2 THE VASCULARIZATION OF ALZHEIMER'S DISEASE

Prevention in "Glocal" Geriatric Care

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Introduction

THE AIM OF THIS CHAPTER is twofold: first, I want to introduce three epistemic aspects—recent changes in the conceptualization of dementia that are part of, and sustain the current turn toward, prevention. Two of the three aspects are rarely discussed in the social sciences. And although I will focus here on only one aspect, all three are important in order to understand the way the life course and aging are rethought through the "new dementia." Second, I want to think about the impact of the recent turn: among multiple possible effects, stigma and exclusion are two that are likely to happen—a point I make relying on ethnographic data from Brazil. However, I also consider the idea of dementia prevention as a chance for a better old age, depending on how "prevention" is framed and enacted. Ultimately, I argue, prevention needs to be situated at different levels in order to make a difference.

The importance of situating the "new dementia" on a national level can be recognized when considering the accumulation of data showing that in several (high-income) countries (with the exception of Japan), dementia incidence and prevalence rates are actually stagnating or even diminishing (e.g., Manon, Gu, and Ukraintseva 2005; Schrijvers et al. 2012; Matthews et al. 2013; Qiu et al. 2013; Wu et al. 2017; Roehr et al. 2018). This observation seems to indicate that in some environments risk factors are better managed than in others. However, when looking at clinical trials that concretely tried to lower dementia rates by controlling one or several of the preventive risk factors involved in Alzheimer's disease (AD),[1] the results are not that clear-cut (e.g., Baumgart et al. 2015). As an example, the Dutch PreDiva study, which looked at efforts aiming to reduce cardiovascular risk factors in or-

der to lower dementia rates, made no significant findings. Researchers think that this is due to the fact that in Holland people already receive good health care with respect to most important dementia risk factors, and suspect that a major impact might have been noticeable in the context of a country with a less efficient health care system (Fagan 2016; see also Leibing 2018).

And if the prevalence of these risk factors (e.g., diabetes and obesity) is very high and even increasing, as, for example, in a great part of the United States (in addition to lack of access to good health care for all), the decline in US dementia rates—as has been shown in a study by Manon, Gu, and Ukraintseva (2005)—is likely linked to a privileged subpopulation within the country. This shows the importance of turning the focus of prevention studies away from individual behavior—a longstanding claim by critical public health scholars—and putting more emphasis on sociopolitical factors (Strighini et al. 2017; Bell, McNaughton, and Salmon 2011). It further shows that national studies say very little about a country's whole population, especially in nations with heterogeneous life conditions. This is also in line with a recent *Lancet* report that showed that—different from the original *Lancet* study (Livingston et al. 2017), in which the claim is that one in three cases of dementia could be prevented—in low-income countries, including Latin America, it could be a ratio of one in two because of the higher prevalence of risk factors when compared with richer nations (Mukadam et al. 2019). The ratio for richer nations has been recently revised to 40 percent of avoidable dementia cases (Livingston et al. 2020).

Adding to the complexity of recent insights into the idea of preventing dementia,[2] several authors also question the likeliness of a direct link between single risk factors and dementia, and observe that an oversimplification in the translation of such complex mechanisms into straightforward public health recommendations is taking place ("diabetes is linked to dementia") (e.g., Anstey and Peters 2018; Larson 2018; Humpel 2011). It is exactly this kind of fragmentation of otherwise interlinked biological, social, ecological, and politico-economic factors that I have called elsewhere an argumentative shortcut (Leibing 2016).

Another point regarding the situatedness of dementia prevention can be made regarding the two principal preventive measures (suggested separately or in combination) in current discussions: lifestyle changes and pharmacological interventions. Translations of such recommendations into practice and health policies are not the same internationally—local factors such as health and social politics, Pharma lobbying, epistemic cultures, and models of aging well, among other things, are responsible for differences and reveal the need for situating preventive measures in local contexts. For instance, when comparing clinical trials targeting prevention and dementia, the US trials are much more medication-focused than the

European ones; the latter privilege and more often test lifestyle changes (Leibing 2018).

So how could the idea of prevention become so successful and why did that happen only now? Although this chapter cannot answer these questions in their totality, I will mention in the next section three more recent epistemic changes that are part of the wider phenomenon and, as I will argue, are essential for understanding the recent preventive turn.

Recent Epistemic Changes Linked to Dementia Prevention: BPSD, MCI, and the Vascularization of Alzheimer's Disease

"The history of AD prevention is relatively short," remark Hsu and Marshall (2017) dryly. And knowing that a 2010 National Institutes of Health (NIH) "*State of the Science*" conference found insufficient evidence, on a clinical level, to support the association of any modifiable risk factors and AD (Baumgart et al. 2015), the current strong agreement among researchers and other stakeholders regarding the validity of the idea of dementia prevention needs some explications. After Hsu and Marshall (2015), especially the US National Alzheimer's Project Act (NAPA) initiative, launched by the Obama administration in 2011, resulted in several prevention initiatives. The novelty of the idea of dementia prevention can be also shown by the fact that as recently as 2015, a group linked to the US American Alzheimer's Association declared that

> the evidence has now reached a point that it can no longer remain simply an exercise in academic discussion. The public should know what the science concludes: certain healthy behaviors known to be effective for diabetes, cardiovascular disease, and cancer are also good for brain health and for reducing the risk of cognitive decline. For our part, the Alzheimer's Association is launching a new brain health education program, *Healthy Habits for a Healthier You*. It is designed to provide consumers with the latest research and practical information on ways they can take care of their bodies and brains to age as well as possible. (Baumgart et al. 2015: 723)

Remarkable here is the recent date of the declaration, but also that brain health is treated as part of bodily health, different from earlier brain-centeredness in dementia concepts and models. In fact, this kind of more holistic thinking became possible in recent years, because in the late 1990s a new subcategory emerged that challenged the "cognitive paradigm" that, after historian German Berrios, had prevailed in dementia research for a long time: the idea that dementia is an exclusively cognitive disease, to the detriment of the idea that any noncognitive symptom could be part of the

main definition of the dementia syndrome (Weber, Berrios, and Engstrom 2012; Berrios 1990). Support for the idea of this new category, BPSD (behavioral and psychological symptoms of dementia), was widely promoted, especially by the IPA (International Psychogeriatric Association) and generously funded by the pharmaceutical industry,[3] the latter desperately seeking new approaches to dementia because doctors until then had been prescribing medications with very limited effects on cognition. Finkel, one of the main organizers of the 1996 consensus conference on the topic, remarked that finally the first steps had been taken in recognizing that BPSD symptoms "are core symptoms of dementia and that it is as essential to study and treat any other aspects of dementing disorders" (Finkel 1996: 215).[4] Although BPSD has lost much of its initial importance as a category for assembling all those different psychological and behavioral symptoms, it was an important mechanism for a general opening up of the prevailing and narrow "cognitive paradigm." This opening up can be seen, for instance, when looking at how medications, originally developed and marketed only for cognitive decline, were relabeled for a much larger target, here activities of daily living (for a more detailed analysis of BPSD, see Leibing 2009a): "Data published . . . suggest that treatment with Reminyl® . . . may help to maintain the ability of patients with mild to moderate Alzheimer's disease to perform certain activities of daily living (ADLs), such as grooming, walking and being aware of current events" (Janssen 2004).

Thinking about prevention is also linked to a second change— a major emphasis on early detection: mild cognitive impairment (MCI)—before only loosely linked to dementia as an indicator of a possible future dementia—has now become more strongly associated with the central dementia syndrome, although more commonly in North America than Europe (Peter Whitehouse, personal communication; see Leibing 2018; but see Moreira, this volume). Further, what Metzler (2010) has called a "biomarkerization" of health and illness—the contested search for reliable early biomarkers even earlier than MCI—is linked to the general argument in dementia research (similar to other syndromes like Parkinson's disease and schizophrenia) that current interventions happen only when the pathology is already too far advanced to make much difference ("a window to act," as Keuck [this volume] calls it). It was only in 2011 that the workgroup responsible for the redefinition of clinical and research criteria, organized by the National Institutes of Aging and the Alzheimer's Association (NIA-AA), mentioned in their report the importance of biomarkers for distinguishing groups at risk at a presymptomatic level (Hsu and Marshall 2017).

A number of more critical social scientists have written about MCI (e.g., Moreira et al. 2009 and this volume; Lock 2013; Fox et al. 2013; Beard 2016; Schicktanz et al. 2016; Whitehouse 2017; Milne et al. 2018a and b;

Katz et al., this volume), and I will here just mention the authors' main arguments. The idea of early detection blurs previously existing boundaries between health and illness, and, as a result, asymptomatic or "mild" individuals can easily become "mild" patients, without the certainty that current predictive tests and biomarkers will do more than reveal a possibility of future illness. Some social scientists, such as Baker (2005), further argue that the increasing intensity of the search for biomarkers is directly linked to the desire for more cost-effective and quicker drug development. Further, preventive medications taken from midlife through old age would obviously mean major business for any Pharma enterprise, some argue, likely diverting funding that otherwise might go to improving environments of care (an either-or logic made by critical scholars that might be questioned or at least more nuanced).

A third aspect of the "new dementia" (and, like BPSD, rarely considered in social science research) is the one I am focusing on in this chapter: the growing importance of vascular or mixed dementias that in some contexts are almost merging with the previously separate category of "Alzheimer's disease."

Vascular Dementia: The New Alzheimer's?

During much of the twentieth century and especially after the Alvarez paper from 1946 on "Cerebral arteriosclerosis" (see Katzman and Bick 2000: 6–7), the focus on cognition (and forgetfulness) was paired with the idea that "senile dementia" was predominantly the consequence of arteriosclerotic changes in the blood vessels, while Alzheimer's disease was the rare early-onset form of illness that Alois Alzheimer had called "peculiar" (Alzheimer 1907; Holstein 1997; Katzman and Bick 2000). This idea began to be challenged in the late 1960s, especially after the famous Newcastle study (Blessed, Tomlinson, and Roth 1968; see also Wilson 2014). Results of this study showed a quantitative correlation of amyloid plaques and neurofibrillary tangles in the brains of deceased individuals with dementia, although the idea of a straightforward link has since then been relativized. The Newcastle researchers found these changes in presenile *and* senile forms of dementia and therefore argued that both forms of dementia were based on the same pathobiology. Since 1974, when Robert Butler and Robert Katzman made Alzheimer's disease the flagship disease of the newly founded US-American NIA (National Institute on Aging), Alzheimer's disease, now including also the late onset form, was linked to pathological changes in the brain (the famous plaques and tangles), and this became for many years the main focus of pharmacological research and interventions (Ballenger 2006; Holstein 2000). Because of the build-up of plaques

and tangles as the accepted main etiology of Alzheimer's disease, atherosclerosis lost its diagnostic strength and became an outdated category. As Hachinski, Lassen, and Marshall wrote in 1974 in the *Lancet*, "The use of the term 'cerebral atherosclerosis' to describe mental deterioration in the elderly is probably the most common medical misdiagnosis" (quoted in Reisberg 1981: 15).

At that time, vascular dementia (VaD)—always described as secondary to and unimportant in terms of number of cases relative to the major diagnostic category Alzheimer's disease—was clearly distinguished from AD by its etiology of mostly mini-strokes in the brain. And although VaD could be conceived as a continuation of the older concept of atherosclerosis with its cardiovascular origins—risk that could be lowered by certain interventions—no preventive public health recommendation resulted from insights into VaD, probably because importance given to that category was so small. Equally, although the risk factors typically linked to VaD (e.g., stroke, high blood pressure, obesity, etc.) became increasingly part of public health campaigns, these were not linked to VaD as a target of preventive measures. The National Stroke Association published the first stroke guidelines in the *Journal of the American Medical Association* in 1999, but findings—almost identical to findings in current dementia prevention studies—were not linked to AD as they are now (Hsu and Marshall 2017).

Robert Friedland, a neurologist at the University of Louisville, who suggested long before the *Lancet* report that lifestyle factors were involved in the development of certain dementias, told me in an interview about the resistance of other researchers to lifestyle suggestions:

> Sometime in the late '90s or early 2000s I presented a paper on the relationship between lifestyle factors and dementia risk. . . . At the press conference I spoke about our work and my suggestion that the available literature suggested that it was wise for people to avoid smoking, manage their blood pressure and diabetes, avoid obesity, live a life with high levels of physical and mental activity, avoid a high-fat diet and avoid head injuries. When I finished [someone from the Alzheimer's Association] got up and raised his hands out wide to the right and left for emphasis and said "Wait!, Dr. Friedland's suggestions have not yet been verified by a double-blind placebo-controlled randomized trial!" I explained that what I had recommended was already known to be good for people anyway. There was nothing I proposed that could possibly be harmful! I think the problem is that many people cannot see the forest for the trees in their search for scientific rigor. They forget that "absence of evidence is not evidence of absence."

Mixed dementia, a category meaning that AD and VaD co-occur, was considered of equally little importance when compared to Alzheimer's disease, the predominant diagnostic category claiming most funding and re-

search at the time (Ramón 2004). My argument here is not only that the boundary between AD and VaD has significantly changed—definitions for both now relying on almost the same risk factors—but also that the new turn toward prevention (and early detection) cannot be understood without taking into consideration this redefinition of AD.

In fact, the link between cardiovascular risk factors and Alzheimer's disease has been noted before: the APOE (apolipoprotein E) gene, and especially its allele ϵ4 (e.g., Slooter et al. 1997), which is understood to elevate the risk of developing the dementia syndrome, is also involved in heart disease; APOE is responsible for the transportation of fat in the body. This causal relationship was initially identified in the 1980s (e.g., Yamamura et al. 1984); however, it was widely ignored until 1993, when neurologist Allen Roses (2006) made a significant discovery that linked APOE to the "sporadic" form of Alzheimer's disease (the most common form, where heredity plays less of a role than in the rare "familial" one). One possible reason for the scientific community's delayed emphasis on cardiovascular risk factors can be attributed to the fact that when Roses established the link, hopes were focused on directly targeting the dysfunctional brain chemistry with the new cholinesterase inhibitors targeting molecular mechanisms. In 1993, Tacrine arrived on the market, although from the beginning—as was the case for its successor drugs—some critical voices argued that the target of this kind of intervention was too narrow for a complex syndrome like Alzheimer's disease (e.g., Levy 1990). Historically this is astonishing because a cardiovascular logic was becoming increasingly dominant in biomedicine starting in the 1950s, and around 2000 became the underlying condition explaining and interlinking a number of previously separated disease categories, transcending the more traditional division between mental and physical health reinforced in most biomedical realms (see Leibing and Kampf 2013 for a more detailed analysis of a "cardiovascular logic").

The merging of the categories AD and VaD has been observed by several authors. As early as 2000, Breiteler was writing about the common etiology of VaD and AD: "Evidence is increasing that the two [AD and VaD] may be more closely linked than just by chance. Epidemiological studies have suggested that the risk factors for vascular disease and stroke are associated with cognitive impairment and Alzheimer's disease" (43). But it is only recently that this merging of categories based on common risk factors has become more mainstream (see, e.g., Kolata 2019 in the *New York Times*), although translated into different kinds of recommendations depending on the context (Leibing 2018). Kling et al. (2013: 76), in their article about the "paradigm shift" regarding the role vascular disease plays in the etiology of Alzheimer's disease, write that "VaD is often said to be the

second most common form of dementia after AD; some authors have even suggested it is the most common form." So what does this rethinking of dementia mean in terms of concrete preventive practices?

New Pathways for Dementia Prevention

The changing landscape of prevention is tightly linked to etiological reasoning. These new models can be well illustrated by looking at the common metaphor used in older texts about AD as a "mysterious disease" versus newer definitions in which AD and VaD are increasingly merging (although they are still used separately by clinicians) and, therefore, are now losing their mysterious character. The metaphor of "mysteriousness" was and is still being applied in order to highlight the difficulty of explaining the etiology of AD. The use of mysteriousness causes risk factors to appear less relevant—it presents AD as rather free-floating and immutable category, devoid of context. In fact, Alois Alzheimer used the word "peculiar" when describing his first case, Frau Auguste Deters, because he did not know whether her early onset symptomatology had the same origin as senile dementia of older patients. And although earlier accounts of Alzheimer's disease also found a correlation between less education (education often merging with and indistinguishable from poverty and its manifold factors that impact on health), depression and nutrition, and a higher incidence of dementia (e.g., Friedland 1993 for the US; Aprahamian et al. 2008 for Brazil), until recently the idea of the disease as fundamentally mysterious was never really challenged. Those earlier studies that showed a link between dementia rates and some of what are now considered "new" risk factors had no wider impact on the conceptualization of dementia because the link between the brain and factors like nutrition and education was mostly subsumed under the—previously unimportant—category of VaD. Risk factors were also only peripherally linked to AD because of the great hope that came with the first dementia-specific medications (the first drug, Tacrine, arrived on the market in 1993). These medications were developed based on the idea—commonly called the "amyloid hypothesis"— that they would prevent the breakdown of acetylcholine (or, in the case of a drug called Namenda, regulate glutamate in the brain)—an idea that found an enormous market worldwide (e.g., Ramsey 2017).

An example of current usage of the word "mystery" as not knowing with respect to AD etiologies can be found in attempts to treat dementia based on the amyloid hypothesis and similar brain-based mechanisms. In this quote, Gandy (2019), a neuroscientist, summarizes dementia research this way: "So, doctors gradually began to recognize the disease, but the truth is, doctors aren't certain that these plaques cause Alzheimer's dis-

ease, and doctors don't know what usually causes those plaques. In some ways, Alzheimer's disease is still a mystery, much as it was 100 years ago." This continuing concern with the disease as basically inexplicable or mysterious is also expressed by Pharma reps in Brazil responsible for selling a current dementia drug based on the traditional model of intervening on the ß-amyloid production in the brain. However, in explaining the mechanism of this AD drug, this pharma rep makes it clear that the older focus on cognition has been replaced by the "softer" target, quality of life, and activities of daily living, a change that has become possible after adoption of the BPSD category (see above):

> The indication for this medication for Alzheimer's is to improve the patient's quality of life, to improve activities of daily living and behavior. There it works. The mechanism of how it really works is kind of complicated (*meio complicadinho*), so to speak. . . . What we studied with the MDs is that there is the acetylcholine and people with AD have such a deficit, *né*? The drug improves this activity . . . . So it works more or less like that, the question of behavior, activities of daily living, less of a decline. (pharmaceuticals sales representative in Brazil)

An example of the hope of finding a silver bullet-drug based on prevention, which equally demonstrates the transformation of "mysteriousness" into knowledge as grounded in a plausible model, is the recent failure of the much-anticipated AD drug aducanumab, which, starting in 2015, had already reached phase 3 of the clinical trial. The underlying logic here, as already mentioned above, is that treatment needs to start at a very early stage. In the end, as Biogen/Eisai announced in March 2019, patients treated with this experimental drug, a monoclonal antibody that was tested on people with mild or moderate AD, showed no cognitive improvement after eighteen months. The hype around aducanumab, which got a "fast track designation" from the FDA that only very promising drugs receive in order to reach the market more quickly, was based on earlier studies that seemed to show that the compound could switch off the production of beta-amyloid (Aß) in the brain.

The reactions to the failure of the phase 3 EMERGE and ENGAGE studies (PRIME is the name of the European equivalent study), which involved more than 3,200 patients, neatly mirror the different epistemic models currently at work in the scientific dementia research community. Comments by researchers on this event can be separated into the following (nonexclusively used) arguments: (A) those who believe that the antibody tested was not the right one, but that a similar antibody will be a solution, and that the current Aß model (or tau) is not yet dead; (B) those who think that still

earlier stages of AD need to be considered and that the current target of either Aß or tau or both is still valid; (C) prevention is seen at the moment as the only possible pathway—as one blog for researchers describes it, "All eyes are now trained on prevention trials" (Alzforum 2019)—a radical rethinking of dementia models. The following comments illustrate some of these different points of view:

> (for B): "Even though this trial was in the early symptomatic phase of AD, it is still in the phase when Aβ is no longer likely to be the driving process but where tau and inflammation probably are," noted David Holtzman, Washington University, St. Louis. "I think Aβ is still a good target for the primary and maybe secondary prevention trials of AD, before tau and inflammation have started driving the disease," he added. (Alzforum 2019)

Several, though by far not all, dementia researchers, however, question the focus on Aß, as many others did already before the trial. Stefano Sensi, an Italian researcher (CeSI-MeT), for example, writes,

> (C): The failure of the Phase 3 aducanumab trial is another warning that the field must take a different approach. Some authors have already called for a rejection of the amyloid hypothesis . . . . AD is a multifactorial condition in which, along with Aβ accumulation, the convergence of many genetic, environmental, vascular, metabolic, and inflammatory factors promotes the neurodegenerative process. . . . we need to remind ourselves that a third of AD cases are strongly dependent on the concerted activity of modifiable factors like low education, midlife hypertension, midlife obesity, diabetes, physical inactivity, smoking, and depression. . . . It is time to take up the challenge of complexity. (Alzforum 2019)

Further, Kasper Kepp from the Technical University of Denmark writes (it might be no coincidence that the more critical voices come from Europe [see Leibing 2018]):

> (C): It has been known for many years that the amyloid hypothesis cannot be correct; the reason it survives is because it is appealingly simple and offers a one-sided treatment strategy that pharma can pursue easily by antibodies and inhibitors. . . . Unfortunately, these people include, because of the paradigm's previous popularity, major opinion-leaders and big pharma with a responsibility for listening to only some key opinion makers of the dominating paradigm in the time of its sunset. (Alzforum 2019)

What is striking here is the fact that the traditional approach to dementia—only targeting Aß in the brain—and the concomitant call for recognizing

more complex approaches after the failed trial—by examining multiple preventive pathways—is transferring the inconclusive, "mysterious" concept of AD into a more grounded, manageable, and concrete concept of intervention. While this new pathway can mean (lifestyle) changes like exercise, nutrition, good education, and good access to health care, the same kind of reasoning is also opening up further possibilities for pharmacological interventions. On the US Alzheimer's Association (2016) website, hope is expressed that in the future, drugs will be developed that address the complexity of the dementia syndrome: "Many of the new drugs in development aim to modify the disease process itself, by impacting one or more of the many wide-ranging brain changes that Alzheimer's causes. . . . Many researchers believe successful treatment will eventually involve *a 'cocktail' of medications aimed at several targets, similar to current state-of-the-art treatments for many cancers and AIDS*" (emphasis added).

The vascularization of Alzheimer's disease has not only changed how dementia is being studied, diagnosed (now less clear-cut as the presence of cardiovascular risk factors used to be understood as a distinctive sign of VaD), and potentially prevented, but has also had an impact on moral citizenship or social sorting: the (re)categorization of people as morally good and bad, as in the following case study in Brazil. What I am calling the vascularization of AD is being debated internationally; however, local ways of integrating current claims and its translation into concrete practices needs to be seen as situated, as "glocal"—tightly intertwined with international theories and recommendations while confronting diverging realities in which knowledge gets adapted (Fernandez 2009).

The Vascularization of Alzheimer's Disease and Moral Citizenship: Data from Brazil

This section is based on an ethnography undertaken between 2015 and 2017 in a geriatric outpatient clinic in Brasília, Brazil's capital. Observations of the clinic's routine practices and interviews with health practitioners, family caregivers, and (a few) patients were combined with interviews and observations in other aging-related milieus (the Ministry of Health, public health posts, the Alzheimer's Society, etc.) on the meaning of prevention in this particular context. For this chapter, I will focus mainly on the interviews with the clinic's health practitioners and some researchers studying dementia-related issues (n=21), in order to flesh out the way aging individuals are described, classified, and evaluated as doing the right thing.

Brazil and Common Risk Factors for Dementia

Brazil has the sixth largest population of elderly people in the world and has experienced a very rapid demographic transition (Ministry of Health n.d.; Camarano 2006, 2008). Since the main risk factor for dementia is aging, the epidemiology of dementia has also shown a dramatic increase in recent years: after Burlá et al. (2013: 2949), this increase "varies strongly between regions and seems to be especially elevated among illiterate people," with a national mean prevalence of 7.6 percent. The reasoning adopted by Burlá et al. is striking—earlier epidemiological studies in Brazil produced results with a similar prevalence as studies from abroad, something stated regularly (and, in my opinion, proudly) in the conclusions of those publications (Leibing 2019).[5] Now, however, it has become an accepted truth that Brazil is special and that dementia rates are higher there than in the richer nations because of the many people in Brazil who receive little or no education, evoking a double penalty from the lack of education in this population: the missing cognitive reserve related to more education, and also a presumed lack of understanding regarding self-care correlated with the presence of several risk factors (e.g., alcohol, diabetes, hypertension).[6]

The newer modifiable dementia risk factors are very high in Brazil (e.g., Seibt 2017). However, better education and better access to health care—though with regional differences— occurred under the governments of Lula (2003–2011) and his successor, Dilma Rousseff (2011–2016), and hypertension and heart disease has slightly improved also among low-income groups (Massuda et al. 2018; Beltran-Sanchez and Andrade 2016; Marteleto, Marschner, and Carvalhaes 2016). One study showed that between 2000 and 2010, life expectancy without depression in São Paulo had increased (Andrade et al. 2016), possibly reflecting better living conditions in one of Brazil's richer states. Improved social conditions under these two presidents were probably too short-lived to have a measurable impact on dementia rates; the government that subsequently came to power under the conservative president Michel Temer was notable for severe austerity measures introduced in many areas (Souza 2017), while the future of health care and education under ultra-right president Jair Bolsonaro (starting in 2019) has yet to be seen, although it looks like an announced catastrophe (see e.g., *Lancet* 2020).

Interviews with Researchers and Health Professionals

In general, interviewees—mostly geriatricians—were aware of the newer factors associated with increased risk of dementia, even though few talked

spontaneously about this. When asked, most of them told me that this topic was not so important for their practice, mainly for three reasons:

1. Some geriatricians told me that they were managing these risk factors anyway, that they had always done this when treating aging individuals, and that only now was this called dementia prevention.

2. Others argued that in the public setting, most new patients were already at an advanced age, while most preventive measures take place during middle age, although in their private practices they were seeing younger adults who might still change lifestyle and medications.

3. Generally, however, interviewees answered with a deep sigh and explained that, in Brazil, prevention does not work. The lack of self-care among less educated people and a lack of government investment in health care and educational programs were perceived as insurmountable obstacles in adhering to preventive measures and, especially, vascular factors (those leading to stroke and other vascular accidents):

> We here in Brazil, we are sinning a lot by not helping people to have the chance to prevent what is preventable. . . . *Our level of education is very low, to the point that the average Brazilian does not understand* that those [dementia-related chronic] diseases need constant control, not just a brief intervention. . . . But treating diabetes and hypertension does not change much if people are not constantly stimulated, educated. . . . Neurons only degenerate if they are not constantly stimulated. (university researcher, emphasis added)

The double problem of both a need for education for its cognitively stimulating effects (brain reserve) and the lack of education regarding responsible self-care revealed in this quote is for this researcher a national shame: although this researcher accuses the government of not providing the right conditions, it is the individual's "level of education" that is the core problem, meaning that ultimately, the government's responsibility is seen as educating people into doing self-care and not as generating better social conditions in which a healthier life is possible. These politics of blame (Ladd-Taylor and Lomansky 1998) apparently name and, at the same time, reduce state responsibilities and the awareness regarding contexts of risk. Another interviewee, a professor of pharmacology, also referred to the lack of adequate education and explained, "In my opinion, Brazil has a serious problem with education. And this impacts someone's self-care. Many diseases [like diabetes and hypertension] are silent, so people say, I have no pain, so I don't have anything."

Although interviewees acknowledged with a lot of compassion social contexts and lives difficult enough that self-care can become impossible—when, for instance, food intake is driven by what Bourdieu (1984) calls "tastes of necessity," or when medications are too expensive—the blaming of poor people for their poor health occurred in more or less explicit ways. This explains, at least partly, that in this context the explicit separation of VaD and AD is maintained in clinical work, distinguishing between VaD as a category of culpability, while AD maintains connotations of a more "mysterious disease", without explanation (as it has been called for a long time in Brazil and abroad).[7] So even if the vascularization of AD was acknowledged by the interviewees, it stayed in the context of science theories; in everyday, clinical life, AD and VaD are separate entities, and the moral weight of the modifiability of risk stays within the category VaD, at least when talking about poorer patients. In the following example, mostly vascular risk factors—here clearly assigned to vascular dementia, but mirroring the newer discourse on preventing dementia—are described in order to mark people's behavior as disease-inducing.

A young resident told me about her second job at a public health center in a very poor neighborhood where she does mostly home visits. Most older people in that neighborhood have dementia, she explained, but have not received a diagnosis. They all had, in her opinion, vascular dementia and not Alzheimer's disease. "Even younger people often had already had strokes," she continued. This is in line with health statistics showing that, as in many other countries, stroke is currently the second greatest cause of mortality throughout Brazil, after cardiac conditions, and more prevalent in the country's poorer states (França et al. 2017).

She, like several other interviewees, used the expression "this is cultural" in order to explain the impossibility of intervening and changing unhealthy habits. The resident, who in general had an especially kind and sensitive way of treating her patients, told me,

> There is the cultural question, that people think they only have to go to the doctor when they are very ill. And do not do anything before getting sick. So they do not exercise, do not stop smoking, do not stop drinking. All that. And then, when they need help, the access to health care is very difficult, because there are many people out there, and the public health system cannot take care of all of them.

What is striking in this quote is that the resident described a deficient health system, unable to help all Brazilians, but this fact appeared of secondary importance compared to the sick person's bad health habits. Another informant told me bluntly that one of the risk factors, hypertension, is a disease of poor people who refuse to behave in a responsible way:

> [Hypertension] medications are distributed for free . . . in the population I studied; older people have good access to certain medications [there], but they do not control their blood pressure the way they should. . . . They don't take these medications—[because they think:] "hypertension is so common, why take this medication?" Because it makes people ordinary! . . . Hypertension is a disease of poor people. "I want to have a disease of rich people," they say. (geriatrician "A")

"We should not have this problem [of dementia]," says an interviewee at the Brazilian Ministry of Health, referring to the new risk factors as modifiable. "Diabetes and hypertension medications are distributed for free here, but people have crazy lives; we see an improvement, but not as much as we wished for."

One can see that there are different kinds of translations of risk at work: first, there are three risk factors—diabetes, hypertension, and poor education—the interviewees focus on. The first two are based on an easy-to-communicate logic of a measurable disease in combination with compliance to prescriptions for medications. The apparent simplicity of such a logic makes dementia rates of supposedly noncompliant people even more irrational. Levels of education, however, is understood in two ways: (1) as a risk factor for dementia, but also (2) as part of an attitude toward responsible self-care—in other words, as ignorance—involving all other risk factors that are not being taken care of. In fact, the mechanism found in several interviews regarding education is the merging of the risk factor (1) with the idea of education as ignorance (2), as in the following quote:

> Maybe in more developed countries, . . . the politics of controlling diabetes and hypertension meet a population that is already prepared to benefit from it; they already have an educational level that allows them to benefit from such a control of diabetes and hypertension. In Brazil there is an unprepared population, an old person or an adult who doesn't have a good educational level in order to do a constant cognitive stimulation, so that even when he controls hypertension and diabetes, this only has a minor impact. (researcher)

This kind of thinking is also prevalent when the state is explicitly mentioned as not providing the right conditions for better health. In the following quote, the association of VaD with poor people is striking—an association that could also become true for AD once the vascularization of AD becomes more widely accepted in Brazil and abroad.

> Vascular dementia in Brazil, *ave Maria*! I am sure it is worse than in any other country. In the first world, diabetes and hypertension are well controlled. We

> will never get there. That is very sad. And especially in the public system, that's a mess. . . . It is difficult to have access to medications, difficult to change lifestyle, difficult to change the diet and all that. . . . The access to health care is difficult—because of all this patients have more ischemic events, micro-angiopathies . . . . And so rates of mixed dementia and the vascular one are very high. In Ceilândia [very poor area], people are unable to buy certain medications. And if I decide to prescribe one they get for free, it will likely be an old medication, with heavy side effects. It is heartbreaking. Sometimes families can buy one medication, but not another. (geriatrician "B")

The sense of resignation regarding less educated people is paired with a resignation regarding the state. Two residents told me that poorer people only get medications that are the cheapest option, often not the latest generation of drugs, and that are less effective than those prescribed to richer people. They stated that corruption exists throughout the entire medication business. Several scandals about politicians and administrators who embezzled money from the health system contribute to the general feeling that good care also means fighting deeply entrenched immorality, contributing to the general feeling of impotence regarding the possibility of preventing dementia (and other health issues). However, others reported that although poorer people get medications that are less effective, in the end—through longer and more complicated therapeutic pathways—the results are the same when compared with people taking last-generation meds.

Conclusion: Vascularization as a Chance for Rethinking Old Age (as Undemocratic)

The vascularization of AD has been shown to be morally charged when it results in sorting out mostly economically disadvantaged people as irresponsible without taking into consideration that most risk factors need to be addressed through better health care and education—through better living conditions for all. However, this reading of recent changes should not be used in order to debunk dementia prevention, but rather as a question of framing and nuance—and even a chance for better health. I want to make this last argument by using another metaphor often found in texts explaining dementia to a wider public:

For many years—and still sometimes today—Alzheimer's Associations and other organizations, self-help books, and media releases promote the mobilizing idea that Alzheimer's disease is a "democratic disease." By adopting this equalizing notion, promoters of this idea want to make the case that everybody is at risk of getting the syndrome (and so every-

body should be concerned), independent of race, education, and socioeconomic background (e.g., Alzheimer Europe 2015).[8] This "democracy" can only make sense if AD is conceived of as mysterious—as relatively unchanging in relation to risk factors—but this idea no longer holds up. Instead of looking primarily at the accumulation of plaques and tangles, the recent vascularization of Alzheimer's disease anchors the brain, so to speak, in the body (e.g., in a cardiovascular logic), and the individual in his or her social context (e.g., in loneliness or level of education as risk factors). In terms of the increasingly popular idea of (neuro)plasticity, the new dementia has become "plastic"—modifiable by different kinds of risk (cf. Meloni 2019)—while AD conceived of as mysterious would be relatively immune to external factors. However, as Meloni (2019: 10) writes in his recent "archeology of plasticity," "not all bodies are considered equally permeable." In the Brazilian example above, poorer people's bodies were considered more plastic or vulnerable to risk factors. This kind of thinking can be understood as blaming; however, depending on the framing, the "new dementia" can also become a real chance to understand the complexity of what is at stake in arguments regarding aging in better health. By conceiving dementia as profoundly undemocratic—by inverting the relatively common metaphor of "democratic dementia"—we can no longer talk about effects on everybody, not even in terms of different kinds of effects on whole groups (as for example, in the older "ethnic" studies that compared "the" Asians with "the" Americans). The "new dementia" is a move toward thinking in terms of subgroups: VaD will "become the commonest form of dementia" worldwide, predicts Ramón (2004: 49). He suggests that differences will not exist between nations anymore, but instead between specific kinds of subgroups: "Variations in incidence and prevalence are found in different racial and ethnic groups, probably related to the preponderance of large-vessel atherothrombotic disease and cardiac embolism in some groups, and small-vessel disease from diabetes and hypertension in others" (Ramón 2004: 50). Ramón opens the door to "undemocratic" thinking of differences, although "racial" and "ethnic" factors do not explain a lot per se. The American Heart Association (see Havranek et al. 2015) recently published an extensive statement about the relation of cardiovascular diseases with disadvantaged groups. This opening up from the once too narrow perception of risk would also be possible for the case of dementia if the latter wasn't stuck with the remaining bits and pieces of brain-centeredness, mysteriousness, and the idea of a democratic disease, as well as interests in narrower frameworks by some groups, mostly parts of the pharmaceutical industry.

As with criticism made regarding more traditional public health studies (e.g., Bell et al. 2011), dementia studies establishing subgroups at risk can end up laying blame on the members of those groups, and the work on risk factors can be privatized and individualized, and interventions pharmacologized, instead of putting the emphasis on structural factors, such as living conditions in combination with responsible medication use and other interventions.[9] But if Alzheimer's disease is conceived as profoundly *un*democratic and effort is being made to enhance living conditions, there might be a real chance to have less dementia in the future.

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Notes

1. As mentioned in the introduction to this volume, the risk factors mentioned in the *Lancet* report (Livingston et al. 2017) are early life education; midlife hypertension, diabetes and hearing loss; and later life smoking, depression, physical inactivity, social isolation, and diabetes—as well as other possible contributing factors such as sleep, pollution, and diet. Although other factors can be found in the literature, for the moment I will focus on these nine.

2. The recent study by Bancks et al. (2019) further complicates the comprehension of preventing dementia as it puts a lot of weight on cardiovascular risk factors: the authors argue that in the United States, educational attainments, and not cardiovascular risk factor profiles, are responsible for better cognitive performances over time.
3. The first consensus conference on BPSD was financed by Janssen Pharmaceuticals with an unrestricted grant (see Leibing 2009a and b for more detailed accounts). The promotion of BPSD was tightly linked to the prescription of drugs, especially antipsychotic drugs, with serious side effects. See https://www.justice.gov/sites/default/files/opa/legacy/2013/11/04/us-complaint-pa.pdf for a civil action in the United States against Johnson & Johnson and its subsidiary enterprise Janssen.
4. The BPSD symptoms, as defined by the IPA (Int'l Psychogeriatric Associations 2012 [1998]): "*Behavioral symptoms*: Usually identified on the basis of observation of the patient, including physical aggression, screaming, restlessness, agitation, wandering, culturally inappropriate behaviors, sexual disinhibition, hoarding, cursing and shadowing. *Psychological symptoms*: Usually and mainly assessed on the basis of interviews with patients and relatives; these symptoms include anxiety, depressive mood, hallucinations and delusions. A psychosis of Alzheimer's disease has been accepted since the 1999 conference."
5. One example for earlier texts perceiving and measuring dementia rates as equal to international trends is Aprahamian et al.'s (2008: 2) observation from a meta-analysis that "Brazilian studies show similar prevalence and incidence to foreign studies." See also, e.g., Lopes and Bottino 2002; Herrera, Caramelli, and Nitrini 1998.
6. "The concept of reserve accounts for individual differences in susceptibility to age-related brain changes or Alzheimer's disease-related pathology. There is evidence that some people can tolerate more of these changes than others and still maintain function. Epidemiologic studies suggest that lifetime exposures including educational and occupational attainment, and leisure activities in late life, can increase this reserve" (Stern 2012: 1006).
7. Several authors, especially in the media, still use this older image of AD as mysterious (regarding its etiology), but now in order to highlight that it has become more manageable, more concretely preventable. For instance, "Alzheimer's disease has been a mysterious disease ever since . . ." begins an article on the blog *ScienceSource*, and continues by reporting the possibility of preventing AD by using anti-inflammatory drugs (see "Have We Found the True Cause of Alzheimer's?," *ScienceSource* blog, http://www.custom-images.sciencesource.com/science-source-blog/2018/11/9/have-we-found-the-true-cause-of-alzheimers).
8. "There is no conclusive evidence to suggest that any particular group of people is more or less likely to develop Alzheimer's disease. Race, profession, geographical and socio-economic situation are not determinants of the disease. However, there is mounting evidence to suggest that people with a higher level of education are at less risk than those with a lower level of education" (Alzheimer Europe 2015).
9. "Democratic" as a popular trope in mostly older Alzheimer texts makes sense when opposed to "undemocratic," here understood in the same sense as "democratic racism" that Marmol (2016) describes as lip service paid to equality in pluralistic societies in combination with blame, instead of a recognition of structural factors involved.

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