Art, Design and Neurodiversity

Luca M. Damiani
London College of Communication
University of the Arts London, UK
l.damiani@lcc.arts.ac.uk

What is the role of contemporary art and design practice within neurodiversity? How digital media is engaging people who have a neurodivergent perspective (e.g., autism, dyslexia, dyscalculia, dyspraxia) into creating new art? This paper looks at giving a brief overview of the topic whilst looking into project *Art, Design and Neurodiversity* that the author started in 2015 in conjunction with the Graphic and Media Design course at London College of Communication, University of the Arts London (UAL). A collaboration was also built on some case-studies with Tate Digital Learning and BBC Research & Development. Exploring areas of sound art, graphic design, video art and storytelling, art practices around different forms of neurodiversity are investigated and produced. In this paper, there is also a key area of inclusive visual material and artistic work created by the participants. The art-design pieces can “live” independently but in this project they are also part of a wider communication that is taken into consideration also in the overall structure of this paper itself. With this paper, the author also looks at describing the way the project started, what outputs and findings are coming from the first phase of the work, and what are the next steps.

Neurodiversity. Art. Design. Technology. Creative Practice. Participation. Inclusive research.

1. INTRODUCTION

Neurodiversity = Neurological Diversity; after about twenty years of the beginning of the term (Blume 1998, Singer 1999) there is a growing positive change in the way neurodiversity is understood. The differences in the function of the individual's brain and in the related behaviours are regarded as traits of the “normal” population, and so not excluded or marginalised as a group. Not anymore seen only as a diagnosis given within a medical context, but understood as a difference in learning and seen (Hendrick 2010) providing new abilities and not disabilities discussions.

Neurodiversity is a term that embraces many aspects of brain's functions and diversity (Pollak 2009), for example autism, dyslexia, dyspraxia, dyscalculia, Asperger, ADHD. The difference in thinking, in seeing, in analysing and responding to data and life that surrounds us. A diversity that is present in human brains. We all are neurodiverse in a way; and although science divides neurotypical and neurodivergent, there is no typical mental capacity, no “normal” brain to which all other brains are compared to (Armstrong 2012).

With the variety of unique ingredients and qualities that these differences bring to the individuals, art and design is a field where diverse voices can be

heard. New creative application and practice can be created and discovered at all levels, merging and crossing grounds between scientific neurotypicality and neurodiversity.

Figure 1: // *My dear Asperger's Syndrome* // Designer: Luca M. Damiani, 2017.

2. ART & DESIGN WITHIN NEURODIVERSITY

The role of art and design within neurodiversity has been present at various points of related development within art education and also interconnection with disability studies (Derby 2015). Art and Design are open to different ways of thinking, are looking for diverse voices in approaching a topic and abstracting a thought. This has engaged more neurodiverse debates within the arts, having openness and knowledge-sharing within contemporary neurodivergent artists, as well as researching and identifying key designers and artists with neurodivergent traits, such as Rauschenberg for example (Gobbo 2010).

The relationship between the processes of actual experience through active learning (Dewey 1938) has created a platform to be investigated further within neurodiversity, shaping the possibility of designing, creating and making based upon our personal experiences. This creates an engagement at all levels, bringing qualities and abilities into the surface. We can see examples with the approach of neurodiversity and inclusive theatre (Kim, Stembridge, Lawrence, et al. 2015) as well as the process of neurodiverse presence within digital making communities (Zolyomi 2016) as well as technology developers and creative engineers (Morris, Begel, Wiedermann 2015).

Discovering the strengths and talents (Armstrong 2012; Grandin 2004) is a key area of neurodiverse success within learning and working in our society. The voice and the area of specific characteristic that needs to be empowered and developed further is also a natural common area of individual progression and personal/professional growth.

Research in Art and Design, with interrelations with Neurodiversity and Art Education, has shown that the decision to study art, for example for dyslexic students, is higher than other cases (Bacon and Bennett 2012). Students with dyslexia, for example, often show and demonstrate artistic abilities and creative approach of thinking and of examining data (Appleyard 1997). Responding positively to different learning needs (Pollak 2009) creates a constructive atmosphere of creation and experimentation, which is key to unleash research questions, open-up new possibilities, build-up forms of interrogation and critical arguments.

Various art & design projects saw neurodivergent artists being involved by cultural organisations (Rogers 2012) and included in research-practice exploration. And neurodiversity was also presented lately in academic design debates and installations such as, for example, Creative Differences (Royal College of Arts, London, 2016) and BBC

Neurodiversity Conference (BBC Radio Theatre, London, 2016).

Being neurodivergent myself (diagnosed with Asperger Syndrome, ASD) and being a practicing artist, in this art and design project, I am particularly interested and focused on this idea of creative development for expanded artistic voice and practice around neurological diversity itself. A practice-based learning, parallel to a practice-based research development (Sullivan 2005), that is connected to an overall cross-media and cross-collaborative artistic making in the field of art and design.

In the following section, I will frame the project and I will go through the various areas of the practice and artwork creation.

3. RESEARCH PROJECT – APPROACH AND STRUCTURE

Art, Design and Neurodiversity is a practice-based research project that started in early 2015. Mainly focused on qualitative data and methods of ethnographic observation during collaborative practice, this art and design study has developed in different settings and institutions: UAL, Tate, BBC.

At University of the Arts London, I worked with 3rd Year BA Graphic and Media Design students at London College of Communication; all these students had a form of neurodiversity (i.e., dyslexia, dyspraxia and dyscalculia). The project then also considered a neurodiversity session part of the Tate Kids Digital Makers and Tate Digital Learning programme, as well as an ongoing collaboration with BBC Research & Development.

Looking at the way art and design is evolving into different disciplines, the project (in its primary phase) shaped into an observation and exploration of design techniques such as sound art, poster design, video art and visual storytelling.

The concept of active creation, of artist's and designer's voices through an open choice of media, became the key angle of this practice-based work, mainly focusing on creating artistic data that shows the clear abilities and level of interpretation from neurodivergent participants.

Having different design approaches instead of a specific one, developed a more open and diverse input to the practice itself. This allowed/allows everyone's voices to be heard through a media that can feel appropriate to reflect a certain message as well as to incorporate the diverse way of interpreting data, of seeing reality, of thinking about inclusive design practice.

Each method was also working with different senses: sound, visual stills, moving images, interactive immersive augmented reality. This allowed to incorporate different elements and explore physical and digital way of working. This flow of cross-methodological practice opened to more possibilities of underlining the abilities of the participants.

3.1 Sound Art

Sound art and neurodiversity (Keay-Bright 2012) have cross-linked in a variety of situations. In our daily routines, our surrounding environment is full of sounds that we perceive in different ways and we configure in diverse ways (Lindborg 2015); the biological nature of our systems filters the inputs and reacts to it with some sort of data codification. Sounds are usually perceived and codified in higher quantities and tones by a person with autism for example, and this can be an issue in some cases as it might create an overload of data and information (Rosenhall et al. 2003). However, this can also be overturned in order to see the positive aspects, using this characteristic as an ability to listen more carefully and to create engaging and constructive responses. Sonic development (Timmermans et al. 2004) and sound therapy approaches (Ellis & van Leeuwen 2007 & 2008) can be recognised in this practice, but also artistic developments and musical creations should be considered.

In February 2016, as part of the “Diggin’ the Gallery” event at Tate Britain, I took, as a small case-study, a participatory workshop on sound-art. This session was run with a group of young people with autism by Tate Digital Learning team, in collaboration with the studio We Are Pyka, a group of digital artists working in technology, sound-design and public engagement.

Figure 2: *Pyka Loop application – We Are Pyka’s creative workshop on sound-art creation. Tate, 2016.*

The session aimed to explore sound within the art gallery, with the goal of creating engaging sound pieces, interpreting the space, the artworks, the

overall setting. It was clear that the interactivity and digital technological aspect of the artistic tool used was a key aspect for an inclusive session. The application *pyka_loop*, created by Pyka studio and used as part of the Tate Kids Digital Makers series, was an example of accessible-open tool to develop an engaging and inclusive workshop design.

The digital app allowed the users to create music using a straightforward recording system of sounds present in the environment; the app also supported the collection of sound-data that could then be edited/remixed to create final pieces of music.

Figure 3: *We Are Pyka sound-workshop. Tate, 2016.*

The accessibility of the service design (Darzentas 2014) and the easy way of visual interaction and interpretation of its functions, is a fundamental design ingredient for empowering the participants. It also underlines the fact that approachable artistic tools are needed for all abilities, in order to shape not only more debate around neurodiversity, but to create more possibilities for creative practices, having a higher exchange of art.

Figure 4: *Tangible Statistics Linguistics – Natasha Trotman at Digital Design 2016, V&A.*

The above image shows a design-research project (Trotman 2015), where Trotman looks at aspects of agency and empathy, identifying awareness of the

neurotypical and the neurodivergent individual. I met Trotman at the Mozilla Festival (2016) and investigated her work more, looking at the way she focused on R&D design, spatial awareness and haptic elements. Trotman collects stimuli and connects to the use of investigative play and creative approach to research (Niedderer 2007) also present with Pyka as an area of sound-design.

Looking at sound-art as a mixture of sound integration and musical interventions, brings us to frame the practice as a responsive auditory system in a playful-process. It has been noted that children on the autism spectrum display many sensitivities to music. This connection of musical skills is adapted to therapeutical goals but it could also be seen as a recognised participatory artistic practice.

3.2 Video Art

One area of neurodiversity that is well analysed and discussed in science is the photographic and/or cinematographic visual memory and registration/codification of data. Screen-based media (Mazurek, Shattuck, et al. 2015) then seems to be an intriguing area to approach for the critical investigation of neurodiversity and artistic practice.

Visual characteristics and approaches to thinking, analysing, memorising and reflecting, are well investigated within the neurodiversity discourse (Grandin 2006). The approach to artistic critical arguments and creative description of situations via video is an area that was also explored within this project, looking at creating moving-images and conceptual visual dimensions for stimuli and mirroring of some areas of the topic. I report here two of the video art pieces that were used as case-studies to help identifying areas to consider in the development of the research-project within moving image. The two pieces that I present here are connected to obsessive compulsory disorder (OCD) and dyslexia.

Figure 4: Video-art piece, reflecting daily actions by a person with OCD. Designer: John Philip Sage, 2015.

The case-study on OCD saw the collaboration between a design-student (Sage) and a participant

who had OCD. Through ethnographic observation, Sage and the co-designer/participant created an overall detailed storyboard to reflect and share elements of OCD experience. In the video, we can see various moments of daily basic activities at home such as opening a door, cooking, closing a door, turning the lights on. Objects as key parts of home and identity (Jacobs 2013) and also as potential ingredients for design, self-awareness and portraiture (Damiani 2009) were also considered in the primary development of the project. The aim of the video was to mirror, recreate and communicate to the viewer some of the anxieties, tensions and obsessive feelings that individuals with OCD syndrome can experience. In this case, all the actions in the videos reflect Sage's observations of the objects that were used by the participant during common daily life at home (keys, phones, doors, cutlery, light switches, doorknobs, etc.). The video, with its rhythm, repetition, action and sound balance, was co-edited with the participant and reflects the levels of perception in her reality. The intensity of the sound and the images build-up in terms of tone and speed, recalling conversations and feelings exchanged with the participant.

Figure 5: Experimental Video-art piece on Dyslexia. Designer: Joel Wilson, 2016.

The previous image shows a frame of a video-art piece from design student Wilson. With a self-ethnographic observation and with various degrees of self-awareness in relation to his dyslexia, in this video-art piece Wilson recreates mainly an area that challenges him the most: reading. The development of reading and spelling in individuals with dyslexia can be delayed, and often can remain a challenge throughout life (Oakland et al 1998).

Dyslexia is about information processing and this can affect learning and the acquisition of literacy skills. Wilson here creates a piece that plays with the concept of interpreting data in a very heavy text-based piece, showing the various barriers that a dyslexic individual might go through. Using design thinking and video-editing, this video shows areas of text that are blurred, then moments of order followed by disorder, combination of patterns that are seen through the words, and also the

identification of shape of font that affect the smooth reading of text.

3.3 Poster Design

Within the area of visual communication, the project also considered poster design creation as a way to reflect areas of neurodiversity and to share these with both the neurotypical and neurodivergent individual.

Running workshops at Tate with UAL Design students with dyslexia, the following poster designs were created.

Here they are presented in a form of mosaic wall experience, similar to how they were presented and discussed at the BBC Neuro-diversity Conference (2016) and in how they might be installed for some interactive sessions with BBC R&D at a later stage.

It is relevant to present them here in this way, as a little graphic collection, giving a different experience of reading information and allowing visual thinking and criticality. Each image contains an area that the designers wanted to review and to express in relation to their neurodiversity.

Figure 6: Dyslexia filtering the sounds of words.
Designer: Farzana Ahmed, 2016.

Figure 7: Dyslexia and reading structures and difficulty depending on colour combinations and other parameters of composition. Designer: Lauren Cotterel, 2016.

Figure 8: Dyslexia in sounds of words and reviewing colour combinations.
Designer: Farzana Ahmed, 2016.

Figure 9: Dyslexia and reading structures and difficulty depending on colour combinations and other parameters of composition. Designer: Lauren Cotterel, 2016.

Figure 11: Dyslexia filtering the words and order. Designer: Sam Jay, 2016.

Figure 10: Dyslexia filtering the space between letters. Designer: Roxanne Bottomley, 2016.

Figure 12: Dyslexia and memory. Designer: Joel Wilson, 2016.

Figure 13: *Dyscalculia and analysis of data.*
Designer: Oliver Zandi, 2016.

3.4. Storytelling

During the development of the project, working on sound art, video art and poster design, an aspect that all these pieces had in common was storytelling. Each piece was related to a narrative of some kind, stories that somehow were told in different ways, through different voices and multiple methods.

The idea of narrative became a fertile ground for next potential steps of the project and research. We realise the importance and the value of stories in dynamic creative teaching and learning and also how storytelling works in various way of therapy, for example within neurodiverse audiences (Rahmani 2011). This gave an input into the collection of all the content created in the various areas previously discussed, in order to create an overall flow of narrative.

Rahmani's study examined the efficacy of narrative therapy and storytelling in reducing reading errors of dyslexic children. Having that as an input and reference, I played on the inverse approach and created a children's story that focuses on those errors of writing in terms of style, content and character..

As an example, Jamsine is part of a series of storytelling that incorporate stories with text, design, illustration and sound. These are to be collected, combining them with all the other works

created in the project. This is thought to create a multi-dimensional installation, trying to work with multiple senses and testing multisensory methods (Oakland at Al. 1998), in order to open up awareness and debate for both the neurotypical and neurodivergent audience.

< Jamsine >

Jamsine sawpped lettres when she worte.
She loevd wirting pomes
and ivnent storeis.
She liked let her imagination folw in her onw uinique way.
But she sturggled reading long books
or wirting essayas for school
and not evreyone could undrestand what she worte.
Someone tried to hepl her sotr the lettres' odrer
and corretec when she maed misatkes
but with no lukc, it was too difficutl for Jamsine.
"I just cannot do this. It is too hard for me."
But Jamsine friend Mary atcuallly loved to see the new
wrods that Jamsine worte.
Mary was inspired seeing these new ipnuts of litreature
folwing in the pages of her friend's noetbooks,
and she loved to raed Jamsine's intreseting pomes.
"Look Jasmine. I think this is fantastic – I can read it and
understand it completely."
And not only Mary, but also otehr poeple thuoght so.
And so Jamsine restrated wirting the way she loved...
a new apporach in wirting was coimng through
and a new way of raeding and undrestanding the
disordre of lettres.
Then Jamsine put wrods into logner pomes
craeted logner storeis and worte a book.
And so, even with lettres not in odrer
and with misatkes here and tehre
her story can be now raed
in a divrese way.

Figure 14 and 15: Jamsine.
Artist-Designer: Luca M Damiani, 2016.

4. CONCLUSION AND NEXT STEPS

In this paper, I wanted to share the primary phase of this practice-based research project, showing how neurodivergent practitioners can create art related to the topic. Different voices were heard using various methods, seeing and underlining the talent and abilities that the participants had. The artistic outputs brought together different perspectives and opened discussions. The project now looks at immersive and augmented reality (with the collaboration of BBC R&D), observing users' responses with the aim of creating further discussions, as well as narrowing down the next phase of the research focus.

REFERENCES

- Appleyard, D. (1997) Education: The art of being dyslexic. *The Independent*, 27 February. URL: <http://www.dys-add.com/resources/RecentResearch/EducationTheArtOfBeingDyslexic.pdf> (retrieved 26 April 2017).
- Armstrong, T. (2011) *The power of neurodiversity: unleashing the advantages of your differently wired brain*. Cambridge: Decapo/Perseus.
- Armstrong, T. (2012) First, Discover Their Strengths. *Educational Leadership*, October.
- Blume, H. (1998) Neurodiversity on the neurological underpinnings of geekdom. *The Atlantic*.
- Damiani, L. (2009) *Can You Design Yourself? Art, Design and Psychology*. Janus Publishing, London.
- Darzentas, J. S. and Darzentas, J. (2014) "The Design of Accessible Self-service Products, Systems and Services: Teaching Inclusive Design" in *Design Research Society: Design's Big Debates*. Institute of Design, Umeå University. Sweden.
- Ellis, P., van Leeuwen, L., and Brown, K. (2008) *Visual-Music Vibrations – Improving quality of life for the elderly and children with special needs*. Digital Creativity, Routledge.
- Ellis, P. and van Leeuwen, L. (2007) Facilitating the experience of agency through an intersensory interactive environment. *Digital Creativity*, 18(2), Routledge
- Gobbo (2010) *Dyslexia and Creativity: The Education and Work of Robert Rauschenberg*. *Disability Studies Quarterly*, 30.
- Grandin, T. (2006) *Thinking in Pictures (and Other Reports from My Life with Autism)*. New York: Vintage Books.
- Grandin, T. (2004) *Developing Talents: Careers for individual with Asperger syndrome and high functioning autism*. Autism Asperger Publishing.
- Grandin, T. (2009) How does visual thinking work in the mind of a person with autism? A personal account. *Philosophical Transactions of the Royal Society*, 364.
- Hendrickx, S. (2010) *The Adolescent and Adult Neuro-diversity Handbook: Asperger's syndrome, ADHD, dyslexia, dyspraxia, and related conditions*. London: Jessica Kingsley.
- Keay-Bright (2012) *Designing Interaction through Sound and Movement with Children on the Autistic Spectrum*. Arts and Technology, Springer and A. L. Brooks Edition.
- Kim, A., Stemberge, S., Lawrence, C., Torres, V., Miodrag, N., Lee, J., and Boyins, D. (2015) Neurodiversity on the Stage: The Effects of Inclusive Theatre on Youth with Autism. *International Journal of Education and Social Science*, 2(9), September.
- Jacob, K. and Malpas, J. (2013) Material Objects, Identity and the Home. *Journal of Housing, Theory and Society*, 30(3).
- Lindborg, P. (2015) Sound perception and design in multimodal environments. KTH Royal Institute of Technology. Stockholm, Sweden.
- Mazurek, M., Shattuk, P., Wagner, M., and Cooper B. (2012) Prevalence and Correlates of Screen-Based Media Use Among Youths with Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders*, 42.

- Morris, M., Begel, A., and Wiedermann, B. (2015) Understanding the Challenges Faced by Neurodiverse Software Engineers: Towards a More Inclusive and Productive Technical Workforce.
- Niedderer, K. and Roworth-Stokes, S. (2007) The role and use of creative practice in research and its contribution to knowledge. International Association of Societies of Design Research. Hong Kong Polytechnic University.
- Oakland, T., Back, J., Stanford, G., and Balise, R. (1998) An Evaluation of the Dyslexia Training Program: A Multisensory Method for Promoting Reading in Students with Reading Disabilities. *Journal of Learning Disabilities*, 31(2).
- Pollak, D. (2009) Neurodiversity in higher education: Positive responses to specific learning differences. New York: Wiley.
- Rahmani, P. (2011) The efficacy of narrative therapy and storytelling in reducing reading errors of dyslexic children. *Procedia – Social and Behavioral Sciences*, 29, pp. 780–785.
- Rogers, P. (2012) *Culture of Autism, Neurodiversity, and Art Education*. New York: Art Beyond Sight.
- Rosenhall U., Nordin V., Brantberg K., and Gillberg C. (2003) Autism and auditory brain stem responses. *Ear Hear*.
- Singer, J. (1999) Why can't you be normal for once in your life? In Corker & French's *Disability discourse*. Open University Press.
- Streeck J., Goodwin C., and LeBaron C. (2011) *Embodied Interaction: Language and Body in the Material World*. Cambridge University Press.
- Sullivan, G. (2005) *Art Practice as Research: Inquiry in the Visual Arts*. Sage Publications.
- Tate (2015) Diggin' the Gallery. Tate Britain, 27 November. URL: <http://www.tate.org.uk/whats-on/tate-britain/special-event/diggin-gallery> (retrieved 26 April 2017).
- Timmemans, H., van Wolferen, G., and Newland, P., and Kunath, S. (2004) *Mediate: Key Sonic Developments in an Interactive Installation for Children with Autism*.
- Trotman, N. (2015) *Tangible Statistics Linguistics as part of Engineering the Future*. V&A, London.
- Zolyomi, A. (2016) *Connecting Tinkerers: Enriching Maker Communities through Neurodiversity*.