

Discussion

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As Rose & Rose (2016) pointed out: neuro is the proliferating prefix. It seems to be everywhere in early childhood care and education. Several contributors in this book have illustrated the proliferation of the neuro-discourse by quoting governmental texts, the Allan (2011) and Field (2010) reports being distinct examples, just as the publications from the Worldbank. This may lead to the impression that the use of neuroscience in early childhood education is first and foremost a matter of (neo)liberal governments. That impression would, however, create a false dichotomy between the state and civil society. Foucault (1990) warned us not to dwell in such false antagonisms that afflict the notion of “state” with a pejorative connotation while idealizing “civil society” as a good, living, warm whole. Indeed, the erroneous use of the neuro-language in early childhood education is by far not the monopoly of science or governmental bodies. There are many examples to illustrate how civil society is permeated by the same narratives of the Allan and Field reports and, consequently, of the social investment and econometric paradigms.

Eurochild (2015: p. 5) for example speaks about a “child centred investment strategy”. They make explicit reference to the Harvard Centre of the Developing Child, stating that “A growing body of neuro-science points to the critical importance of the first five years of a child’s life in brain development (...) Conversely, if a child misses out on a stimulating and nurturing environment in the early years, it can be difficult to catch up and can negatively affect life-time chances”. Save the Children (Finnegan & Lawton, 2016) quotes the National Scientific Council on the Developing Child to also tell the story about synaptogenesis and critical periods. They argue that by age three, a child’s brain is estimated to be twice as active as an adult’s brain and that at the same time, the rapid growth in the size of a child’s brain and in the formation of synapses begin to slow. Their publication makes use of colourful images to depict how language circuits in the brain change during childhood and they give “Top tips for parents” on how “You can help build your child’s brain by talking to them right from the start”. The critical period narrative is ultimately used as a plea for investing more public funds in nurseries.

This is also the case of UNICEF. The title of their 2014 symposium “The three pound universe” is eloquent, and in their publications (e.g. 2014a; b) they go with the story that early

intervention is the answer, because it becomes progressively harder to fix problems later in life.

Similarly, UNESCO has also taken over the discourse, including the specific vocabulary that the framing agencies proposed to influence policies (see Shonkoff and Bales, 2011).

UNESCO (2012) writes about “the child’s brain *architecture*” that is “*wired* in the first five years of life”, they also took over the terms of “chronic unrelenting stress in early childhood, caused by extreme poverty” and the concept of sensitive, if not critical, periods of brain development, using similar pictures (in this case from the Council for Early Child Development, 2010) than those that are criticised by Sue White and Dave Wastell in their contribution to this book. In many of these publications by NGO’s the neuroscience is used as an argument to claim considerable “returns on investment”, either directly (you will save money later on) or indirectly (it will cost you a lot if you repair rather than prevent). The use of neuroscience along with an economic investment rationale in early childhood education is also to be noticed in local interventions, evenings for parents, and discussions between private day care organisers and local authorities (Boyle, 2016). It is impossible to know to what extent the use of neuroscience to gain political attention for one’s objectives is based on the belief that one attaches to the claims of lobby groups such as the Harvard Centre for the Developing Child, or to what extent that is just a façade, because one assumes that other – moral, ethical or rights based – claims do not stand a chance in these neoliberal times. It is not only impossible to know; it is also irrelevant. The effect is entirely the same: it is as if all agree that there is but one rationale for publicly funding early childhood care and education: the alleged economic benefits. And in so doing, NGO’s and local activists risk making their crucial place in the democratic public debate - as crucial part of the civil society - redundant.

It is clear that the neuro-turn, together with this economic language of investments, and what White and Wastell have ironized as Outcomes Theology is not just a matter of policy makers alone, but can be labelled as a dominant discourse in the Foucauldian sense: a story that is so dominant that thinking about children and early childhood in different ways becomes very difficult (Foucault, 1966). The many examples of how this discourse has not only permeated civil society but has also been shaped by local NGO’s and social workers and early years educators in the field (Boyle, 2016) clearly show that policy is not the monopoly of policy makers and practice is not to be reduced to policy that trickled down. On a positive note, this means that discourse can also be contested bottom up, as well as top down. Or in the words of Foucault, dominant discourse always goes hand in hand with resistance (Pickett, 1996).

Translating neuroscience into education

The contributions in this book illustrate how we should be cautious when referring to these narratives. On August 13, 2016, well-known neuroscientist Max Coltheart tweeted: “At present, there are no findings from neuroscience that have implications for classroom practice”. He is immediately acknowledged by prof Anne Castles, (Department of cognitive science, Macquarie University): “Most definitely!”

Thais not to say that neuroscience is – and for ever will be – useless for education and neuroscientists are optimistic that somewhere in the future, their science will have evolved to a stage where it may be able to give some advice about education. Wim Fias shares this optimism, claiming that neuroscience is self-correcting and still very young a science. As a neuroscientist, he sketched the possibilities and the limitations of neuroscientific research and their relation to educational purposes. Yet he seriously warns us for simplistic conclusions. Through the case of number processing, he gave a detailed insiders’ view on the transformation of robust scientific results in dominant narratives that are attractive and simple, but lack evidence to support them. His plea for “a good dose of criticism” when it comes to construct validity and even more so when it comes to translating neuroscience in education is important. It should indeed be noted that much of the claims about translating brain research in educational practice or policy are not made by neuroscientists, often much to the distaste of the brain researchers themselves. It is probably not a coincidence that some of the more severe criticisms on the use of brain research in the field of early childhood care and education come from (former or present) neuroscientists, such as Raymond Tallis (2013), Steven Rose (2012; 2016), or indeed Dave Wastell (2012) who contributed to this book. Many of their arguments relate to the yet unknown complexity and plasticity of the brain and to what Wim Fias calls the brain as a network.

The contributions of Helen Penn, Sue White and Dave Wastell in this book deplore that the necessary caution and critical self-correcting attitude is scarce when neuroscience is translated into educational and social policy. As they rightly claim: evidence does not speak for itself, it has to be spoken for. Images of parts of the brain that appear to “light up” cannot self-evidently be translated in educational or social policies. Nor can animal research be directly translated to the growth of the baby brain. In between stand theories and conceptions of the human nature, ideas about what a society needs, ideologies about parental responsibility and the role of the state, and – ultimately – an image of what a child is. Through many examples

(the case of non-consensual adoption being a particularly salient and worrying one) they illustrate that all too often the neuroscience is limited to “materialise” what was already known, yet used for political aims that are way beyond the evidence produced, a critical claim also made by Ramaekers & Suissa (2011). As Penn has illustrated, this materialisation (e.g. “the brain is an organ that develops in the same way for all children”) is also a naturalization and thus inherently a far-reaching decontextualisation. This way of using brain research leads to universal claims and remedies, ignoring cultural preferences, political histories, and social contexts and *a fortiori* ignoring the local voices of parents and practitioners on what early childhood education is for or what is desirable.

Translating neuroscience into the political

Equally important than the question of what is true, is the question of what is desirable (Biesta, 2007). As Helen Penn rightly argued in her chapter, highly specialized and highly limited findings cannot be extrapolated to make general prescriptions about policy. Indeed, contrary to the plea of Shonkoff and Leavitt (2010), linking neuroscience to early childhood policy and moving from *why* to *what and how* is anything but straightforward. Indeed, policy – and even more so the political (Mouffe, 2005) – is about what constitutes the good life, about what is desirable. And what is considered desirable cannot just be derived from what is considered true. Between science and policy lie ethical and moral opinions about social justice, about what is fair, ideas on what constitutes human dignity and on what is democracy. Obviously – and very luckily – these opinions and ideas are far from consensual. Citizens may deeply disagree on these questions and that disagreement is vital as it forms the core of what Mouffe (2005) calls the political, without which there would be no democracy. The unique contribution of Jan De Vos in this book goes even further, by challenging the claim in the Introduction that this book is about the use of neuroscience and not about neuroscience itself and by analysing the relations between neurologization, medicalization, psychologization and – crucially – digitalization. His analysis is not to be reduced to a mere (somewhat outdated) fear of Big Brother, but he gives us food for critical thought about how the image of the child (as well as the image of Man) has indeed changed in present-day neoliberal times. He draws our attention to the warnings of Hannah Arendt on the problematic relation between Truth and Policy, between the conceptualisation of human activity and what is desirable.

In neoliberalism it seems that the question of what is desirable is beyond discussion: what is desirable is what is profitable. What is desirable is what supports economic growth. And that is a matter of individual freedom and individual responsibility in a competitive and meritocratic system where one “earns what one deserves”. It is assumed that the market is inherently fair and that assumption dismisses ethical concerns about inequality and solidarity.

And into early childhood policies

The prevalence of the neuroscientific narrative in early childhood education does indeed not come alone. It is accompanied by its inseparable twin brother: the narrative on the social investment state, on the return on investments, on human capital. As Penn noted, this notion of human capital has profoundly shifted from the *humane* human capital of Amartya Sen to the neoliberal concept of human capital assuming self-conscious, self-supportive individuals who are responsible for their own development and prosperity. And thus, the neuro-discourse and its human capital twin brother go hand in hand with an image of the child as what it is yet to become: an autonomous, entrepreneurial citizen, anything but dependent on the state (Masschelein, 2001; Ramaekers & Suissa, 2011). The image of the child as a cost (be it a profitable one) and as what it has yet to become reduces education to the preparation for later life and thus reduces the meaning of early childhood education to a preparation for compulsory education (Moss, 2013), which is – in turn – reduced to a preparation for the labour market. In such a world view, there is only limited space for interdependency, collaboration, solidarity, fairness, democracy, and care, concepts that were so dear to generations of pedagogues, including Dewey (1916), Freinet (1929), Freire (1970), Malaguzzi (Moss, 2016) and many others.

Neoliberal conceptions of the welfare state have given momentum to more meritocratic conceptions of fairness or social justice, that indeed moved away from the more solidaristic notions that prevailed in times of educational reforms under these inspiring pedagogues. It has been well documented how the welfare state evolved in a more contractual welfare state and equality of opportunity has replaced the equality of outcomes as a principle of fairness (Morabito, Vandenbroeck & Roose, 2013). Jan De Vos explained how intra-individual concepts (i.e. empathy) risk to decontextualise the socio-economical and the political, occluding issues such as inequality and power relations. Sue White, Dave Wastell and Helen Penn have documented in their contributions, that the focus on the early years and the very concept of critical (or sensitive) periods give a scientific rationale to the shift of the

equilibrandum from outcomes to opportunities. As the neuroscience is believed to be beyond doubt, and no one can object that it is better to prevent than to cure, the meritocratic individualising discourse on poverty, blaming the victim, is silently and gradually also accepted. This meritocratic discourse implies that poverty is an individual responsibility and that (early childhood) education rather than redistribution is the solution. In this vein, one can see that naming “poverty” as the problem and “poverty reduction” as the solution, is of course already a framing of the problem that would benefit from a broader discussion. One could indeed, as Wilkinson and Pickett (2009) and Picketty do, argue that it is not poverty that is the main problem, but inequality, and that therefore poverty reduction cannot exist without the reduction of wealth and thus redistributive policies. These are just a few examples of discussions that risk to remain covered in the absence of a plurality of discourses and that illustrate how education cannot be understood without its social, ethical and political contexts.

Precisely because the use of neuroscience is so inextricably intertwined with the eminently political and ethical discourse on social investment and return on investment, it is extremely worrying that these narratives have permeated in local and international NGO’s and the wider civil society. In their quest for the just causes (such as education for all) they make use of the economic argument in order to have their voices heard by those who decide where to invest their money. Yet, in so doing, they reinforce the idea that the only valuable argument is an economic one and that spending public money in early childhood education can only be justified by its later return on investments. In so doing, the civil society would indeed converge with Foucault’s warning not to dichotomize state and civil society, as they would contribute to the devaluation of ethical, moral and social concerns in political decision making.

Practice as policy and science

Several of the pedagogues mentioned in the previous paragraph have considered education as inherently democratic. Some framed education as a means to do justice to specific populations such as labourers in Brazil (Freire) or farmers’ and labour class children in France (Freinet). Others have considered education as one of the means to restore democracy after fascism (Malaguzzi). They have in common that what happens in daily practice (arrangements of space, relations with families, activities of children, ...) is related to one’s vision of society, of education and thus of the very meaning of the educational system. In short, one cannot distinguish practice from policy or science. This is also clear in the case of the neuro-

discourse. The univocal focus on the early years as preventive of later harm (i.e. developmental delays) has led to a search for evidence-based programs, what White and Wastell denounce as a spectacular case of the tail wagging the dog. These educational programs are expected to generate predefined outcomes, without necessarily questioning the desirability of these outcomes with those who are concerned: children, parents, communities, and – of course – the professionals of early childhood education (Biesta, 2007). A salient example of this is the International Early Learning Study (IELS) of the OECD (2015). Its ambition is to measure early learning outcomes in the domains of cognitive, social and emotional skills. The study is tendered to be implemented without any concertation of the early childhood professionals in the countries that are concerned (Moss et al., 2016). The danger is indeed that in doing so, the very meaning of early childhood education – and thus the daily practice – is decided without discussion with the direct stakeholders. Another danger is that objectives that do not fall under these developmental outcomes are ignored, despite their prominent place in curricula from New Zealand and Berlin (e.g. the attention for dealing with societal diversity), Belgium (the attention for how child care may influence social cohesion) and many other countries. The programs reduce the act of education to a technical procedure, i.e. the application of some general and universal rules (e.g. serve and return) and in doing so, the pedagogue him- or herself becomes a technical professional. Yet care is not a technical matter and one cannot expect pedagogues to take care if they are not taken care of. In her PhD research, Katrien Van Laere (2016) conducted focus groups with many parents and professionals about how they make meaning of education and care in Belgian preschool. Discussions about the meaning of preschool are reduced to the importance of early learning and professionals can hardly legitimise their desire to also care for the children. Meanwhile, parents concur with that discourse, but ask one additional question: will you love my child?

The discussion is of course not to replace one hegemonic discourse (be it a meritocratic) by another single voice. It is rather to say with John Dewey (who in turn quoted Lincoln's Gettysburg Address) that democracy is simply "the government of the people, for the people and by the people" (Dewey, 1916: p 303) and can therefore not be dictated by science, nor can it be univocal: "To the educator for whom the problems of democracy are at all *real*, the vital necessity appears to be that of making the connection between the child and his environment as complete and intelligent as possible, both for the welfare of the child and for the sake of the community. The way this is to be accomplished will, of course, *vary according to the conditions of the community (...)*" (p 289 our italics).

Transforming neuroscience, policy and politics through early childhood care and education

Indeed, it is a question of whether we should consider the problems of democracy in early childhood education and care as *real* problems, rather than obeying the current “abstract formalism” (Loevli, 2007) that surrounds early childhood. This abstract formalism is the very logic that ties together a preference for “interiority” (development and learning takes place *within* each individual) with the desire for control (standards and accountability movements) and the longing for measureable results (economic investment in “early intervention” and the child as “human capital”). As shown in the introduction to this book, this is not something specific to neuroscience and it is not entirely new. Psychology and more specifically developmental psychology was the forerunner and it has had a long-lasting impact on early childhood education. What this book and all its contributors show is that this logic of abstract formalism and the unqualified application of the neuroscientific paradigm in early childhood education might be but yet another attempt of abstraction of *real* people, *real* practices and *real* lives in early childhood care and education.

So, what to do in this current situation? Maybe what is needed, is a little bit less of historical obliviousness and a little bit more of eagerness to (re)turn to, but also (re)invent history. Because what is then originally and *really* early childhood education about? The significant Greek origin of education (*scholé*) took place at a place - distinct from both the city-state (*polis*) and the household (*oikos*) - and made possible the study of the world, the formation of knowledge into “common goods” and new generations renewal of society. Education here had “the *potential* to give everyone, regardless of background, natural talent or aptitude, the time and space to leave their known environment, rise above themselves and renew (and thus change in unpredictable ways) the world” (Masschelein & Simons 2013:12). Within this definition of education the focus is not so much on the individual child but rather on the very place of education, the time and space needed to study the world. It is not about “interiority”, quite on the contrary it is about the outside – the world and the possibility of studying the world and relating to that world. Neither is it primarily about results - and certainly not about pre-defined and measureable results – as it invites and creates conditions for new generations’ *renewal* of society. What is focused here is the *relation* between the child and the world. Just as Dewey claims in the quote above it is “making the connection between the child and his environment as complete and intelligent as possible” that is of importance. That is, in an

educational context it is not of interest whether brains in themselves are intelligent or not. Rather it is the relation between child and environment in itself that needs to be made complete and intelligent. Moreover, for Dewey in the quote above, the successful making of complete and intelligent connections between the child and its environment is beneficial both for the child and for the community. It is the very openness in this continuously transforming relation between individual and society that for Dewey assures democracy as “the government of the people, for the people and by the people”. This implies that the everyday work in early childhood practices is *really* about assuring the continuous democratic process of simultaneously *studying and renewing* the world. Any teacher or for that matter anyone that comes into contact with very young children, has the difficult task of creating the conditions - offering and setting up time and space - where this vital and transformative relation between child and world can happen.

Pedagogy is not applied psychology

Tools for relating the child to the social environment cannot be found in any scientific discipline that focuses only individuals, interiority, control and results. Any attempts to, within such logic, create any kind of pedagogy - including “neuro-pedagogy” - becomes nothing more than an oxymoron. Such efforts become impossible because they don’t even account for half of the relation that defines it as a pedagogical and educational phenomenon. Of course, there are many disciplines that offer knowledge that can help us to direct our educational efforts. Developmental psychologists have historically informed us, and continue to do so, on how children acquire knowledge, on how the child’s experimentation is driving it to new insights (e.g. Piaget, 1975), and how this learning is inherently relational (e.g. Stambak et al. 1983), but also culturally defined (e.g. Bruner, 1996; Rogoff et al., 2005). Health sciences have also much contributed to our understanding of the relations between mind and body. Neuroscientists will undoubtedly be able to make substantial contributions to our knowledge base about how the environment influences our brain activity. Yet pedagogy will also be concerned with the questions of education for what?

As indicated in the preface to this book, tools for making time and space for vital and transformative relations between child and world can be found precisely within pedagogical and educational theories that historically have given consistency to educational practices. There is also a rich array of philosophical and aesthetical perspectives that – rather than obeying the logic of abstract formalism - consider educational experiences and events as

taking place in a processual and contextual whole and as intimately connected to the material conditions and resources that the very time and space for education offer. Dewey, for instance, talks about experience as not pertaining to an individual, but rather to the situation, the “story” or the “plot” itself, that demands a “a stage, a space, wherein to develop and time in which to unfold” (Dewey 1934:42). French philosophers Gilles Deleuze and Félix Guattari (2004) for their part, replace the individual with concepts, such as “assemblages”, containing both human and non-human matter that find themselves in continuous processes of becoming. Feminist corporeal-materialist aesthetics, as described by art theoretician Marsha Meskimmon, in turn, “challenges conventional concepts of subjectivity, moves away from representation and helps to rethink agency” (Meskimmon 2016:1). Agency is here not pertaining to the individual subject, but is seen as “an action” (ibid). This perspective further shows how bodies and spaces mutually define each other and through notions such as “figuration”, the embedded and positioned subject is acknowledged at the same time as it promotes a vision of both material space and the subject as dynamic and transforming entities. This is, then, a different conception of *real* than the one presented to us within current abstract formalism in education. Reality is here being given status and modus as material but still continuously transforming and it is “a thinking-in making that matters” (Meskimmon 2016:6). All of these seem to us to be very fruitful theoretical tools for contesting current abstract formalism, but they are also tools that seem capable of letting early childhood education and care take place through *action* at place. So, it is not only that we are *confined to* visions of education that shape practices, it is also that early childhood practices can - and already do - *transform* visions of education through practical work.

We should therefore also take into account *real* children’s possibilities to inform and transform current abstract formalism in early childhood education and care. As noted by Helen Penn, the one’s concerned, are as flagrantly lacking with their presence as the very invisibility of the grey matter that has come to so matter in early childhood education and care. Children, even at a very young age do enter many of the problems and questions that the world presents us with, bodies and brains included. A four-year old child once said to us during a discussion on “having ideas”: “All my ideas come about as I am working, I have all my ideas in my hands, I think through my hands”. Now, this expression clearly demonstrates (might even be considered *evidence* of) that children not only have ideas worth listening to, but also that they have *ideas of ideas* that might be worth taking into account. In our continuing work with this *Contesting Early Childhood* series we will make an effort to pay

attention to all the counter-effectuations that the one's concerned - *real* children, teachers, families - readily and continuously perform in early childhood education and care.

Upcoming books in the series will, for instance, bring forward notions of the public early childhood teacher, of the aesthetic dimension of education, of space and place - including material/immaterial tools such as new technologies –all essential issues for early childhood practices. We will (re)turn to and (re)invent central historical pedagogical figures and we will not only continue contesting but also continue to present alternatives to the current abstract formalism in early childhood education and care.

So, “stay tuned” ... there is more to come...

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