and suffering of the protagonists. Both Payne and Haddon are concerned with possibilities and probabilities, and use the unreliable mind of a female character who suffers from a brain tumour or a mental disorder as a crucial dramatic situation to ponder the possibility of choice, the existence of free will and the power of the creative imagination in subversive ways. Their plays are fundamentally pragmatic and ethical and belong to what I propose to call 'the Theatres of Uncertainty', the question asked being 'what shall I / we do?'. In these dramaturgies, not only does the character hesitate between different options, states and possibilities, but their entire reality and all of their interactions ask to be thought of either in terms of choices (radical modality) or probabilities (epistemic modality).

Traditionally, as Anne Ubersfeld explains, the dramatic space is a structured and signifying 'spatialized universe in which chance becomes intelligible', giving theatre a 'didactic value' which 'has to do with the creation of an ordered space within which the spectator can observe and experience the

²⁷ Ibid.

²⁸ Ibid.

hidden laws of a universe normally experienced as chaotic.’²⁹ In *Constellations*, as in *Polar Bears*, it is the opposite: the aleatory has replaced the intelligible, space is disordered, and even if the reader-spectator is given access to some of the hidden laws of the universe, these laws portray a universe so much more chaotic than what common experience suggests. As a result, the plays appear as fundamentally non-didactic, as the idea of making chance intelligible in a spatialised universe is precisely challenged by Payne and Haddon. The poetic dramatisation of such concepts as undecidability, indeterminacy, unpredictability, and instability allows them to go beyond the classic binarisms which conventionally oppose fiction to reality. The notions of *alternation* and *wandering* (in French ‘*alternance*’ et ‘*errance*’) take the lead over those of *alteration* and *error* (‘*alteration*’ et ‘*erreur*’), which causes the very concept of cognitive distortion to be questioned, at least to a certain extent. It forces us to rethink the boundaries between madness and sanity, to reflect on the notions of distortion and convention, and to reinvent stage realism on the basis of counterintuitive or ‘spooky’ structures and images relying on the quantum principle of uncertainty and on the subjective experience of cognitive disturbances. In doing so, they provide strikingly similar dramatic structures which emphasise what playwright Mike Gordon identifies as the ‘potential of theatre, in its continuing exploration of the possibilities of being human.’³⁰

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²⁹ Anne Ubersfeld, *Reading Theatre*, trans. by Frank Collins, ed. by Paul Perron and Patrick Debbèche, Toronto, University of Toronto Press, 1999, p. 102-3.

³⁰ Mick Gordon, *Theatre and the Mind*, London, Oberon Books, 2011, p. 16.

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