



# How has Wayne McGregor used Science to develop his choreography in the 21st century dance?

**Gonzalo Preciado Azanza**

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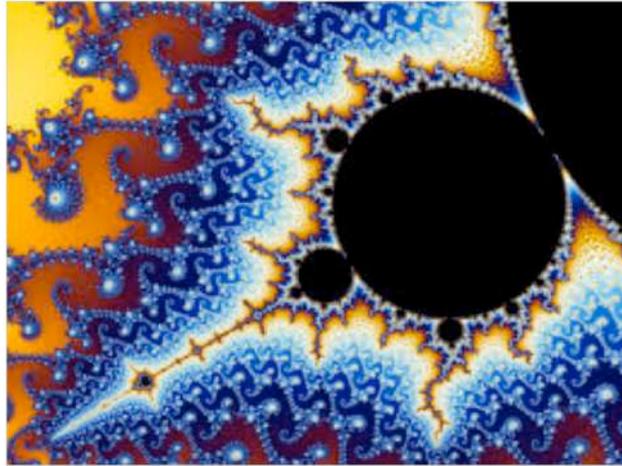
## Introduction

My dissertation will discuss how Wayne McGregor has used Science to develop his choreography in 21<sup>st</sup> century dance. I have chosen the British choreographer, Wayne McGregor to reflect my topic; due to the fact that he is probably the best of the few choreographers that are exploring how science and dance can be linked together. By the end of my dissertation I intend to answer how McGregor's influence of science has developed 21<sup>st</sup> century dance, in terms of movement vocabulary, structure of the choreographies and the way of creating dance as an art form.

"The "walls" that exist between science and art are simply the bounds of their description, and "breaking them down" serves only to make both art and science more fluidly defined"

<http://www.litandart.com/2008/01/30/the-art-science-phenomenon/>

I have chosen this subject, because I am fascinated with the human knowledge, especially Science. When I discovered that Wayne McGregor was using brain science, new technology and computers in order to create new movement vocabulary for his choreographies, I wanted to explore this in more detail and learn more about it.



Benoit Mandelbrot's Fractals. An example of the relationship Art-Science

(<http://www.bbc.co.uk/news/world-us-canada-11560110>)

My previous knowledge was quite extensive because last year I did an essay and a presentation about the life, work and stylistic characteristics of McGregor, so I have already studied and analysed some of his most important, well known works such as *Chroma*, *Infra* and *Entity*. Furthermore, due to my interest in science I have done a lot of research on many parts of science (especially in astrophysics, my main interest).



Eric Underwood and Sarah Lamb in Royal Ballet's *Infra*

(<http://www.dancemagazine.com/issues/January-2009/The-Royal-Ballet>)

The choreographic process of McGregor is unique because, at the beginning he starts with a scientific project exploring any of the scientific fields that he is fascinated with, and from there, alongside his dancers, they start to explore new movements and developing the new piece that they are working on.

“Creativity has to be based in knowledge, and so to be able to be original one must have a culture and an understanding of what other have done before us”

Tamara Rojo’s Interview, English National Ballet School’s Live Stream, November 2013  
[http://www.livestream.com/artstreamingtv/video?clipId=pla\\_831875b6-5ea4-4d76-863e-8ec99f0febe3](http://www.livestream.com/artstreamingtv/video?clipId=pla_831875b6-5ea4-4d76-863e-8ec99f0febe3)

My research process is mainly based on the Wellcome Exhibition’s Thinking with the Body (2013); there was a timeline with all the research and work that McGregor has produced in the 21<sup>st</sup> century, as well as interactive videos that were key to understand his investigations. After that I have also used many sources like webpages, DVDs and magazines that have allowed me to deepen my investigation into this even more, mainly I have used his own website where all his projects are extremely well explained.



Poster of the Wellcome Exhibition’s Thinking with the Body  
(<http://www.damnmagazine.net/en/article/thinking-with-the-body-mind-and-movement>)

In order to develop my subject, I have chosen the 1<sup>st</sup> male variation from *Entity* (2008), and then in contrast I have chosen the 1<sup>st</sup> male variation from *Dyad 1909 (In The Spirit Of Diaghilev)* (2009). My idea at the beginning was to show two different solos from the start and end, of his research. However, there was not enough material to learn about his choreographies for his own company, so I decided to do two solos from his latest choreographies.

The structure of my dissertation is divided into different parts in order to have a better understanding of my subject. In my introduction, and after I have presented the subject, I have explained why I have chosen it, as well as my previous knowledge and how my research process will be. Chapter 1 starts with a brief introduction about McGregor's work, it is divided into the 12 projects that he has done with the R-Research at the Wayne McGregor | Random Dance. Chapter 2 and 3 will be my research on my 1<sup>st</sup> male variation from *Entity* and my 1<sup>st</sup> male variation from *Dyad 1909 (In The Spirit Of Diaghilev)*, respectively. Then I will have a brief self-reflection about the whole process of doing this dissertation and a conclusion to establish the answers and my opinions about the investigations of McGregor and the impact of his work had on 21<sup>st</sup> Century dance. Finally the appendixes and bibliography will finish this dissertation.

## Chapter One

Wayne McGregor founded his own company, Wayne McGregor | Random Dance in 1992, since then it has become the instrument that McGregor uses in order to develop his fast and articulate style as well as researching into his own fascination with the human body, technology and science.

"It was during his major trilogy *The Millennium* (1997), *Sulphur 16* (1998) and *Aeon* (2000) that the company became a byword for its radical approach to new technology, incorporating animation, digital film, 3D architecture, electronic sound and virtual dancers into live choreography"

[http://www.randomdance.org/the\\_company/biography](http://www.randomdance.org/the_company/biography)

McGregor has always been curious in what begins his creative process. He named his company Random Dance because it involves Cunningham's conviction that random numbers can be as helpful as logic and that chance and indeterminacy are basic artistic tools.

McGregor said he'd "been fascinated with disruptions, diversions, randomness, incompleteness, the different set of intelligences involved in dance and the different ways of extracting information with the body."

<http://arsscintia.blogspot.co.uk/>

### **R-Research (Random Research)**

R- Research (Random Research) are the investigations held by McGregor and his own company, in the 21<sup>st</sup> Century. In total they have done 12 projects alongside scientists from diverse institutions including the University of Cambridge, the Royal Brompton Hospital or the University of California, San Diego. Those projects are going to be presented in chronological order.

“During the last decade, McGregor has engaged in research collaborations with neuroscientists, cardiologists and experimental psychologists, exploring the ways in which mind and body interact and in which creative ideas are transmitted”

<http://www.theguardian.com/stage/2013/sep/24/wayne-mcgregor-wellcome-collection-dance-science>

## **Choreography and Cognition**

The Choreography and Cognition project started in November 2002 and finished in February 2004. After this project McGregor was influenced by those investigations and started to rehearse his new choreography, *AtaXia* that was premiered in June 2004.

“This project, titled *Choreography and Cognition*, invited five scientists to work for short periods in residence with the dance company and resulted in a variety of studies including movement control, phrase segmentation and the cognitive dimension of notations” (deLahunta, 2009).

<http://www.sdela.dds.nl/cla/>

The project started as a discussion between McGregor and arts researcher Scott deLahunta. After that in November 2002 they organised Phase I, which consisted of a series of meetings with cognitive scientists from the United Kingdom and France. Phase II was a six-month project from September 2003 to the end of February 2004 that was made possible because of a six-month Arts and Science Research Fellowship for Wayne McGregor hosted by the Department of Experimental Psychology, University of Cambridge.



*AtaXia* (2004), choreographed by Wayne McGregor  
(<http://criticallegalthinking.com/2011/05/04/dance-dance-otherwise-we-are-lost-pina-bausch-1940-2009/>)

The main artistic objective of the project was:

“To integrate the participation and contribution from the scientists into the fabric of the choreographic process.”

<http://www.choreocog.net/ataxia.html>

Usually the choreographer and scientists are expected to follow a line of investigation which is specific for its field, but open to the reciprocal exchange of ideas across disciplines so that new ways of investigations could emerge with the overall result of improvement innovative and creative thinking.

“The impact of the joint research on Wayne's creative process might be best articulated as follows: new sets of information, different terminology, ways of thinking about creativity and cognition, movement control and coordination and many other fresh reference points and insights (shared so generously by the collaborating scientists)”

<http://www.choreocog.net/ataxia.html>

### **Of the Heart**

The Of the Heart project started in 2004 and finished in September 2005 with the *premiere* of *Amu*. The composer Sir John Tavener and the heart imaging specialists Dr Philip Kilner and Dr Sonya Babu-Narayam collaborate in this project

“An interactive exploration of the heart from the perspectives of the collaborative team behind the creation of AMU, a performance that premiered at Sadler's Wells, London on 15 September 2005”

<http://www.oftheheart.org/index.htm>

Of the Heart research showed different ways of seeing and thinking about the heart, In the process of it, there are moral and ethical dilemmas that appear between the scientific reasons of the heart in contrast of the religious and mystical ideas of it.

In *Amu* we can appreciate those disagreements that make the piece more exciting to watch.



*Amu* (2005) by Wayne McGregor  
([http://www.randomdance.org/the\\_company](http://www.randomdance.org/the_company))

### **Choreographic Objects: traces and artifacts of physical intelligence**

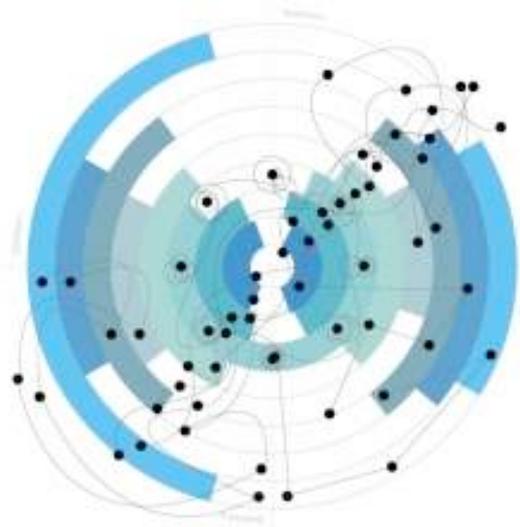
The Choreographic Objects: traces and artifacts of physical intelligence project was a series of three workshops between the collaboration of four research teams and the choreographers William Forsythe, Siobhan Davies, Wayne McGregor and Emio Greco PC.

“These research teams were working on ways to create productive exchanges with audiences and specialist knowledge groups, about the choreographic ideas and processes of the choreographers. Choreographic Objects refer to the range of resources they employed in order to mediate these exchanges. The workshops looked at

interactive scores and installations, choreographic software, and digital dance archives as Choreographic Objects.”

[http://www.randomdance.org/r\\_research/previous\\_projects/previous\\_projects/choreographic\\_objects\\_traces\\_and\\_artifacts\\_of\\_phy](http://www.randomdance.org/r_research/previous_projects/previous_projects/choreographic_objects_traces_and_artifacts_of_phy)

The 1st workshop took place in the University of Aberdeen in November 2008, the 2nd workshop took place in the Coventry University in February, March 2009 and final workshop took place in the Sadler’s Wells Theatre London In April 2009.



Prototype process image from the Siobhan Davies Digital Dance Archive Project ([http://projects.beyondtext.ac.uk/project\\_gallery.php?i=15&p=Choreographic%20Objects%20traces%20and%20artifacts%20of%20physical%20intelligence](http://projects.beyondtext.ac.uk/project_gallery.php?i=15&p=Choreographic%20Objects%20traces%20and%20artifacts%20of%20physical%20intelligence))

### **Entity Think-Tank**

The Entity Think-Tank project occurred in November 2007, experts attended it from different fields of human knowledge including cognitive science, robotics, artificial intelligence or dance.

“The Think-Tank was an interdisciplinary 'brain storming' session to envision autonomous adaptive agents that can generate unique solutions to choreographic problems alongside McGregor's own creative decision-making. It took place at the time when McGregor was generating creative ideas for his piece "Entity" (2008).”

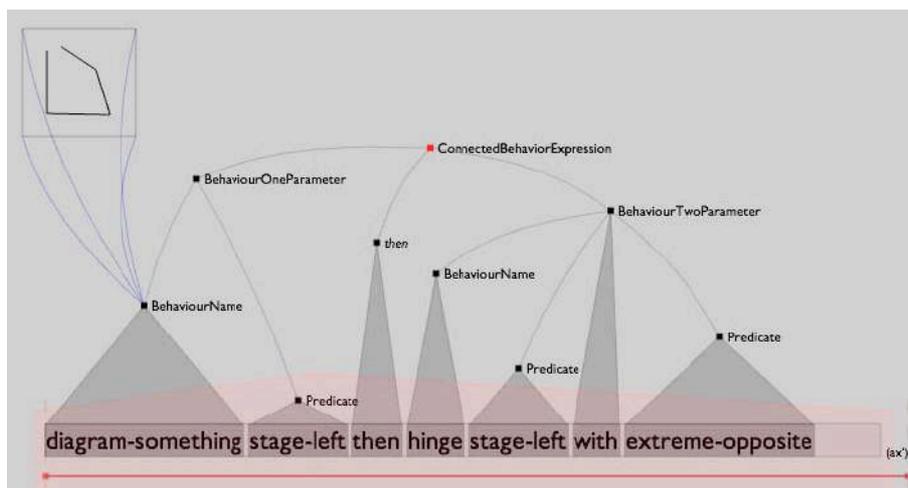
[http://www.randomdance.org/r\\_research/previous\\_projects/previous\\_projects/entity\\_think\\_tank](http://www.randomdance.org/r_research/previous_projects/previous_projects/entity_think_tank)

## Choreographic Language Agent

The Choreographic Language Agent (CLA) is a smart software tool that uses Artificial Intelligence algorithms to generate unique answers to choreographic problems, so the creative decision- making process increases.

“The project could lead to a fascinating virtual dance that is intricate at a number of levels, from the details of individual movements to the over-all picture of their synchrony”.  
“The software tool enables the creation of grammars that point two ways; towards simple versions of human language and towards choreographic grammars of dance that are particular to a given choreographer (in the initial case, of Wayne McGregor of Random Dance)”.  
“This tool posits a new form of dance notation; one which aids the choreographer in generating dance movements rather than in recording existing movements”.

<http://www.openendedgroup.com/artworks/cla.html>



Prototype example of sentence construction by the OpenEndedGroup  
(<http://www.sdela.dds.nl/cla/>)

This system was used by Wayne McGregor, even though he developed it using the open source software FIELD, which is another open source software created by the OpenEndedGroup to create their own digital artworks. This project began in 2008 and was involved in creation of *Entity* (2008).

## **Distributed Choreographic Cognition**

The Distributed Choreographic Cognition was a project between the University of California, San Diego and Wayne McGregor | Random Dance.

This project occurred in March 2009 in San Diego and was behind the creation of *Dyad 1909* (2009). In the project around 40 people participated. They explored the nature and role of cognition in the process of dance creation. The professor David Kirsh, the director of the University of San Diego's interactive cognition lab, supported by McGregor.

“This project examined the unique coordination of choreographic thought and action between choreographer and dancers during the creation process, and aimed to visualise the evolution of choreographic form for the audience.”

[http://www.randomdance.org/research/previous\\_projects/previous\\_projects/distributed\\_choreographic\\_cognition](http://www.randomdance.org/research/previous_projects/previous_projects/distributed_choreographic_cognition)

## **Choreographic Thinking Tools**

The Choreographic Thinking Tools was a project created in 2009 and finished with the creation of Wayne McGregor's piece *FAR* (2010). The CTT were developed in collaboration with cognitive scientist Phil Barnard. It consisted to find out more about the types of intelligences (choreographic thinking) that are surrounded in the creation of a piece of contemporary dance, and how this information could be useful for the choreographers.

“The Choreographic Thinking Tools, which support the creation of movement material for a dance through tasks that use embodied mental imagery. The tools focus on working with stimuli, how to notice and select features of these stimuli, and how to translate these features into movement, thus embodying the features of the stimulus”.

[http://www.randomdance.org/research/current\\_projects1/current\\_projects/choreographic\\_thinking\\_tools\\_resource](http://www.randomdance.org/research/current_projects1/current_projects/choreographic_thinking_tools_resource)

## **Enhancing Choreographic Objects**

The Enhancing Choreographic Objects (EChO) project occurred between 2012 and 2013. The collaborators of the project include James Leach (Aberdeen University) and Scott deLahunta (Coventry University).

“Enhancing Choreographic Objects is a follow-on research project that draws on social science expertise for the further development of the Choreographic Language Agent (CLA), currently used to generate and investigate movement ideas in the studio. This enhanced version will be realised in the form of a public installation that draws the visitor into the choreographic operations and structures embodied in and rendered visible by the CLA software.”

[http://www.randomdance.org/r\\_research/previous\\_projects/previous\\_projects/enhancing\\_choreographic\\_objects\\_echo](http://www.randomdance.org/r_research/previous_projects/previous_projects/enhancing_choreographic_objects_echo)

In EChO, James Leach is in charge of a research team that applies the framework elaborated in the former research to review how the CLA incorporate the creative strengths and skills of dance. This review will inform the artist or design team so the CLA is improved for public viewing.

## **Trinity Laban Partnership**

Since 2011 Trinity Laban Conservatoire of Music and Dance and Wayne McGregor | Random Dance R-Research Department have established a partnership in order to elaborate a dance-science research project to research the creative process in dance. In March 2014, Wayne McGregor was appointed Professor of Choreography at Trinity Laban Conservatoire of Music and Dance. In October 2012, both institutions organised a one-day interdisciplinary seminar called "Imagery and Creativity in Performing Arts: decision making, problem solving and breaking habits". This seminar was focused on clinical psychology, sports psychology, cognitive and neuroscience and how the use of imagery has improved over the last decade.

## **LABO21 - Research on Artistic Methodologies**

“LaBo21 (the laboratory of the 21st century) is an international partnership created to foster individual development combined with extensive exchanges between four artist-led interdisciplinary research projects on creative methodologies. LaBo21 is structured so each partner hosts four internal labs designed to support their on going individual research, and one salon meeting in which all partners come together to share research.

The fourth and final salon will overlap with a closing public Colloquium.”

[http://www.randomdance.org/r\\_research/current\\_projects1/current\\_projects/lab21/about](http://www.randomdance.org/r_research/current_projects1/current_projects/lab21/about)

The LaBo21 is integrated by the Wayne McGregor | Random Dance and Coventry University (UK), BADco. (Croatia), Troubleyn- Jan Fabre (Belgium), and ICKAmsterdam (The Netherlands). This European project started in November 2012 and finished in May 2014.

## **Choreographic Thinking Tools resource**

“For the past ten years Wayne McGregor has been working with cognitive scientists to examine his creative process. The research focuses on the way that Wayne collaborates with his dancers in the creation of movement material for his performance works. Out of this research have developed the Choreographic Thinking Tools, which support the creation of movement material for a dance through tasks that use embodied mental imagery. The tools focus on working with stimuli, how to notice and select features of these stimuli, and how to translate these features into movement, thus embodying the features of the stimulus.”

[http://www.randomdance.org/r\\_research/current\\_projects1/current\\_projects/choreographic\\_thinking\\_tools\\_resource/about](http://www.randomdance.org/r_research/current_projects1/current_projects/choreographic_thinking_tools_resource/about)

In September 2013, Mind and Movement was released. This new resource based on the Choreographic Thinking Tools (used by McGregor since 2010) was created mainly for dance teachers in schools; it was designed to improve the imagination skills of the students so they can establish new and original dance movement.



Mind and Movement Resource (2013)

([http://www.randomdance.org/r\\_research/current\\_projects1/current\\_projects/choreographic\\_thinking\\_tools\\_resource](http://www.randomdance.org/r_research/current_projects1/current_projects/choreographic_thinking_tools_resource))

### Thinking with the Body

Thinking with the Body was an exhibition that took place at London's Wellcome Collection from September to October 2013. The exhibition featured the investigations and results by Wayne McGregor | Random Dance's R-Research Department of over a decade.



Wellcome Exhibition's *Thinking with the Body*, Wayne McGregor's 21<sup>st</sup> Century Research Timeline

(Photo: Gonzalo Preciado Azanza)

It showed as well, the new project is a collaboration between Wayne McGregor | Random Dance and OpenEndedGroup used in the creation of *Atomos* (2013), called *Becoming*.

*"Becoming*, an algorithmic "virtual dancer" that grows and evolves in response to emulated mechanical constraints and to a database of film material."

<http://www.dance-tech.net/profiles/blogs/wayne-mcgregor-random-dance-becoming>

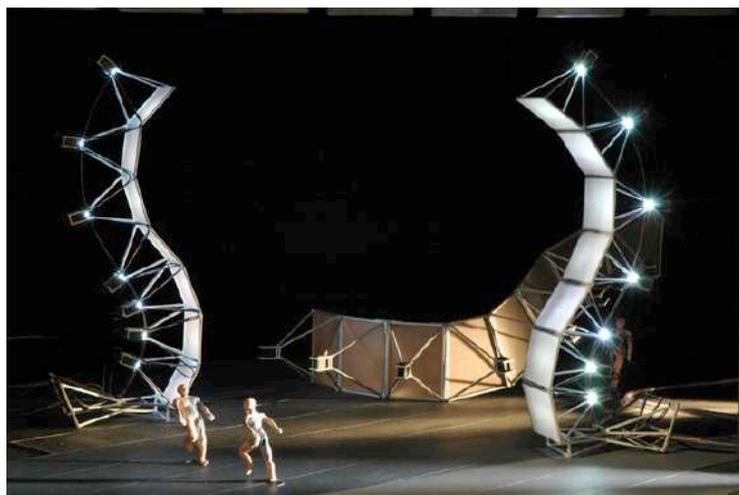
## Chapter Two

### Variation One: First Male Solo McGregor's *Entity* (2008)

As I mentioned before, my first solo is the First Male Solo from Wayne McGregor's *Entity* choreographed in 2008. It was not my first choice, because I tried to find a solo that belonged to a choreography from the early 2000s, for example *Aeon* (2000), *AtaXia* (2004) or *Amu* (2005). However there wasn't enough material from this period so I have chosen *Entity*, the earliest choreography that I could find a solo to study.

This choreography is the starting point of his research and use of new technologies in the choreographic process.

I decided to do this variation because I knew it would be a challenge for me. It is not a long solo, but it has lots of details in order to perform the style of Wayne McGregor.



Patrick Burnier's set design for McGregor's *Entity*.  
(<http://www.amandahowardassociates.co.uk/pages/pbportfolio.htm>)

The solo takes place after the 1<sup>st</sup> entrance of the entire cast, which happens almost at the beginning of the piece. There is no narrative, even though there is a scenario (See Appendix One- DVD One and Scenario).

The music was created specifically for this piece by Joby Talbot (an usual composer that collaborates with McGregor) and Jon Hopkins.

In terms of the designs, the Patrick Burnier's sets are one of the most spectacular parts, because it changes, giving a 3-D aspect to the piece, which also contributes the lighting of Lucy Carter, which gives even more a 3-D aspect to the sets and dancers.

The solo that I have studied was created for Paolo Mangiola in 2008. I have studied him in the DVD of *Entity* (2008) because there are no more recordings of this solo that I could find on my research. In the solo you can appreciate incredibly well the McGregor's Style, which is dynamic, sharp, usually fragmented and very often with such a fluid movement. To see more information about the choreography of the solo (See Appendix Four- Analysis of Variation One).



Wayne McGregor's *Entity*  
(<http://www.criticsatlarge.ca/2012/03/science-of-dancing-wayne-mcgregors.html>)

*Entity* (2008) was created under the project Choreographic Language Agent (CLA), a smart software that generate unique answers to choreographic

problems, so the creative decision- making process increases, and the project Entity Think-Tank, a series of conferences attended from experts from different fields in November 2007. Those projects can be appreciated, not just in the choreography, but also in the designs of the sets and lighting that follows those ideas of robotics and technology in general.

Entity ... is born of his preoccupation with the idea of 'an artificially intelligent choreographic entity' - a piece of software, which can 'think' for itself and help generate movement. The relationship between this research and the performance on stage is an abstract one ... All of this suggests Darwinism... The dancing, meanwhile, appears to express the uneasy tension between free will and evolutionary programming. With Entity, McGregor has refined his choreographic language ... It retains its extraordinary fluidity and strangeness - the complex isolations, the nervy detail, the acutely arched spines, the rubbery heel-walks - but the calculated visual and aural disruptions of the earlier work have been sharply reined in. The physical imagery, however, is dense, with the dancers' bodies in endless and complex dialogue.

<http://www.theguardian.com/stage/2008/apr/13/dance>

The rehearsal process of this variation has been incredibly hard, but productive as well. Not just in terms of the style, the process of learning the solo was completely different from anything I have learnt before, ballet dancers usually follow a certain path, in terms of structure, energy of the steps or style, but this solo was completely the opposite from that so it was a true challenge just to start with. Then, of course the rehearsal process of the technical parts of the solo, and most importantly, the rehearsal and understanding of Wayne McGregor's style was another challenge for myself.

## Chapter Three

### Variation Two: First Male Solo McGregor's *Dyad 1909* (2009)

My second solo is the First Male Solo from McGregor's *Dyad 1909* choreographed in 2009. Same as my previous solo, it was not my first choice, because I tried to find a solo that belonged from a choreography from the earliest 2010s for example *FAR* (2010), *UNDANCE* (2011) or *Atomos* (2013). But, because there was not enough material from this period, I have chosen *Dyad 1909*, the latest choreography that I could find a solo to study.

This choreography was the result of an experimental project of cognitive processes. He and his company at the same time were involved in the design and the dancers were the objects of the experiments, as well.

I have chosen to perform this solo because I knew it would be another challenge for me, because It is a long solo and completely different from the previous variation in order to perform another side of the style of Wayne McGregor.

This solo is the beginning of the piece, even though there is a small introduction when there is a dancer dressed up as a monster that fall sleep or dies. In this choreography you could see a narrative, because the piece it is based on the Ernest Shackleton 's Nimrod expedition to the South Pole in 1909. (See Appendix Two- DVD Two and Scenario).

... I have been inspired by a fascinating example of the period's rapid evolution... In a mere twenty years the technological revolution had given man the enduring power of flight and with it a renewed energy for expedition. Literally now able to 'dis-cover' more of the globe it was a new

dawn in possibility. ... That have been assimilated in the spirit of the Ballet Russes through collaboration and made visible for our time.

<http://nycdancestuff.wordpress.com/2012/07/20/dyad-1909-performance-by-wayne-mcgregor-music-by-olafur-arnalds/>

The acceleration of the scientific progress is the inspiration of this choreography; this sets a parallelism of what the Diaghilev's Ballets Russes in dance.

Dyad 1909 was commissioned to celebrate the centenary of Diaghilev's Ballets Russes, but its scope was widened out to include the scientific and political context of Diaghilev's era.

McGregor is even more fired up by the insights he has acquired from working with cognitive scientists at the University of San Diego. His exploration of the "technicities of creativity" ... and the logic of "distributive cognition" ... has had a liberating effect on him, he says.

<http://www.theguardian.com/stage/2009/oct/13/wayne-mcgregor-interview>

Olafur Arnalds created the music for this piece after the dancers were creating the piece, so it is based on them; it is very much a dark music that suggests intrigue.

The piece has simple costumes and sets that contribute to create this dark atmosphere. And the lighting by Lucy Carter increases even more this ambient.



Wayne McGregor's *Dyad 1909*

(<http://www.theguardian.com/stage/2009/oct/18/in-spirit-diaghilev-dance-review>)

The solo that I have studied was created as well for Paolo Mangiola in 2009. Because there are no more recordings of this solo that I could find on my research, I have studied himself in the DVD of *In the Spirit of Diaghilev* (2009). This solo is very different from *Entity* (2008), even though you can still appreciate the style of McGregor, specially the dynamism and fragmented movement with fluidity. For more information about the choreography of the variation see Appendix Five- Analysis of Variation Two.

*Dyad 1909* (2009) was created under the project Distributed Choreographic Cognition, between the University of California, San Diego and Wayne McGregor | Random Dance that occurred in March 2009 in San Diego. The project analysed the relationship between choreographer and dancers in the creation process in terms of the choreographic thought. In my opinion the project is visible to the audience in terms of the movement as well as the dark atmosphere of it, because of the lab conditions that was created in.

The learning process of this variation has not been as hard as the previous solo, because of the speed of the solo was not as fast as *Entity*. However the rehearsal process was exhausting, because of the length of it. You need so much stamina to perform this solo because, even though is not as hard as the previous one, you are still performing a McGregor piece, so it is always going to be technically demanding and fast.

## Self Reflection

This dissertation has been an exciting process that gave me the opportunity to increase my knowledge of the work of Wayne McGregor and his relationship with Science.

I discovered a new world, where science helps in the artistic creation. The artistic creation itself is an exploration of new ideas that may arise to incorporate and collaborate with scientists from many different disciplines. Science thrives on the study of the artistic creation.

This process began in June 2013 when I decided that my dissertation was going to be based on Science and dance, however I didn't have enough information, apart from my previous knowledge from the essay on the life and work of Wayne McGregor, to decide the title of it. It was at the beginning of 3<sup>rd</sup> Year when I started to organise the research, structure and contents of my dissertation, and from there the process started to grow, until now, June 2014, when I have finished and performed my dissertation.

In terms of the practical assessment I have to admit, that it has been a tough process because of the contemporary solos that I have chosen from Wayne McGregor. The movements are unnatural to the body and abstract, it requires lots of rehearsals to learn and execute them properly. Those solos gave me the opportunity to improve my versatility and to understand and learn a new style of contemporary dance.

After all, my dissertation helped me to grow as a person, being more mature and with a better understanding of myself and the world of dance.

## Conclusion

“In the past, studies of dancers have helped in projects as varied as the rehabilitation of stroke victims and the acclimatisation of astronauts to zero gravity. But how much can science help dance in return?”

<http://www.theguardian.com/stage/2013/sep/24/wayne-mcgregor-welcome-collection-dance-science>

After studying, how has Wayne McGregor used Science to develop his choreography in the 21<sup>st</sup> century dance. I discovered that they are structured in three parts:

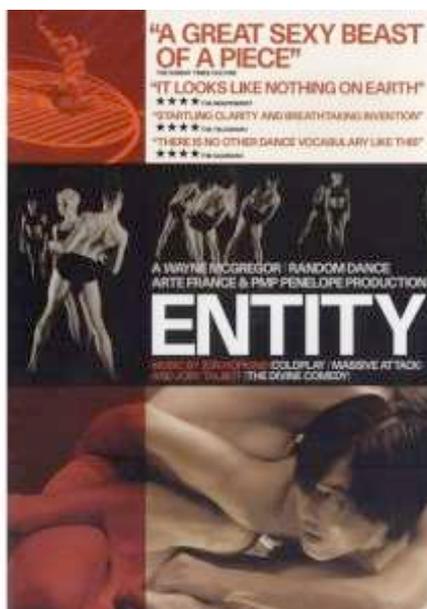
Research and use of new technologies in the choreographic process.

Experimentation of cognitive processes. He and his own company at the same time were involved in the design of the experiments, and the dancers were the objects of those experiments, as well.

Operation of the results. Transfer the results in didactics, marketing of tools...

After completing my dissertation, I realised that the relationship dance-science, (art-science in a wider relationship) is much stronger than I thought. Both fields are two different facets of the same unit, the human knowledge. They need each other to move towards the future.

## DVD One: *Entity*



Cover of *Entity*

(<http://www.roh.org.uk/products/entity-dvd-wayne-mcgregor-random-dance>)

**Choreographer:** Wayne McGregor (in collaboration with the dancers)

**Composer:** Joby Talbot & Jon Hopkins

**Designer:**

Costumes: Patrick Burnier

Set: Patrick Burnier

Lighting: Lucy Carter

Video: Ravi Deepres

**Dancers:** 10 dancers: Neil Flemming Brown, Catarina Carvalho, Agnès López Rio, Paolo Mangiola, Ángel Martínez Hernández, Anh Ngoc Nguyen, Anna Nowak, Maxime Thomas, Antoine Vereecken, Jessica Wright

**Première:** 10 April 2008 at Sadler's Wells, London

**Director:** Wayne McGregor

## Scenario

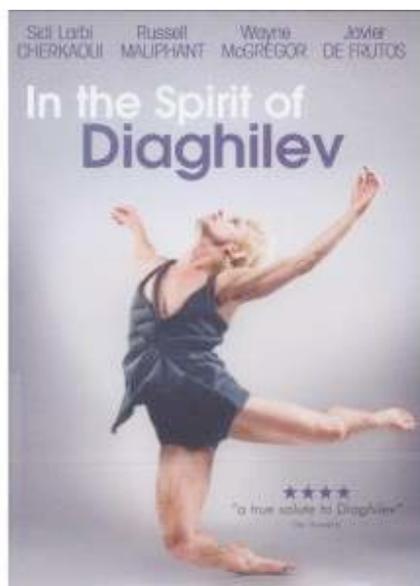


A duet from McGregor's *Entity*  
(<http://www.thelowry.com/event/entity>)

“An hour-long breath taking trip through a soundscape created by Coldplay and Massive Attack collaborator, Jon Hopkins, and award-winning composer Joby Talbot (The Divine Comedy), ENTITY is a staggering blend of bodies, lights, technology and film that mark McGregor at the cutting edge of contemporary culture. Technically astonishing, emotionally uncompromising and hard-hitting, McGregor's work breaks boundaries and defies categorisation.”

[http://www.randomdance.org/productions/wayne\\_mcgregor\\_past/entity](http://www.randomdance.org/productions/wayne_mcgregor_past/entity)

**DVD Two: *Dyad 1909 (In The Spirit Of Diaghilev)***



Cover of *In the Spirit of Diaghilev*  
(<http://www.roh.org.uk/products/in-the-spirit-of-diaghilev-dvd>)

**Choreographer:** Wayne McGregor

**Composer:** Olafur Arnalds

**Designer:**

Costumes: Moritz Junge  
Set: Jane Wilson and Louise Wilson  
Lighting: Lucy Carter  
Make-up: Kabuki  
Mask: Kabuki

**Dancers:** 7 dancers

**Première:** 13 October 2009, Sadler's Wells, London

**Director:** Wayne McGregor

## Scenario



Wayne McGregor's *Dyad 1909*

([http://www.randomdance.org/productions/wayne\\_mcgregor\\_past/dyad\\_1909](http://www.randomdance.org/productions/wayne_mcgregor_past/dyad_1909))

“By now we are all familiar with the story of the maverick impresario and founder of the Ballet Russes, Sergey Diaghilev. Diaghilev’s creative vision served to challenge the social norms of the day, scandalize Paris and quickly seduce the rest of the world with productions that not only redefined ballet but set a fresh agenda for the process of art making itself. But the Ballet Russes was also very much a product of its time. From a scientific, social, political and technological perspective the period of 1909-1929 was rich in discovery and experimentation; the world was changing and fast. For *Dyad 1909*, I have been inspired by a fascinating example of the period’s rapid evolution, illustrated brilliantly in their pre-occupation with Antarctica: In January 1909, the Anglo-Irish explorer Ernest Shackleton embarked upon his seminal Antarctic expedition the *Nimrod*, successfully reaching the magnetic South Pole, a first. By 1929, aviator Richard Evelyn Byrd the pioneering American polar explorer was the first to actually fly over the South Pole in a Ford Trimotor. In a mere twenty years the technological revolution had given man the enduring power of flight and with it a renewed energy for expedition. Literally now able to ‘dis-cover’ more of the globe it was a new dawn in possibility. Although *Dyad 1909* is not a narrative ‘about’ Antarctica, the dance, design and music, richly contain its traces; traces that have been assimilated in the spirit of the Ballet Russes through collaboration and made visible for our time. *Dyad 1909* is dedicated to the memory of Merce Cunningham (1919-2009), a choreographer whose curiosity, sense of adventure and seamless collaboration knew no bounds.”

Wayne McGregor

[http://www.randomdance.org/productions/wayne\\_mcgregor\\_past/dyad\\_1909](http://www.randomdance.org/productions/wayne_mcgregor_past/dyad_1909)

## Selected Wayne McGregor Choreonicle for Wayne McGregor | Random Dance

Year	Title	Relationship with Science
2000	<i>Aeon</i>	He created digitally landscapes that seemed like other dimensions and other worlds. It is part of his major trilogy
2001	<i>Nemesis</i>	The dancers duelled with prosthetic steel arm extensions with a soundtrack that has mobile phone conversations
2003	<i>Polar Sequences</i>	This piece suggests alternative realities where sensory landscapes crash with incredibly strange movement to build an alien universe
2004	<i>AtaXia</i>	He explored the connection between brain and body movement. It was created with scientists from the Department of Experimental Psychology, University of Cambridge where Wayne McGregor was appointed artist in residence in 2004
2005	<i>Amu</i>	He explored the functions and the symbolism of the heart
2006	<i>Erazor</i>	-
2006	<i>Ossein</i>	The title of the piece means the collagen component of bone which is also called ostein
2008	<i>Entity</i>	He explored the links between artificial intelligence and choreography. The piece was created alongside six international cognitive scientists
2009	<i>Dyad 1909</i>	The piece was created under "lab" conditions in the University of California, San Diego. It is inspired by Ernest Shackleton 's Nimrod expedition to the South Pole in 1909
2010	<i>FAR</i>	The cutting edge design is combined with the choreography that is made from a radical cognitive research process
2011	<i>UNDANCE</i>	There is a 3D projected backdrop. This choreography is not related with science but more with the society including in his title U.N (United Nations) and creating the question can the U.N solve the world problems?
2013	<i>Atomos</i>	This piece was created alongside cognitive scientists and a new creative tool, a 3D digital figure (that is called "Becoming")

**Analysis of Variation One: First Male Solo McGregor's *Entity* (2008)**

<b>Counts</b>	<b>Choreography</b>	<b>Stage Positions</b>	<b>Purpose</b>
05:54	Parallel position, the arms rest on the side	Backstage centre	Beginning of the solo (It changes the atmosphere from the previous section)
05:58	Step forwards with the right leg and kick with the left leg in front, the arms swing front and back to help the dynamics and the wrist are spiky	Moving forwards to centre	Connect with the audience
06:03	Parallel <i>retiré</i> with the right leg, arms in third position (same arm as leg) and swing with the body to the left and sitting on the left hip	Centre	Give dynamics to the solo
06:05	Step down with the right leg from the <i>retiré</i> position, small <i>rond de jambe</i> and kick to the side with the left leg, then <i>grand plié</i> into a <i>soutenu</i> finished with right leg in front, the arms swing forwards and backwards finish in third position (same arm as leg) with spiky wrists	Facing left stage and moving to the left centre	Use all the space available
06:08	Moving forwards to do a small arabesque with the left leg, then step to do a parallel <i>retiré</i> with the right leg and a swing the body, the arms swing from third position, forward (just right arm) and finish upwards with spiky wrists	Diagonal into downstage centre	Use all the space available
06:12	Kick backwards with the right leg, the body swing forwards and arms rest on the left thigh, then chase en tournant to the right with the arms	Moving to backstage centre	Keep the connection with the audience as well as the using of all the space

	swinging up and down and finish in a <i>rond de jambe temps levé sauté à la seconde</i> with the right arm upwards and spiky wrist the left arms is hanging on the side		available
06:15	Small <i>jetés à la seconde</i> with the right leg after the little jump, then <i>chase</i> to the side and <i>piqué</i> to the right en dehors and finish with the right leg behind and <i>plié</i> , the arms swing sideways finishing in third position with the left arms and spiky wrists	Moving to upstage left	Give dynamics to the solo as well as intrigue
06:19	<i>Pirouette</i> in <i>plié</i> to the left en dehors catching the leg with the right arm and left arm upwards with spiky wrist	Upstage left	Give more dance vocabulary to the solo
06:21	Alternate small <i>arabesques</i> starting with the right leg, (the arms and body swing forward opposite to the leg) finish into a half <i>piqué en dehors</i> with the right leg in fifth (left leg front) and left arm upwards with spiky wrist after a swing with the body and arms, finish looking to the left arm	Moving to left centre	Use all the space available as well as give intrigue
06:26	Look to the left and to the floor, then kick the right arm to the left one and look at it, drop the arms, swing the shoulders and <i>chase</i> into <i>seconde</i> , swing the body sideways and look upstage right, <i>grand plié</i> with a swing in the body, then <i>double piqué en dehors</i> with the right leg in coupé, no arms, facing upstage left, finish left leg in front, <i>plié</i> and head hanging to the right side	Moving to upstage centre	Give dynamics to the solo as well as intrigue
06:33	<i>Glissade</i> to the left swinging the body sideways with an <i>enveloppé</i> with the right leg, finishing in fifth (right leg in front), no arms, step backwards, <i>detourné</i> to the	Upstage centre	Keep the connection with the audience

	right, finish in fourth, left leg in <i>plié</i> , left arm swings back, drop the body forwards, kick the leg forwards, finish in parallel position, body tilt to the left		
06:37	<i>Demi fouette en dehors</i> with the left leg through <i>retiré</i> , kick with that leg, finish facing upstage right, with a swing of the body, 2 steps backwards, finish in <i>tendu derrière</i> with the right leg back (swinging the arms), and same arm in third position, then looking to the left, swing with the arms back and front and doing <i>grand plié</i> in fourth finish with the right knee on the floor, curve back, relax and looking to the floor	Moving to centre	Give more dance vocabulary to the solo as well as dynamics
06:43	Half-turn to the right facing downstage left, then kick backwards with the right leg in parallel <i>attitude</i> finish in parallel <i>tendu</i> backwards looking to the floor, shoulders up and arms up and front, then swing the arms down and ripple forwards facing front	Centre	Give dynamics to the solo as well as intrigue, it is the introduction of the end of the solo
06:47	Little step in <i>coup de pied</i> with the right foot (parallel then <i>en dehors</i> ) finish in <i>demi-pointe</i> in fourth in front, then swing the left arm front and back, then same the right arm with spiky wrists (but look to this arm), little <i>rond</i> with this arm through the chest, same with the left one, first look to the left then opposite the arm and tilt to the same side, little fourth position, left in front, finish in <i>grand plié</i> , touching the right arm on the floor and left arm to the ceiling	Moving towards downstage left (but you don't go that far)	Keep the connection with the audience as well as the using of all the space available
06:51	Step towards right centre-downstage right, <i>attitude</i>	Moving towards right centre-downstage right	Give dynamics to the solo and

	behind with the left foot, arms go through a little <i>ronde</i> in the chest into third position (same arm as leg) with spiky wrists, looking to right and the body bending forwards, then left leg down, step backwards, kick backwards through <i>retiré</i> with the right leg, left hand touching the floor, right arm upwards	(but you don't go that far)	explore new vocabulary and movements to the solo
06:55	Right leg go down, through parallel position, one turn <i>en dedans</i> to the left, finishing in <i>developpé à la seconde</i> with the left leg facing downstage left and looking upstage left, arms in fourth position <i>allongé</i> (same arm as leg) through the chest, then drop everything to <i>demi plié</i> in third position, right leg in front, finish in <i>retiré</i> with the right leg in <i>relève</i> , looking to the hand, arms cross down, through the chest finish in a extremely long fourth <i>allongé</i> , (same arm as leg)	Moving to the centre facing downstage left	Connect with the audience in order to finish the solo with the maximum attention of them
06:59	Alternate steps forwards, the arms do three ripples/circles in front of the body, then three quick swing sideways in first with the hands holding a <i>retiré</i> with the left leg, fourth, left leg in front and right leg in <i>plié</i> , left arm forwards, then right arm quick towards the left one, face upwards, look to this arm, step forwards, left arm in front, catch it with the right one and twist the arm and the body towards upstage right through the left, and the head tilts to the right	Moving to downstage left	Give dynamics to the solo as well as intrigue
07:04	Look backwards, alternate steps and turn through the left through parallel position, left arm swing around, finish facing downstage left, small step through <i>demi-pointe</i> with	Moving to centre	Keep the connection with the audience using the change of dynamics

	the left leg and finish in <i>tendu</i> to the side in <i>demi-pointe</i> with the right leg, the arms do small ripples/circles upwards and looking at them, then <i>rond</i> sideways to the right and finish parallel looking and pointing to the left foot		
07:08	Step forwards through fourth <i>plié</i> with the right foot, finishing in <i>tendu</i> parallel in <i>demi pointe</i> forwards with the right foot, no arms, tilt backwards (including the head tilting down) and looking to the foot, step backwards with the left leg and swing the left side and arm forwards, step backwards with the right leg, finishing in fifth with the left leg in front, facing the downstage left, and body and arms tilt forwards facing the floor	Moving towards downstage left (but you don't go that far) and then coming back to centre	Give dynamics to the solo as well as intrigue in order to create the atmosphere of the end of the solo
07:12	Swing the right arm backwards, then catch the right arm through the elbow, change into a small <i>demi plié</i> with the right leg bend in <i>demi- pointe</i> , swing the left arm backwards and right arm bends like the leg, then change facing downstage right, both arms circle around and meet in front of the body, takes the right leg into a <i>retiré en dehors</i> with flex feet, the arms go upwards and behind, still together, and arch the back	Centre	It is the last breath of the solo
07:16	Face backwards and <i>chase en tournant</i> through the right side, arms through first, then ripple backwards with the leg and the body, left arm resting on the thigh and right arm backwards and looking to the upstage right	Moving to upstage left	The dancer is trying to find a way to finish the solo or start another section
07:19	Run with alternate feet, then	Moving through almost	The dancer has

	<i>chase</i> into second position with the right leg first, left arm upwards and right arm in front towards the chest, then walk towards upstage right	left centre, centre, almost right centre to upstage right	found the way to start another section and goes towards it
07:29	Parallel position, the arms rest on the side facing backstage	Upstage right	The dancer is ready to start the next section

**Analysis of Variation Two: First Male Solo McGregor's *Dyad* 1909  
(2009)**

<b>Counts</b>	<b>Choreography</b>	<b>Stage Positions</b>	<b>Purpose</b>
01:35	Parallel position, the arms rest on the side, facing the left wing	Left wing	Beginning of the solo and the piece (It sets the atmosphere of the whole piece)
01:37	Start falling backwards, and two steps/chases backwards starting with the right foot finish with <i>tendu</i> backwards with the right foot in demi-pointe facing the upstage left and twisting the body towards backstage through the left and looking down	Moving to the left centre	Starting to use all the space available as well as creating some of the movements and the atmosphere
01:44	<i>Rond de jambe en l'air</i> in <i>attitude</i> into <i>attitude à la seconde</i> with the right side and the body tilts to the left side, bring the leg down through the left side and half turn to this side through fourth in <i>plié</i> finishing in first position facing downstage centre with the right arm upwards and looking at it, then the other one upwards and kicking the air slowly and twisting and doing circles with the hands	Left centre	Giving dynamics to the solo as well as intrigue
01:51	<i>Grand plié</i> in first <i>en dehors</i> starting with the body tilting a little bit to the right and the hands going to first through spiky wrists as well as small circles, then half turn to the right through parallel <i>grand plié</i> , finishing in <i>grand plié</i> in first position facing between upstage left and that wing	Left centre	Keep the connection with the audience
01:56	Ripple to the right with the head and body, right knee on the floor facing backstage, use the help of the arms, right arm on the right thigh, then ripple forwards with the head and body	Moving to upstage left	Use all the space available

	finishing upwards, arms are bend going backwards, left legs are in a big fourth parallel, with the left in front and bend and the right stretch and backwards, then push with the left arm on the thigh and two steps forwards starting with the right leg finish in parallel position, the arms rest on the side, facing backstage		
02:03	Turn the arm to the left side and then the right arm through the chest and bend, then the body ripples to this side and turns through the left and finish facing the left wing, finish in parallel <i>attitude</i> backwards with the right leg, right arm parallel to the floor and the body tilts forwards, then bring the leg through <i>retiré</i> , finishing forward in fourth with the left bend and the right leg stretch with a little tilt backwards of the body and the right hand on the waist	Upstage left	Giving dynamics to the solo as well as creating more vocabulary
02:06	Ripple the body to the left side and half turn to the left side facing the right wing, through fourth and second position finish in <i>tendu</i> front with the left leg, then <i>cambré</i> and bring the arms, through the back, upwards and then front finishing parallel to the floor, then whole ripple with the body forwards/backwards and at the same time you help with the arms in a wide first position and spiky and doing circles with the wrists, two steps backwards starting with the left leg and finishing in a <i>tendu</i> front with the right leg, looking to the floor and low first position of the arms and spiky wrists	Moving to the left wing (But don't reach it)	Giving dynamics to the solo as well as intrigue
02:14	Brush the leg through first, look down, then high <i>arabesque</i> tilting the body forwards and both hands on the left thigh to help the movement, then push with the hands, bring the leg down and turn through <i>plié</i> in 4th until parallel position facing the left corner backstage, through a ripple with the body and the arms rest on the side	Backstage left corner	Keep the connection with the audience changing the body direction
02:19	Ripple with the shoulders backwards, the right foot is in a sickle demi-pointe, the right arm is bend on the chest, then bring the arm backwards behind the back, slide the right foot backwards, tilt	Backstage left corner	Giving dynamics to the solo as well as intrigue

	the body forward in order to help the nature of the movement, then land on the right knee and the left leg is stretch forwards and the right arm stretch behind the head and with a spiky wrist, keep landing on the right side of the thigh, put the right arm bend on the floor backwards, and keep looking to the backstage left corner, then put the body on the floor, turn the head to the right corner of the audience and bring the left arm bend to the floor		
02:23	Push with the left hand to get up from the floor and reverse the movement that it was done in the count 2:19, finishing facing the backstage left corner in a parallel position with the arms, resting on the side	Backstage left corner	Keep the connection with the audience
02:26	Half turn to the left in <i>coup de pied</i> , the arms swings backwards in order to help the turn and finish facing downstage right, finish in parallel, and the arms swing through the back and finish down, then bring the right arm bend to the chest and same with the left arm to the back and look to the floor, then half turn in parallel facing upstage left to the right in parallel with the left arm bend to the chest and the right arm bend to the back, then ripple sideways with the body and tendue parallel in <i>demi-pointe</i> with the left leg and the right arm goes up with that wrist sideways and looking at that hand	Moving to centre (but don't reach it) and back to the backstage left corner	It is the end of the first section, so it is changes the atmosphere of the solo
02:31	Parallel position with the body tilting and twisting to the left, right arm goes down, and right leg goes up through parallel <i>retiré</i> and goes down crossing the left side, right arm goes down resting on the right thigh, a quarter of a turn to the left facing upstage right corner, step with the left leg forward, kicks the left arm with spiky wrist with a semicircle finishing sideways, same movement with the right leg and arm but with a complete circle <i>en dedans</i> finishing in parallel position through a ripple to the right side facing the audience with the arms in a diamond with the right arm same height of the	Moving to upstage centre	Giving dynamics to the solo as well as using all the space available

	shoulders		
02:35	Ripple again through the right side and tilting then lift the left leg until a parallel <i>attitude</i> and looking at the leg, push the leg with both arms and drop the body a little bit, cross the leg through right side, and turn to the same side facing the upstage right corner, step with the right leg forwards, and move the right arm sideways until finishing facing backstage, retiré with the left leg in parallel, and push with both arms this leg with a ripple with the body and tilt to the right side, same with the right side, then <i>plié</i> and drop the body	Moving to upstage right corner	Use all the space available
02:39	Same movement with both sides, but finishing facing the front through a <i>detourné</i> in fourth position and tilting to the right side, step sideways to the right and fourth parallel <i>plié</i> with the left leg backwards and the right arm up and backwards with spiky wrists, then parallel position, swing the right arm forwards and upwards, swinging the body through the right, left arm back and right arm hyperextended and both spiky wrists	Upstage right corner	Giving dynamics to the solo as well as intrigue
02:43	Tilt the body to the left and hips to the right, swing both arms through a hyperextended first position, and then arms swing in opposite directions (front and back), finishing both upwards, step <i>plié</i> forwards with the right leg, swing the arms through the front, right arm back and side and left arm sideways, step and jump through <i>coup de pied</i> with the left leg, step <i>plié</i> with the right leg in a parallel fourth sideways with the right side and swing the right arm forward and left back	Moving to right centre	Use all the space available
02:46	Step forward into cross fourth position <i>relevé</i> (left in front) through <i>retiré</i> , bring both arms upwards like a <i>toreador</i> , facing the front, <i>detourné</i> through the right finishing facing the upstage left corner, with the right leg in front, bring the left leg forward into a <i>tendue devant</i> in <i>plié</i> with a curve with the body and swing the arms forwards, finishing backwards, <i>piqué</i> forwards into <i>attitude</i>	Moving to the centre (but don't reach it)	Giving dynamics to the solo as well as creating more vocabulary

	backwards with the right leg, body sideways facing the front and tilting and looking to the leg, and arms in a relax second position		
02:49	Bring the right leg forwards through a parallel attitude <i>à la seconde</i> into a step forwards with the right leg bringing the arms down, step with the left leg forwards, left arm upwards and right backwards, both backwards with a small jump forwards, step forwards with the left leg and right arm goes upwards and hyperextended, step with the right leg, left arm do the same as the right one finishing in the <i>toreador</i> position, small jump forwards with the left leg in front, drop the arms and bring the right arm backwards, left arm forwards and right leg forwards, both arms backwards	Moving to backstage left corner (through the centre)	Use all the space available
02:52	Step with the left leg, turn <i>en dedans</i> with the right leg sideways in <i>plié</i> finishing facing the front, the right swings through the side and crossing the left side finishing upwards in <i>relevé</i> , then step sideways to the left finishing with both legs together in parallel in <i>relevé</i> and the arm turns and the palm face the front and tilts to the right, then goes straight upwards, then drop the body and the arm and turn a quarter through the right finishing facing the right side, bring the left arm upwards and tilt the hand to the audience, bring the hand back straight upwards	Backstage left corner	Giving dynamics to the solo as well as intrigue
03:01	Drop the arm down, and five alternate steps looking to downstage left starting with the right leg in a demi circle through upstage, finish in the centre in parallel position facing downstage left	Moving to centre	Use all the space available
03:04	Ripple with the right shoulder, bend the right elbow, turn through the left leg to the right finish facing downstage right, ripple with the body, right arm bend to the chest, left arm goes parallel in front to the floor, and right arm turns in the chest being parallel to the floor, the body is backwards, drop the position through a <i>coup de pied</i> with the right leg finishing in <i>tendue devant plié</i> with	Centre	Giving dynamics to the solo as well as keeping the connection with the audience

	the right leg with the pelvis in front and looking to the ground, close in fifth position		
03:07	Long <i>chasé</i> forwards through fourth position in <i>plié</i> with the body backwards, bring the body forwards, step forwards through <i>plié</i> with the left leg and left arm backwards, small jump forwards and bring the right leg forwards into a <i>tendue devant plié</i> , swing the arm forwards, then upwards turning through the left side finishing in first position facing the left with the left arm upwards hyperextended and the right arm resting on the side in <i>bras bas</i>	Moving to downstage right (but don't reach it)	Giving dynamics to the solo as well as creating more vocabulary
03:10	Twist the body to the left in a <i>coup de pied</i> in front <i>demi-pointe</i> with the left arm and bringing the body backwards, bring the left arm in front with a Martha Graham hand and a long <i>plié</i> , bring the left arm in first position looking to the upstage left corner, then one <i>pirouette</i> and three quarters in <i>retiré</i> with the left leg, left arm in first and right arm in <i>bras bas</i> finishing facing downstage left and <i>developpé à la seconde</i> in <i>plié</i> with the left leg and <i>allongé</i> the left arm	Between downstage right and centre	Giving dynamics to the solo as well as intrigue
03:13	Bring the leg and right arm down, then through a small fourth position with the legs <i>rond de jambe en dedans</i> with the right leg finishing in <i>attitude</i> parallel, and arms down and relax, then finishing facing the left side, bring the leg down and look at it, step backwards with the left leg finishing in a <i>tendue</i> behind parallel with the right leg in <i>demi pointe</i> , tilting the body forwards and looking to the floor	Between downstage right and centre	Keep the connection with the audience
03:16	Swing the shoulders backwards and do parallel <i>attitude</i> with the right leg with flex foot, look to the left side, bring the right arm backwards and catch the right ankle and push the leg higher twisting the body facing the audience, stretch the right arm and tilt the body forwards, kick with bend left arm and wrist the right shoulder	Between downstage right and centre	It is the end of the second section, so it changes the atmosphere of the solo
03:20	Bring down the right leg and both arms, then 3/4 of a <i>pirouette en dedans</i> with the right leg in <i>passé</i> , and both arms go	Between downstage right and centre	It is the beginning of the last

	in fifth position, finishing in a small fourth position in <i>relevé</i> with the right leg in front, facing the front, and swing the arms down and then backwards finishing upwards and sideways of the head with spiky elbows and wrists		section of the piece so it gives energy in the piece in order to create a different atmosphere
03:23	Ripple and drop the body down and forwards starting with the head, at the same time you do <i>plié</i> , then you do a parallel <i>jeté</i> with the left leg and you look down, then <i>possé</i> into an <i>enveloppé</i> sideways with the right leg <i>en dehors</i> , finishing in a over crossed fifth position with a small <i>relevé</i> , right leg in front, change into first and fifth position again, then drops the arm, into bend arms resting on the side of the ribs, look to the front, and step forwards into a small fourth position <i>plié</i> with the right foot in <i>demi pointe</i> , curve the upper body and bring the right elbow facing the front, and back to straight back and bend arms on the side of the ribs	Moving between centre and downstage centre	Giving dynamics to the solo as well as intrigue
03:28	Look to downstage left, bring the left arm bend through the chest until having the wrists resting on the left shoulder, then bring this arm down, and the right arm goes around the body though upwards finishing bend, elbow facing downstage left and the wrist on the shoulder, step with the right leg towards downstage left finishing in a big fourth position <i>en dehors plié</i> , with the right leg in front, recover into first position with the legs, same arms with the left in first sideways and spiky wrist and looking to the left floor	Between centre and downstage centre	Giving dynamics to the solo as well as creating more vocabulary
03:30	Tendue forwards through fifth position the right leg, then <i>rond de jambe</i> finishing in fourth position, right leg behind, look to downstage left, change the body and the legs to downstage right with the right in front, little circle with the body finishing on the right side, <i>plié</i> , bring the left arm straight above the bend right arm, finishing in a tilt to the right side looking forwards, and	Between centre and downstage centre	Keep the connection with the audience

	arms bend, right arms sideways and left arm in front of the body and tilt, both wrists are spiky, reverse the arm movement and finish it, left arm stretch, wrist spiky and facing upwards, and right bend sideways and wrist on the shoulder		
03:33	Bring the right leg through <i>coup de pied pli�</i> with the left leg, reverse circle with the right arm through first with spiky fingers, finish it stretch forwards and look at it, the right leg brush from <i>coup de pied</i> into first in <i>relev�</i> and <i>piqu�</i> backwards into arabesque with the left leg up and the head look forwards, bring the leg down into fifth behind and little circle with the hips starting to the right, bring the arms backwards to impulse and parallel <i>pli�</i> fourth position with the right in front, jump into a parallel <i>coup de pied</i> with the left leg, arms parallel upwards, elbows touching and looking upwards	Moving to downstage right (but don't reach it)	Giving dynamics to the solo as well as intrigue
03:36	Land the jump through a parallel <i>en l'air</i> , finish it in fourth parallel position <i>pli�</i> , the body facing upstage right, and the right arm goes to the floor and you look at it, recover from that into a turn in left leg and parallel <i>coup de pied</i> backwards with the right foot, both arms goes upwards and you face downstage right, reverse that movement and <i>relev�</i> in <i>retir�</i> parallel facing upstage right, and both arms upwards with relax wrists, <i>pli�</i> through the leg in <i>retir�</i> , drop the arms through the shoulders, step forwards with a rotation to the left, arms, backwards, step with the left leg and small <i>rond de jambe</i> parallel <i>en dedans</i> with the right leg, facing front, looking to the floor and arms in third position	Between right centre and centre	Use all the space available
03:40	Two small steps backwards starting with the right leg, finishing in parallel facing downstage right, twist backwards the right body, <i>pli�</i> with a ripple starting with the left side, and open the right leg <i>en dehors</i> , step-chase forwards with the left leg, and arms in opposite third position, step forwards with a mini- <i>pli�</i> ,	Moving to upstage right (but don't reach it)	Keep the connection with the audience

	bring the right leg into tendue forwards and change the arms into the opposite third position, then <i>rond de jambe en dehors</i> and change the arms again into opposite third position, lift the arms, bring the right leg through <i>coup de pied</i> into <i>plié</i> parallel fourth position, facing upstage right, impulse with the arms and <i>detourné</i> to the right, with the left leg first, and arms bend behind the back		
03:45	Finish the turn in parallel fourth <i>plié</i> , right leg in front, left arm in front and right behind with spiky wrists, <i>rond de jambe en l'air plié</i> with the left leg parallel, change the arms to impulse, step forwards, <i>plié</i> with the left leg and jump in parallel <i>retiré</i> with hyperextended arms, right upwards and left sideways, finish it with a curve and drop the arms, reverse the position before the jump with no arms, left arm through <i>developpé</i> sideways to downstage right, step forwards facing there	Moving to right centre	Use all the space available
03:48	Brush the right leg through first into arabesque and half turn to the right flat, then another half turn through parallel finishing in the starting position, another half turn in <i>arabesque</i> finishing facing the centre, bring the leg down and step forwards parallel, brush into <i>arabesque</i> with the left leg, small ripples with the body, bring the leg down and <i>plié</i> and hand on the right thigh, half turn to the left, finish in parallel facing the right wing	Right centre	Keep the connection with the audience
03:52	Bring the right leg into parallel <i>tendue</i> in relevé forwards with shoulders up, bring the shoulders down with the help of the arms and a ripple of the body and starting front and in <i>plié</i> , brush into a deep <i>plié</i> in fourth position parallel, left leg in front, looking down and arms like a runner, recover the position, doing a step backwards into an <i>arabesque</i> with the left leg lifted, left arm upwards and right to the side and both relax, bring the left leg down and the arms into <i>plié</i> and steps towards upstage right and	Moving to upstage right (but don't reach it)	Giving dynamics to the solo as well as intrigue

	look at it, starting with the right and finish parallel with the last step with a <i>plié</i> and ripple with the body and the arms front and hyperextended sideways and behind, spiky wrists and rib cage forwards		
03:59	Small movements with the arms, legs and ripples with the body, <i>plié</i> , bring the left arm down, left hill lifted and both arms relax, reverse this position to the other side through neutral parallel in <i>plié</i> and body still down, finish with a small kick to the downstage right and arms bend sideways and in <i>plié</i> , <i>developpé</i> backwards with the same leg as the kick, bring both legs into a wide fourth position <i>en dehors</i> , closing with the right leg towards the left in fifth facing front and looking to downstage right	Between upstage right and right centre	Keep the connection with the audience
04:02	Kick the right leg forwards in parallel <i>attitude</i> , bring it down into fifth, and kick the left leg in <i>en dehors</i> backwards in <i>attitude</i> , and small kick with the head, bring it through second position and shoulders lifted into fourth position <i>en dehors</i> facing the right wing, right arm on the thigh, look to the front, and left arm lifted sideways, ripple the body and turn in parallel <i>attitude</i> in flat to the right finish facing the left wing and step sideways towards backstage in <i>plié</i> into a parallel position facing the right wing and looking towards downstage left	Between upstage right and upstage centre	Giving dynamics to the solo as well as intrigue
04:06	Left arm cross the body to the other side finish sideways, cross back again, lift the arm upwards, and sideways and bend the arm and body to the right, recover into neutral position, tilt to the left, left leg parallel <i>attitude relevé</i> on the floor, tilt to the right, bend and turn out both legs into a fourth <i>plié</i> , put the weight of the body on the left leg, bring the body through the knees into a parallel runner position facing downstage right and looking towards downstage left, and right arm stretch on the floor, left arm on the knee, start to do small movements and both feet in small <i>relevés</i>	Between upstage right and upstage centre	That's the transition between the solo and the next duet

04:11	Ripple the body forwards using the power of the arms, recover into neutral parallel position, step forwards with the right leg into parallel facing the front, ripple the right arm into first, then twist it, and the left arm, through the side, helps to lift the right leg parallel <i>attitude</i> flex and both arms bend on the right hip, and looking to the right floor, bring this lifted leg, crossing to the left side, small jump into parallel with the arms in third position, left in first facing the front	Moving to centre	Keep the connection with the audience
04:15	Right leg through <i>relevé</i> bend forwards, goes sideways into a big fourth <i>plié</i> parallel with the right leg bend and the left one stretch, bring the left arm backwards to impulse, kick the body forwards and then to the right side swinging the body, through fourth parallel <i>plié</i> , left in front and right arm upwards into parallel <i>coup de pied</i> in the floor, palm facing downstage, slowly bring the right arm down and the legs into parallel	Centre	It the last movement of the solo
04:20	Parallel position neutral facing the left centre	Centre	It is the end of the solo

## Bibliography

Wayne McGregor, *Entity*, Biennale de la Danse, Arte France & Wayne McGregor | Random Dance & PMP Penelope, Lyon, 2008

Sidi Larbi Cherkaoui & Russell Maliphant & Wayne McGregor & Javier de Frutos, *In the Spirit of Diaghilev*, Sadler's Wells, Axiom | Films, London, 2009

Margaret Williams & Jonathan Haswell, *Three Ballets by Wayne McGregor: Chroma & Infra & Limen*, Royal Opera House, Opus Arte London, 2011

Catherine Maximoff, *Wayne McGregor: Going Somewhere & A Moment in Time*, Lesfilmsduprésent & Arte France & Wayne McGregor | Random Dance & MJW Productions, Berlin, 2014

Anon. (2006) 'Chroma' The Royal Ballet programme, Royal Opera House, November, 2006

Wayne McGregor, *Thinking with the body: mind and movement in the work of Wayne McGregor* | Random Dance, Welcome Exhibition, Wayne McGregor | Random Dance & Welcome Trust, 2013

Dance on Screen, English National Ballet School, 2012/2013

Dance Through Time Notes, English National Ballet School, 2012/2013

Dissertation Notes, English National Ballet School, 2013/2014

<http://www.wellcomecollection.org/whats-on/exhibitions/thinking-with-the-body.aspx>, accessed 2013.10.24

[http://www.randomdance.org/the\\_company](http://www.randomdance.org/the_company), accessed 2013.11.21

[http://www.randomdance.org/the\\_company/mission](http://www.randomdance.org/the_company/mission), accessed 2013.11.21

[http://www.randomdance.org/wayne\\_mcgregor](http://www.randomdance.org/wayne_mcgregor), accessed 2013.11.21

<http://www.roh.org.uk/about/the-royal-ballet/wayne-mcgregor>, accessed 2013.11.23

<http://www.randomdance.org/productions>, accessed 2013.11.23

<http://www.guardian.co.uk/stage/2012/dec/02/wayne-mcgregor-random-dance-review>, accessed 2013.11.23

<http://www.guardian.co.uk/stage/wayne-mcgregor>, accessed 2013.11.24

<http://www.dancemagazine.com/issues/January-2009/The-Royal-Ballet>, accessed 2013.11.24

<http://www.express.co.uk/entertainment/theatre/212324/Review-Far-Wayne-McGregor-Random-Dance-at-Sadler-s-Wells> accessed 2013.11.25

<http://www.criticsatlarge.ca/2012/03/science-of-dancing-wayne-mcgregors.html>, accessed 2013.11.25

<http://www.youtube.com/watch?v=KPPxXeolzRY>, accessed 2013.11.26

<http://www.roh.org.uk/productions/infra-by-wayne-mcgregor> accessed 2013.11.26

[http://www.youtube.com/watch?v=Xn\\_XQF2ro78](http://www.youtube.com/watch?v=Xn_XQF2ro78), accessed 2013.11.26

<http://www.roh.org.uk/productions/chroma-by-wayne-mcgregor> accessed 2013.11.27

<http://www.youtube.com/watch?v=4NJBRJy59tM>, accessed 2013.11.28

<http://www.youtube.com/watch?v=zylKCLy-Bh0>, accessed 2013.11.30

[http://www.randomdance.org/productions/wayne\\_mcgregor\\_current/atomos](http://www.randomdance.org/productions/wayne_mcgregor_current/atomos), accessed 2013.11.30

[http://www.livestream.com/artstreamingtv/video?clipId=pla\\_831875b6-5ea4-4d76-863e-8ec99f0febe3](http://www.livestream.com/artstreamingtv/video?clipId=pla_831875b6-5ea4-4d76-863e-8ec99f0febe3), accessed 2013.11.30

[http://www.livestream.com/artstreamingtv/video?clipId=pla\\_831875b6-5ea4-4d76-863e-8ec99f0febe3](http://www.livestream.com/artstreamingtv/video?clipId=pla_831875b6-5ea4-4d76-863e-8ec99f0febe3), accessed 2013.11.30

<http://www.bbc.co.uk/news/world-us-canada-11560110>, accessed 2013.11.30

<http://www.damnmagazine.net/en/article/thinking-with-the-body-mind-and-movement>, accessed 2013.11.30

<http://www.criticsatlarge.ca/2012/03/science-of-dancing-wayne-mcgregors.html>, accessed 2013.12.03

<http://www.dancemagazine.com/issues/January-2009/The-Royal-Ballet>, accessed 2013.12.03

<http://criticallegalthinking.com/2011/05/04/dance-dance-otherwise-we-are-lost-pina-bausch-1940-2009/>, accessed 2014.02.04

<http://www.theguardian.com/stage/2009/oct/18/in-spirit-diaghilev-dance-review>, accessed 2014.02.04

<http://www.theguardian.com/stage/2013/sep/24/wayne-mcgregor-wellcome-collection-dance-science>, accessed 2014.02.23

<http://www.amandahowardassociates.co.uk/pages/pbportfolio.htm>, accessed 2014.02.23

[http://www.randomdance.org/productions/wayne\\_mcgregor\\_past/dyad\\_1909](http://www.randomdance.org/productions/wayne_mcgregor_past/dyad_1909), accessed 2014.03.12

<http://www.roh.org.uk/products/entity-dvd-wayne-mcgregor-random-dance>, accessed 2014.04.17

<http://www.roh.org.uk/products/in-the-spirit-of-diaghilev-dvd>, accessed 2014.04.17

[http://www.randomdance.org/productions/wayne\\_mcgregor\\_past/entity](http://www.randomdance.org/productions/wayne_mcgregor_past/entity), accessed 2014.04.17

<http://www.thelowry.com/event/entity>, accessed 2014.04.17

[http://www.nytimes.com/2011/12/06/arts/dance/undance-by-wayne-mcgregor-and-friends-in-london-review.html?\\_r=0](http://www.nytimes.com/2011/12/06/arts/dance/undance-by-wayne-mcgregor-and-friends-in-london-review.html?_r=0), accessed 2014.05.06

<http://www.choreocog.net/ataxia.html>, accessed 2014.05.06

<http://www.choreocog.net/index.html>, accessed 2014.05.10

<http://www.oftheheart.org/index.htm>, accessed 2014.05.10

[http://projects.beyondtext.ac.uk/project\\_gallery.php?i=15&p=Choreographic%20Objects%20traces%20and%20artifacts%20of%20physical%20intelligence](http://projects.beyondtext.ac.uk/project_gallery.php?i=15&p=Choreographic%20Objects%20traces%20and%20artifacts%20of%20physical%20intelligence), accessed 2014.05.10

<http://www.openendedgroup.com/field/>, accessed 2014.05.10

<http://www.theguardian.com/stage/2008/apr/13/dance>, accessed 2014.05.10

<http://www.sdela.dds.nl/cla/>, accessed 2014.05.10

[http://www.randomdance.org/docs/lacacognition\\_0.pdf](http://www.randomdance.org/docs/lacacognition_0.pdf), accessed 2014.05.10

<http://www.labo21.eu/>, accessed 2014.05.10

<http://arssciantia.blogspot.co.uk/>, accessed 2014.05.10

<http://nycdancestuff.wordpress.com/2012/07/20/dyad-1909-performance-by-wayne-mcgregor-music-by-olafur-arnalds/>, accessed 2014.05.10

<http://www.dance-tech.net/profiles/blogs/wayne-mcgregor-random-dance-becoming>, accessed 2014.05.10

<http://www.theguardian.com/stage/2009/oct/13/wayne-mcgregor-interview>, accessed 2014.05.10

