REVIEW ARTICLE

Sociocultural perspectives on neurodiversity— An analysis, interpretation and synthesis of the basic terms, discourses and theoretical positions

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Abstract

The neurodiversity concept can now be found in many places. However, it is often misunderstood and many people are not aware of its complexity. The aim of this paper is to highlight the different facets of the term neurodiversity as well as the discourses around the neurodiversity movement in order to bring together the interconnections around identity politics, diversity and social disadvantage. This article is intended as a contribution to the advancement of neurodiversity studies, which could be understood as a branch of disability studies. Finally, it will be argued that neurodiversity can be understood (1) as a natural and equal diversity of neuronal structures, (2) as a concept of identity politics, (3) as social critique of hegemonic structures and practices, and (4) as a subject that can be examined systematically on the basis of a praxeological research methodology that integrates neurodiversity in the concept of performativity of embodied thought and action.

KEYWORDS
cultural studies, diversity, identity politics, neurodiversity, neurodiversity paradigm, social disadvantage

1 | INTRODUCTION—NEURODIVERSITY STUDIES

> The field of autism studies is interdisciplinary, contentious, and heavily disputed terrain to venture.
> While many ongoing debates linger, they continue to generate lively and even contradictory para-
> digms and programs of scholarship. (Leveto, 2018, p. 2)

This applies even more to the field of neurodiversity studies, as they imply far more than just autism. The concept of
neurodiversity unites people under a "unifying banner" (Craine, 2020), both those who have or suspect they have a
diagnosis and those who do not, but still feel they have a different relationship to the world than most. This paper
attempts to provide a systematic overview of the various (albeit mostly Western-influenced) lines of discourse. The
differences between the approaches result partly from their authors themselves (some are activist researchers,
others try to take a neutral position on the topic) and partly from the different scientific disciplines (sociology,
psychology, neuroscience, disability studies, educational science, etc.). Since all these perspectives are simulta-
neously valid, the aim is to draw a more comprehensive picture of the concept of neurodiversity and thus
contribute to a more theoretically reflective foundation for the field of neurodiversity studies. However, this also
means that in some places even more questions are posed and it will not be possible to provide clear answers to all
the contradictions and dilemmas presented.

2 | THE BASIC TERMS NEURODIVERSITY, NEUROTYPICALITY, NEURODIVERGENCE

Neurodiversity can be understood as a concept, political term, guiding concept of a social movement or as an
identity-related term. In the discourse of social science, it is mainly a theoretical perspective and concept based on
the diversity of neural structures (see Singer, 1997, 1998, 2017, 2020; Hughes, 2016; Kapp, 2020; Liu, 2017;
Walker, 2014, 2021). While some would say neurodiversity refers to the diversity of brains, "neuro" primarily refers
to the neural pathways. Thus, "neuro" encompasses not only the connections within the brain but also all neural
connections throughout the body (Walker & Raymaker, 2021). This means that when we talk about neurodiversity,
we are not just talking about different thought processes or procedures, but about the diversity of perception,
processing, and practices. On a biological level neuronal structures provide the connection between mind and body,
which is why the diversity of neuronal connections is also visible in their embodiment. This also justifies a socio-
logical view, even though we are talking about neuronal structures (see chapter 6). Accordingly, the article argues
for a praxeological sociological perspective for the scientific exploration of neurodiversity.

Neurodiversity should thus be understood as a new way of theorizing that attempts to deal with identity-
influencing neural conditions on the one hand, and deviations from normal perception and response to the
world on the other (see Rosqvist et al., 2020a). Neurodiversity is to be seen as a fact of human diversity—human
neural pathways and brain structures differ from individual to individual. The diversity of neural connections thus
implies all people: "everyone has a different mind, a different way of being" (activist Vincent Camley on a poster;
Camley, 2005).

Nevertheless, the debate about neurodiversity also conceptually frames a difference that is significant for the
understanding of the term: that between *neurotypical* and *neurodivergent*.

While the terms *neurodiverse* and *neurodivergent* are often mixed up (only a group can be neurodiverse, whereas
individuals conform to a typicality or diverge, they do not "diverse"), a significant part of the neurodiversity debate
revolves around why and, more importantly, how the boundary between neurotypical and -divergent is drawn
(Walker, 2014, 2021; Walker & Raymaker, 2021).

> While the extension from this concept to group-based identity politics that distinguish between the neurodivergent and neurotypical may at first seem contradictory, the neurodiversity framework draws from reactions to *existing* stigma- and mistreatment-inducing medical categories *imposed* on people that they *reclaim* by negotiating their meaning into an affirmative construct. (Kapp, 2020, p. 2-3)

The differentiation may therefore be confusing at first glance, as one could assume that it is a substitution of the conceptual pair "healthy - sick"—but there is more to it than just a conceptual distinction. Firstly, it is about drawing attention to the hegemonic structures and practices behind neurotypicality (more on that in chapter 5). The approach of "neurotypicality" or "neuronormativity" (Walker, 2021, p. 53) has barely been discussed outside of neurodiversity studies. Basically, this refers to the social structures and practices that ensure that some groups with certain neural pathways are privileged and others are not. It is therefore about social dynamics that are very similar to those of the diversity dimensions of gender or class. This socially conditioned classification of neural normality can be found, for example, in typical colorful and sensory stimulating classrooms, waiting rooms with dominant music in the background, certain kinds of information and advertising on television and all kinds of institutions. From this perspective, one could say that professional classification systems are also an expression of neurotypicality:

> NeuroDivergent People aren't in control of our own narrative & the diagnostic manuals are one way the NeuroTypicals control the narratives around NeuroDivergent People. (Holmans, 2021)

Secondly, it is a matter of influencing the definition of the boundary between neurotypical and neurodivergent oneself. Consequently, no medical diagnosis is required to perceive oneself as neurodivergent. In this broad sense neurodivergent means that one's ways of thinking, perceiving and acting deviate from a dominant social standard (neurotypicality), which is neither desirable nor undesirable, neither negative nor positive (Walker, 2014, 2021). Neurodivergence can thus encompass a broad spectrum, and the causes can be genetic, traumatic or unclear.

While there are diagnoses or names for some neurotypes (autism, epilepsy, dyslexia), other neurodivergences are characterized by an altered resonance with or relationship to the world (Rosa, 2019, pp. 110–144). The aspect of resonance is to be understood here as a "resonating" with social, material and structural elements of the world, as a building of a "relationship to the world" (Rosa, 2019). In this understanding, resonating with the world around you means, that the world becomes more and more "readable" over time, like a book. Just as a reader seeks answers in the book, humans seek their answers in the social and material world. While all people have difficulty reading the increasingly complex and contradictory world (children even more so than adults), they usually succeed in establishing a relation to the world by experiencing, recognizing and thus also "reading" social, material, and worldly structures. Neurodivergence in this understanding would not only mean that the process of "reading" is difficult, partly fails or differs from a typicality, but that the book of the world is written in such a way that it demotivates, overtaxes or discriminates against some people. Just as a reader can build or fail to build a relationship to a story, a narrative or a biography, people can succeed in building a relationship to the world in an "institutionally designed capitalist reality" (Rosa, 2019, p. 424)—or the very way the world is designed makes the challenge of acquiring "bodily and symbolic or meaning-mediated relationships to the world" (Rosa, 2019, p. 90) more difficult for them. This is potentially the case on all three axes of relationships to the world: the social (e.g. family, friends), the material world (e.g. work, school, objects) and the worldly (e.g. nature, religion, art).

As Leveto states, this "connection to the world" is an important theme amongst self-advocates:

> For this group, autistic people are not disconnected from the world around them, they are differently connected to it. (Leveto, 2018, p. 3)

However divergence is defined—by medical parameters determining a diagnosis or by relationship and connection to the world—the concept of neurodiversity is not only about neurodivergent individuals, but also about the neurotypical society in general.

From a medical point of view there is also a difference between neurological divergences that affect a person's entire being and divergences that only affect certain facets of a person. For the debate on neurodiversity, those forms of neurodivergence that permeate the entire being, identity and personality of a person are of particular relevance. Neurodivergence is explicitly not understood as pathology - therapies and healing approaches that pursue an abolition of neurodivergence are explicitly rejected. Certain disorders that could be interpreted as not identity-altering can be understood as neurodivergence, but the concept of neurodiversity is primarily about individuals who experience divergence in all areas of life at almost all times. This is not always the case with disorders such as epilepsy, for example. Approaches that are aimed at curing neurodivergences that are not identity-forming (e.g. epilepsy or consequences of accidents) are therefore not criticized—unless they are accompanied by discrimination (Kapp, 2020).

If certain groups are grouped together that exhibit a similar form of neurodivergence, we can speak of neuro-minorities with regard to the disadvantages associated with neurodivergence (Walker, 2014, 2021). Examples include people with schizophrenia or bipolar disorder, and under certain circumstances also autistic people.

These fundamental elements of neurodiversity were and are primarily introduced into the discourse by the neurodiversity movement and continue to be actively represented by it.

The neurodiversity movement, similar to comparable social movements, advocates for inclusion, participation, and freedom from discrimination for people who describe themselves as neurodivergent. It explicitly opposes discriminatory neurotypical structures and advocates for an accepting and diverse society.

> I'd define the neurodiversity movement as the movement to shift the prevailing culture and discourse away from the pathology paradigm and toward the neurodiversity paradigm. The neurodiversity movement is by no means monolithic; there are a lot of different ways that people are working to bring about this shift in different realms and contexts, and of course there's some variation in how the neurodiversity paradigm is interpreted by different groups and individuals within the movement. (Walker & Raymaker, 2021)

Neurodiversity is not a clear black and white concept. In the following, four (primarily global western) perspectives on neurodiversity are discussed with the aim of making the concept theoretically and conceptually tangible in such a way that future research can work on relevant aspects in a clearer and more focused way: The discourse around the pathology paradigm (chapter 3), neurodiversity as a political concept (chapter 4) and connections to biodiversity & social dynamics of human diversity (chapter 5) are taken up to argue that a praxeological approach can be very beneficial to examine neurodiversity and the neurotypical society in more detail, which is approached through performativity and culture based theory (chapter 6). The interaction of the various aspects of neurodiversity as a praxeologically analyzable phenomenon is exemplified by the influence of medicalization, that is, the increasing dominance of medical patterns of interpretation in western culture in chapter 7.

3 | THE PATHOLOGY PARADIGM

In some places, neurodiversity is used as an "umbrella term" (Clouder, et al., 2020; Graby, 2015; Skelling, 2019) or "container term" (Arnold, 2004), as a collective term for different types of disorder or conditions—similar to terms such as "mental disorder" or "consequences of accidents." A conceptual framing like this goes hand in hand with a demarcation that is primarily conducted via medical diagnoses. For example, the UK-based Developmental Adult Neurodiversity Association (DANDA) refused membership to a person who acquired a speech impairment due to a cerebrovascular accident—because the divergence was not birth-related (Arnold, 2017).

However, neurodiversity activists reject such a definition and demarcation via medical diagnoses (e.g. Arnold, 2017; Singer, 2020; Walker, 2014, 2021), as they reproduce medicalizing hegemonic structures as well as an interpretation of diversity as a disorder instead of focusing on the social dimension of diversity of neuronal structures. Moreover, as can be added from a critical social theoretical perspective, the tertium comparationis—the neurotypicality—remains undefined in such an understanding of the term.

In 2014, in the much-cited article "Neurodiversity: Some Basic Terms & Definitions," Nick Walker refers to two paradigms that define the neurodiversity debate: the pathology paradigm and the neurodiversity paradigm.

It is certainly debatable whether the concept of a paradigm is the right one for the changes involved in neurodiversity. After all, it could be argued that the paradigm shift has already taken place, for example, with the debate on biodiversity or the recognition of the construction of social differences through gender and racism research. A new paradigm means, as Thomas Kuhn was the first to state, that "scientists see new and different things when looking with familiar instruments in places they have looked before. It is rather as if the professional community had been suddenly transported to another planet where familiar objects are seen in a different light and are joined by unfamiliar ones as well." (Kuhn, 1962, p. 110) Since the paradigm shift described here revolves around the changes from disorder to divergence, from determination by others to self-determination and from objectified to subjective world relations, the concept of a paradigm shift seems understandable from a self-advocacy perspective. Walker, who argued first for this terminology, writes, that a paradigm shift represents "a shift in our fundamental assumptions; a radical shift in perspective that requires us to redefine our terms, recalibrate our language, rephrase our questions, reinterpret our data, and completely rethink our basic concepts and approaches." (Walker, 2021, p. 15) I will argue that this is the case in most cases, which is why the term "paradigm" is still adhered to.

In the following, I will reproduce and graphically illustrate the pathology paradigm as Walker defines it. As will become apparent, a discussion and graphic illustration for the neurodiversity paradigm is not so easily explained and illustrated. Walker describes the pathology paradigm as follows:

> The pathology paradigm starts from the assumption that significant divergences from dominant sociocultural norms of cognition and embodiment represent some form of deficit, defect, or pathology. In other words, the pathology paradigm divides the spectrum of human cognitive/embodied performance into "normal" and "other than normal," with "normal" implicitly privileged as the superior and desirable state. (Walker & Raymaker, 2021)

The pathology paradigm (see Figure 1) is thus based on a protonormalist interpretation (Link, 2013; Mihan et al., 2004) of neurodivergences, that is, deviations from a neurological normality—however a neurological normality may be defined.

This division of humanity into normal and non-normal quickly reaches its empirical limits—since all people can be normal or non-normal depending on context, space and time. Moreover, in such an understanding, the construct of normality is not questioned further. Nevertheless, it can be found in medical discourses, which will be discussed in more detail further below.

In the 1990s, this paradigm was countered by sociological perspectives, especially in relation to neurological "pathologization," which began to uncover the powerful dynamics that ensured the disadvantage of neurodivergent people.

4 | NEURODIVERSITY AS A POLITICAL CONCEPT

It was the discourse on normality and pathologization that led to the term "neurodiversity," which was created by the sociologist Judy Singer and the journalist Harvey Blume (Blume, 1997, 1998) in joint conversations in distinction to similar conceptual constructions (Silberman, 2015).
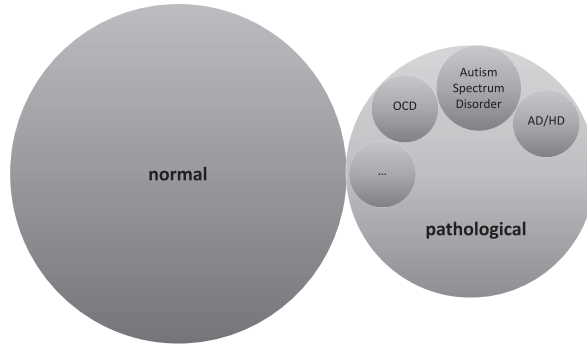
Pathology Paradigm

FIGURE 1 Pathology paradigm. On the left is a large circle titled "normal," adjacent and not overlapping is a smaller circle titled "pathological," which contains small circles titled "OCD," "Autism Spectrum Disorder," "ADHD" and one with three small dots. AD/HD, attention deficit/hyperactivity disorder; OCD, Obsessive Compulsive Disorder.

The first use of the term in the social sciences can thus be found in Judy Singer's thesis (Singer, 1997), which was adapted and republished a year later as part of a scientific paper:

> For me, the key significance of the "Autistic Spectrum" lies in its call for an anticipation of a politics of Neurological Diversity, or "Neurodiversity." The "Neurological Different" represent a new addition to the familiar political categories of class / gender / race and will augment the insights of the social model of disability. (Singer, 1998, p. 64)

Even in this first discussion of terms, the politicization of neurological diversity is brought into focus, as Singer confirms 22 years later:

> And like biodiversity, it's not really intended as a scientific descriptor because it's quite obvious that no two humans are alike. It's actually coined like biodiversity for a political purpose, to argue for the conservation of biota - animals and plants. Because it's known that biodiversity is important for sustainable environments. And so, I thought well humans are a subset of that. And it can be used to argue for the importance of allowing human diversity to flourish and the importance of society in allowing human diversity to flourish." (Singer, 2020)

Neurodiversity can therefore be understood in the context of the increasingly important debates on biodiversity, that is, the significance and recognition of the diversity of biological conditions. A central premise of the neurodiversity paradigm is that there are natural differences in neurological development and functioning in humans. These differences are a natural and valuable part of human variation and therefore not necessarily pathological. In other words, having a disorder means you cannot develop and thrive normally—being neurodivergent means you do not embody or conform to the perception of a typical mind, but that does not mean you cannot flourish fully.

Neurodiversity thus also connects to discourses around disability rights; Kapp writes with reference to neurodiversity:

> [T]he term implicitly refers to a tenet of inclusion based on universal rights principles, with an emphasis on those with neurological disabilities. This includes aspirations of full inclusion in education, employment, and housing; freedom from abuse (e.g. abolition of seclusion and both chemical— that is, overmedication to control behavior—and physical restraint); and the right to make one's own decisions with support as needed. (Kapp, 2020, 4)

Neurodiversity is therefore a concept that pursues political goals. The "logic of the political" can be worked out in three dimensions: Polity (the basic order, the respectively applicable written and unwritten constitutions, i.e. the valid basis on which political processes take place), Policy (the contents, i.e. the objects, goals and tasks of politics as well as the programs to deal with them) and Politics (the dynamics and processes of political debate; the powerful representation and assertion of interests; conflicts, consensus and compromise) (North, 1990; Pichler, 2023).

While the basic order on which political discourses are built is of little relevance to the debate on neurodiversity, the levels of (1) Policy and (2) Politics are quite relevant.

(1) At the policy level—the level of political programs—the current ways of dealing with neurodivergent people are questioned. Neurodiversity points to the fact that a standardized approach, which is primarily oriented towards medical patterns of damage, cannot do justice to many individuals. The criticism of ABA therapy in the autism communities could be cited as an example—after all, the funding of long-term training aimed at being as inconspicuous as possible can certainly be interpreted as a political decision. Questioning the motive of "adaptation before recognition and acceptance" as a political program could be formulated as a consequence of the discourse around neurodiversity (Kirkham, 2017).

(2) The level of politics as the way in which political discourses are conducted is found in neurodiversity activism. While there is certainly partisan and politician-related activity in relation to neurodiversity (Craine, 2020), the primary activities are of an activist nature, uniting under the "banner" of the neurodiversity movement. What is interesting is the way of activist influence, which does not proceed through street protest, strikes, or other established social movement techniques (Rodgers, 2018), but primarily chooses the route of online activism. This approach is especially favored by the rise of social networks. Many neurodiversity activists can now reach tens of thousands of people with their messages—and the number of followers and activists is steadily increasing.

Significant to these policy messages is the dialectic of natural variation and disability that is inherent within neurodivergence (den Houting, 2019). While some critical voices argue that no additional support would be necessary if neurodiversity were just the natural variations in neural connections (Jaarsma & Welin, 2012), it is important not to forget that deviation from a neurotypical standard is basically always accompanied by experiences of disability.

> Advocates therefore concurrently campaign for acceptance and respect for autistic people as valuable members of society and also fight for appropriate support and services to meet the needs of the autistic community. (den Houting, 2019)

The specific world views on neurodiversity in general and autism in particular differ in various activist and academic camps, for example, Critical Autism Studies (Milton & Ryan, 2023), the Autistic Rights Movement or Neurodiversity Studies (Rosqvist et al., 2020a). However, they all differentiate themselves from more traditional perspectives, such as those found in the pathology paradigm.

While the pathology paradigm supports interventions that aim to adapt and reduce autistic traits (French & Kennedy, 2018; Jaarsma & Welin, 2015), the neurodivergent paradigm calls for and supports interventions, supports, innovations, and amendments that aim to improve subjective well-being and perceived quality of life in

agreement with neurodivergent people. At the same time, neurodivergent traits are not problematized but supported.

5 | NEURODIVERSITY IN RELATION TO SOCIAL DYNAMICS OF HUMAN DIVERSITY

Another important aspect of the idea of neurodiversity is its relation to other diversity categories such as class, gender, and ethnicity. It points to the same power dynamics, but also implies similar paradoxes.

> The neurodiversity paradigm starts from the understanding that neurodiversity is an axis of human diversity, like ethnic diversity or diversity of gender and sexual orientation, and is subject to the same sorts of social dynamics as those other forms of diversity—including the dynamics of social power inequalities, privilege, and oppression. From this perspective, the pathologization of neurominorities can be recognized as simply another form of systemic oppression which functions similarly to the oppression of other types of minority groups. (Walker & Raymaker, 2021)

The concept of neurodiversity is primarily concerned with the structures and dynamics that are similar to those of other dimensions of diversity. This therefore implies a sociological perspective. If it is the task of sociology to make the invisible visible (Giddens & Griffiths, 2006, p. 13), then this is also the task of neurodiversity studies. As with the other dimensions of diversity, a drawing of difference is usually accompanied by sociologically conditioned devaluations or disadvantages of individuals—mostly those who stand at the edge of a diversity continuum. The idea of neurodiversity thus implies, just like discourses around class, ability or gender, a critique of hegemonic interpretations, structures, and practices—especially the structures and practices of neurotypicality (see Figure 2). This also leads to the continuation of a two-group theory in the discourse around neurodiversity: the difference of neurotypical and neurodivergent. At the same time, neurodiversity is understood as a continuum that flexibly changes according to context, space, and time. While a diagnosis is primarily attributed, a neurodivergence is
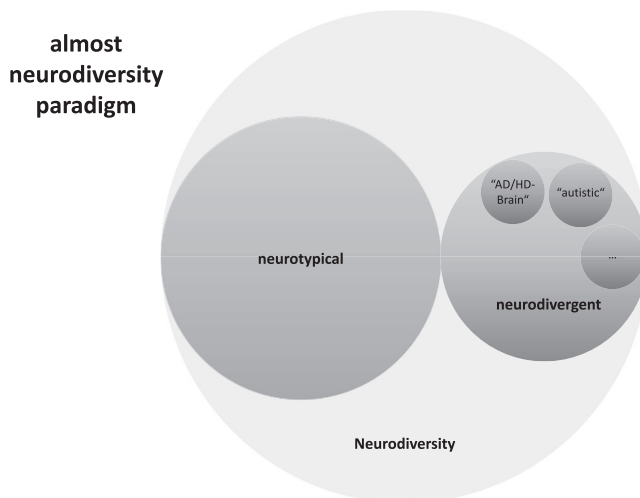

FIGURE 2 Almost neurodiversity paradigm. On the left is a large circle titled "Neurotypical', adjacent and not overlapping is a smaller circle titled "Neurodivergent" which contains smaller circles titled "autistic", "AD/HD-Brain" and one with three small dots. The circles are framed by a large circle titled "Neurodiversity." AD/HD, attention deficit/hyperactivity disorder.

primarily experienced through practice. For this reason, it is proposed below to pursue a practice-theoretical/praxeological approach in researching neurodiversity.

6 | NEURODIVERSITY AS A NOTION OF PERFORMATIVITY OF EMBODIED THOUGHT AND ACTION

As in the other diversity dimensions, neurodivergence can be understood not only as disadvantage and disability but also as performatively produced, that is, in the context of performative theory (Butler, 2015) or in comparable approaches of praxeology (Schaefer, 2017). Roughly speaking, this means that disadvantage and divergence emerge in action, in practice, and do not naturally pre-exist. Such a post-structuralist and praxeological approach, which basically characterizes almost all of the cultural studies (gender studies, cultural studies, black studies, etc.), is also applicable to debates about neurodiversity—however, the approach has so far only rarely been chosen (Rosqvist et al., 2020a).

This perspective is accompanied by that of the performativity of embodied thought and action (Butler, 2015), which is expressed, among other things, in the discourse around the embodiment of neuronal structures. Examples of this would be the embodiment of a conversational style that causes problems at school (someone with attention deficit/hyperactivity disorder (AD/HD) might be easily distracted or interrupt others, while someone with social anxiety might be quiet and reserved), or the reinterpretation of non-verbal communication that can lead to misinterpretation in conversations (a sarcastic comment might be taken literally, or a monotone voice might be misconstrued as boredom).

The element of performativity, that is, the practical production of divergence, opens up a different perspective on the difference between "mind" and "brain," which has already been discussed above. While for many years neurodiversity was discussed as the diversity of brains, it is the diversity of mind and its embodiment that informs the debate:

> Neurodiversity, simply put, is the diversity among human minds. For 15 years or so after the term was coined, it was common for people to speak of neurodiversity as "diversity among brains." There still are plenty of people who talk about it that way. I think this is a mistake; it's an overly reductionist and essentialist definition that's decades behind present-day understandings of how human bodyminds work. (Walker & Raymaker, 2021)

As stated above, "neuro" does not only mean—as one might think—the structures of the brain. "Neuro" stands for neural connections, which implies not only the connections in the brain, but also the neural connections throughout the body. Neurodiversity does not mean a different form of thinking—diversity in neuronal connections and thus in the nervous system means the complex connection of cognitive processes and embodiment:

> So neurodiversity refers to the diversity among minds, or among bodyminds. (Walker & Raymaker, 2021)

To understand these relationships better, interdisciplinary research is needed. While neuroscientific research in the past was not always attentive to aspects of cultural production, it could be said, that sociological research assumed biologically determined models for the neurosciences (Leveto, 2018). What is needed, therefore, is a theory that relates and recalibrates the various scientific fields represented by different disciplines.

> Sociology has much to gain engaging in and contributing to the discourse related to autism and neurodiversity. As discussed, sociological social psychology has made and will continue to make

theoretical and methodological advancements related to autism and in doing so must stay cognizant of the discoveries relevant in other disciplines. Understanding and studying autism provides insight into the foundations of social interaction such as shared meaning, development of self, solidarity, and stigma (to name a few). [...] It is indeed a brave new world for the sociology of autism scholarship and as criteria shifts so too will our own theoretical and methodological strengths to inform, educate, and transform. (Leveto, 2018, p. 14)

The notion of the performativity of neurodiversity can already be found in Judy Singer's early work, albeit with a different scientific vocabulary and approach, in the connection to the social model of disability (Singer, 1997, 1998). Although she herself has since relativized this (Singer, 2017), the idea of the social construction of disability is certainly found in many conceptualizations (Walker, 2014, 2021; Hughes, 2016; den Houting, 2019) and is thus also related to the notion of a performative production of neurodivergence.

And there is also an opportunity in this performativity: Disability experiences could be reduced or avoided altogether through environmental modifications and appropriate assistive technologies and supports.

Providing a non-speaking autistic person with an alternative method of communication may give them a voice, but they will only truly stop being disabled when others listen. (den Houting, 2019)

It is primarily the (unsuccessful) fit between individual neuronality and societal neurotypical demands that can lead to experiences of disability for neurodivergent people—this relational concept does not correspond to the social or the medical model of disability in their original readings. Neurodiversity should rather be understood following relational models and especially the cultural model of disability, even if there is still a lot of theoretical work in progress (Waldschmidt, 2018). Nevertheless, it can be stated at this point, that it is the element of neurotypicality that produces the powerful social dynamics that can lead to discrimination, disadvantage, and experiences of disability—regardless of whether it is to be located culturally, socially, and/or socio-structurally (see Figure 3).
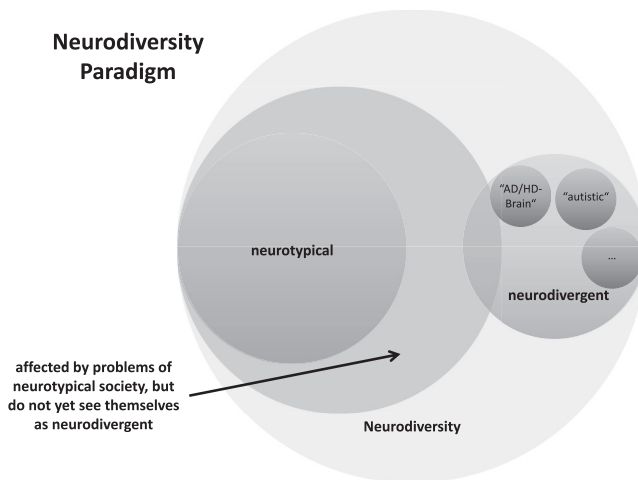

FIGURE 3 Neurodiversity paradigm. On the left is a large circle titled "Neurotypical," this is surrounded by another slightly larger circle titled "Affected by problems of neurotypical society, but do not yet see themselves as neurodivergent', adjacent and overlapping with the bigger circle is a smaller circle titled "Neurodivergent," which contains smaller circles titled "autistic," "AD/HD-Brain" and one with three small dots. The circles are framed by a large circle titled "Neurodiversity." AD/HD, attention deficit/hyperactivity disorder.

Focusing on the power of neurotypicality also defuses the criticism that the discourse around neurodiversity would only refer to people with low support needs (Fenton & Krahn, 2007; Jaarsma & Welin, 2012). Certain neurotypical contexts can lead to high-functioning and low-functioning experiences of the same person depending on space, time but also individual ability, which is why this difference cannot be confirmed empirically. Experiences of disability arise in concrete practice. Moreover, the concepts of "high-functioning" and "low-functioning" are accompanied by the tendency to overestimate and underestimate, which on the one hand negates support needs and on the other hand leaves potential unrecognized (den Houting, 2019). From the basic assumption of the neurodiversity paradigm that all neurological variations are valuable, it follows that all neurodivergent people are explicitly included—including those with high support needs. One could hypothesize that the low representation of people with higher support needs in research (Sequenzia, 2012) and activist contexts is related to the fact that they are denied activist abilities and receive little support to become activists or researchers. Which is just another example of the praxeological performativity of neurotypicality.

7 | AN EXAMPLE OF THE PRAXEOLOGICAL PRODUCTION OF NEURODIVERGENCE: MEDICALIZATION OF NEURODIVERSITY

In order to illustrate the praxeological elements of the neurodiversity paradigm, the discourse on medicalization is used here as an example.

> The term medicalization refers to a social process that, first, refers to the historical establishment of medical institutions, second, encompasses the expansion of medical spheres of influence through the increase in the importance of medical ways of thinking, and third, includes an increasing dissolution of the boundaries of medical fields of action (Karsch, 2019, p. 89; translated).

Medicalization thus means that as medical ways of thinking become increasingly important and spread, they also claim greater hegemonic authority for themselves. This biomedicalization ensures that phenomena such as neurodiversity are no longer viewed as sociological phenomena (although they have only just begun to be) but are instead placed even more strongly under medical frames.

This medicalizing monopoly shows itself in the drawing of boundaries between those in need of treatment and those not in need of treatment, between healthy and sick, between typical and autistic. With the growing dominance of biomedicalization, the belief that it can be clearly defined biomedically whether someone has autism, AD/HD, depression, etc. is also growing. However, initial empirical results indicate that people are involved in too many social contexts for biomedical approaches such as genetic tests or similar to provide reliable answers (Halpin, 2011). For example, it would first be necessary to know which test to use, which is not a given as the extensive differential diagnostics are becoming increasingly complex. An even more critical aspect of bio-medicalization is that, despite massive research investments in the search for biomarkers, it has not yet been possible to confirm them for the most common diagnoses (e.g. autism and depression) (Palmer, 2022). None-theless, these classifications have power, even if they are not openly named. In addition, these classifications are so deeply rooted, at least in Western culture, that they cannot be easily changed—except perhaps through a constant change in practice (Bowker & Leigh Star, 2000).

And even if the boundary cannot be clearly drawn empirically, the drawing of boundaries in individual cases is still very relevant as a social differentiation mechanism. This is evident both (1) praxeologically and in (2) objec-tification tendencies of modern societies.

(1) In terms of praxeology, a change in the boundaries of normalization can be observed empirically. Historical examples (which also have a protonormalist effect) would be the normalization of women's suffrage and homosexuality (Kabeer, 2015). "Protonormalist" means, simplified, a clear demarcation of normal and non-normal with a clear border in between—it is "normal" in Western cultures that women are allowed to vote. In the case of flexible normalism, there is a broad tolerance zone, which is also to be understood in movement (for more detail, see Mihan et al., 2004; Link, 2013). Today shifts can be observed in relation to the treatment of nature and the environment or a changed awareness of lifestyles, nutrition and personal health management. What is understood as normal or typical is therefore subject to constant change. The neurodiversity paradigm can be understood in a structurally similar way: it is about questioning and softening the protonormalistic boundary between neurotypical and pathological, the associated reduction of the dominance of the medicalizing monopoly and ultimately a flexible normalization of neurological divergence.

(2) Another medicalizing phenomenon of modernization is the objectification of certain fields, in the sense of measuring the world, which can lead to a normalization of it. This is primarily the result of evidence-based research, which no longer has relevance only for scientific conclusions, but has become an ingrained part of everyday world. On the one hand, scientific recommendations determine everyday life in many social dimensions—very obviously in the consequences of health policy in the case of a pandemic, but also statistics on e-mobility or stress perception influence patterns of thought and action of many people. On the other hand, there are also unconscious measurements of people that can lead to social normalization processes, for example, those by the large corporations behind social networks, smartphones and wearables, which not only influence and normalize step counts and activity levels, but also usage behavior, interests and contacts (Lanier, 2013, 2018). On the basis of objectifying normalizations, the influence of standardizing science as well as medicine continues to expand: People with AD/HD are defined as factually "different" on the basis of objectively measurable actions, autism is increasingly associated with a disorder rather than a way of being through standardizing medical tests. Diagnoses produced by standardized procedures, such as learning disabilities, dyslexia or other developmental disorders also seem difficult to reverse, and retraction is very rare.

What the objectification and protonormalization of science and especially medicine produces can only be conjectured here, but in any case, the connectivity to the systems of politics and education can be well established through it. Even if an identity-based diagnosis can be relieving for individuals, the social environment, and institutions, it is precisely such reductions in complexity that are being questioned by movements such as the neurodiversity movement and perspectives such as those of "Doing Difference" or those of the Cultural Studies.

Neurodiversity is thus also to be understood as a concept of a social movement that deconstructs those objectifying attributions in an informed way through identity politics. Just like other social movements, it is about uncovering the interests and discourses behind the established practices that are understood as powerful or hegemonic—for example, the professional and institutionalized practices of diagnosis and treatment (Leveto, 2018).

Identity politics in the understanding of neurodiversity is multiperspectival—so the political demands and messages also differ. While, for example, the demand for the recognition of AD/HD as a disability—in contrast to its recognition as disorder—can be found in interest groups and among those affected, which is primarily linked to resource issues, the demands of autism self-advocacy groups are only peripherally concerned with material and symbolic support. They focus more on issues like paradigm shifts, the separation of disorder and disability, the abolition of degrading therapy procedures, and the recognition and respect of divergent world perceptions and world resonance.

But the unifying political "banner" (Craine, 2020) of the neurodiversity movement can be classified as depathologization. The diversity of neurological preconditions and structures can be categorically classified, but to

automatically interpret these classifications as disorders in the negative sense is rejected. This rejection, however, involves subtleties: It is quite possible for certain aspects of neurodivergence to be attributed a disorder value and for this to be recognized—but to state at the same time: "AD/HD Is Not a Deficit Disorder" (Hallowell & Ratey, 2022).

A medical or even self-given diagnosis does not automatically mean feeling sick or ill. What is problematic is not the categorization, whether it is self-determined or determined by others, but the social interpretation of this category as problematic. The neurodiversity movement thus sets up a counter-model to pure diagnosis by experts in the sense of a co-constructive categorization process. Neurodivergence arises from a convergence of self-attributions and attributions by others. With increasing awareness of the boundaries of neurotypicality and neurodivergence, people take on more and more responsibility for categorical determination of difference—not only within the framework of self-diagnoses, but through contextualization of the experienced, observed, processed, and perceived states, assessments, and events. These self-(re)contextualizations are to be understood independently and in interaction with standardized procedures. That, however, is related to the ability to detach oneself from external determinations by third parties, which can be very difficult not only for children and but also adolescents. Sensitivity to this process characterizes the idea of neurodiversity: A diagnosis, no matter how it is obtained, only becomes a specifically individual perception, understanding and action in individual interaction—that is, in self-(re) contextualization—and thus shapes identity. A diagnosis does not automatically result in a diagnosis-related habitus. The neurodiversity movement therefore also stands for a communal discursive processing and reflection of diverse neurodivergent starting points.

With the understanding of neurodivergence as self-(re)contextualization, consent to a diagnosis must also be processed in practice. If a diagnosis is excluded by the diagnosing expert, it may be that the person concerned is denied membership of the constructed community of people with that very diagnosis. Access to a group that sees itself as neurodivergent in a neurotypically dominated world can thus be prevented by the logic of neurotypicality. Taking neurodiversity seriously would also have to question this—otherwise one would probably have to speak of neuro*difference*, not *-divergence*.

However, diagnoses and medicalization are only two pieces of the puzzle—albeit hegemonically highly charged ones. What is significant above all are the experiences that have a confirming or contradictory effect on personal (neuronal) identity. It does not take a diagnosis to feel "different." Diagnoses are only part of the co-construction process that also performatively produces neuro-minorities—but social processes of disadvantage and discrimination also work without diagnostics. Therefore research into neurodiversity always means gaining a better understanding of neurotypical society.

8 | CONCLUSION: NEURODIVERSITY AS PARADIGM—IDENTITY POLITICS, SOCIAL DYNAMICS AND PERFORMATIVE EFFECTIVENESS OF DIVERGENT THINKING, PERCEIVING AND ACTING

As shown, neurodiversity is more than just the diversity of brains. These four dimensions of the concept of neurodiversity work simultaneously and should be understood scientifically as interdependent (see Figure 4). They refer to the complex initial situation that repeatedly leads to experiences of disability, discrimination and stigmatization experienced by people who do not conform to a neurotypical image.

Dimension of neurodiversity	Natural and equal diversity of neuronal structures	Concept of identity politics	Social critique of hegemonic structures and practices	Concept of the performativity of embodied thought and action
Neurodiversity as...	...A new paradigm directed against pathologizing attributions;... equivalence of the natural diversity of neuronal structures	...Understood in the same way as biodiversity— differences are a natural and valuable part of human variation and therefore not necessarily pathological	...A reference to the same power dynamics, but also similar paradoxes as other diversity categories such as class, gender and ethnicity	...A perspective, that points to the fact that disadvantage and divergence arise in action (through practice) and through embodiment (the connection between mind, body & environment)—and are not necessarily given by nature
Areas of reference	Inclusion, theory of recognition	Disability rights	Sociology	Cultural studies, praxeology, post-structuralism
Primary community expressing this dimension	Activists	Disability and neurodiversity rights activists	Social scientists and sociologists	Cultural scholars
How neurodivergent people are considered	As a part of many	As people who must be advocated for and who can be politically visible	As members of society, who are on the margins of a diversity spectrum, and therefore experience individual devaluation and disadvantage	As people who enjoy fewer privileges due to the performative production of privileges
Consequences	Critical reflection of the identity-creating effect of designation as "disordered" or "dysfunctional" in comparison to "neurodivergent"	Political activities: Grass roots activism, political participation especially online, participation in committees and commissions	Critical awareness that social mechanisms— here those of "neurotypicality"— disadvantage and minoritize individuals, which leads to maintaining a two-group theory, namely that between neurotypical and neurodivergent	An awareness that disadvantage is caused by practice and that it can also be improved through practice

Such a multiperspectival notion opens up a shift of focus from neurodivergence to the structures, practices and discourses of neurotypical society. It is not clarity about neurodivergence that enables an understanding of neurodiversity, but a quest for an understanding of neurotypicality. What is that anyway, a typical neurological development, perception, processing, and embodiment? This is precisely what Neurodiversity Studies, which are only just beginning to develop, aim to explore—a field of research that not only focuses on the well-being of neurotypical people, but above all strive for a "cognitive decolonization" (Rosqvist et al., 2020b, p. 227) of society. The first theoretical foundations are available (starting with Singer, 1997, Walker, 2014, many in between and now
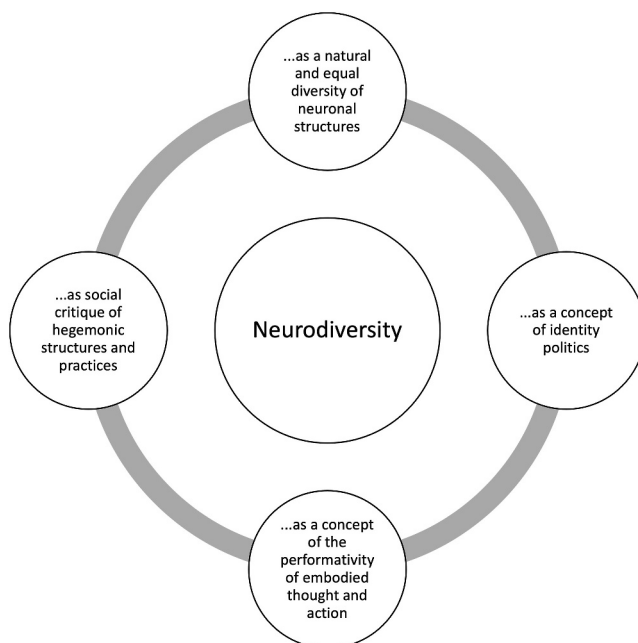
FIGURE 4 4 Dimensions of neurodiversity. It is a graphic with the word "neurodiversity" in the middle, framed by four circles that contains: 1. "…as a natural and equal diversity of neuronal structures", 2. "…as a concept of identity politics", 3. "…as a concept of the performativity of embodied thought and action", 4. "…as social critique of hegemonic structures and practices".

the first volume titled "Neurodiversity Studies" by Rosqvist et al., 2020a), but there are still many unresolved issues to be identified at both the empirical and theoretical levels.

It is thus still important to take perspectives of the neurodiversity movement seriously and to make voices heard that still lack a platform. But for a further foundation, an intensification of neurodiversity sensitive and critical neurotypicalfocused interdisciplinary research is needed, both through educational, psychological, neuro-scientific and sociological research directions, as well as through the emerging neurodiversity studies. Ultimately, this implies in any case an increase in participatory, or better inclusive, research—and thus more research from an "inside perspective." It needs the insider perspective of people who live the neurodiversity or the pathology paradigm on a daily basis and can identify neurotypicality more clearly, and not only that of people born with the privilege of benefiting from the hegemonic structures of neurotypicality.

CONFLICT OF INTEREST STATEMENT

The author declares no conflicts of interest with the persons, organizations, subject matter or materials discussed in this article.

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