Where and How Do Aging Processes Take Place in Everyday Life? Answers From a New Materialist Perspective

Grit Höppner[1]* and Monika Urban[2]

[1] *Department of Social Work, Catholic University of Applied Sciences, Münster, Germany,* [2] *Fachbereich 11 Human- und Gesundheitswissenschaften, University of Bremen, Bremen, Germany*

In the last decade, the focus of studies on age and aging has fundamentally changed from biological to symbolic, discursive, and cultural phenomena. Currently, the most studied topic in material gerontology is the materiality of age and aging in the context of everyday life. Scholars in this area have thus been making an important contribution to a material understanding of aging processes. As we understand them, however, both social constructivist and material gerontological concepts reach their limit when it comes to the questions of *where* and *how* aging processes actually take place in everyday life. In order to answer these two questions, we review social constructivist ideas with a particular focus on the "doing age" concept and material gerontological assumptions regarding human subjects, their material environments, and their relations. We then suggest rethinking bodily limitations and agencies addressed by scholars in the field of new materialism. The aim is to develop a new materialist-inspired understanding of aging processes that helps to reconstruct the material-discursive co-production of aging processes. These processes are deployed as mutual entanglements of materiality and meaning as well as of humans and non-human agency. This approach emphasizes the decentralization of the human actor and thus helps to map the material-discursive complexity of aging processes as relational co-products of humans and non-humans in everyday life.

Keywords: aging processes, social constructivist gerontology, material gerontology, new materialism, bodily limitation, agency, non-human, doing age

INTRODUCTION

In gerontological research the understanding of age and aging has fundamentally changed over the last decades. Biological explanations that reduce age to physical deterioration processes no longer predominate in studies on age and aging (Kruse, 2010; Schroeter and Künemund, 2010; Settersten and Angel, 2011). Rather, several gerontological scholars have questioned such a perspective by pushing social constructivist concepts of aging onto the agenda (cf. Gubrium and Holstein, 2008). That questioning started a dynamic process in which theoretical territory and empirical stances were made controversial. Inspired by such different thinkers as Levi Strauss, Michel Foucault, Gille Deleuze, and Peter Berger and Thomas Luckmann, scholars of aging studies began to envision aging as a non-representational phenomenon. Traditions and discourses were established as having

a strong influence on age and aging, as in the case of "active aging" (WHO, 2002) and "successful aging" (Rowe and Kahn, 1997). In this context, social constructivist concepts help to map the ascriptions, expectations, and bodily norms—such as being fit, healthy and independent—that are linked to age, and provide a basis for determining the social stereotypes and the hierarchies that are associated with aging (Schroeter, 2005; Backes, 2008).

One of these prominent social constructivist concepts is "doing age" (Laz, 1998; Schroeter, 2007, 2012) on which we will focus in this paper. Similar to the "doing gender" concept (West and Zimmerman, 1987) "doing age" acts on the assumption that age develops in the form of a social praxis, that is in everyday life interactions between people; that age is performed through social interactions and is thus displayed in performance. The meanings given to objects, bodies, problems, and situations can be contested within negotiated contexts. The struggle to redefine situations, identities, and problems can be embedded within and between contested social worlds and can cause a number of unintended consequences. Still, and this is why we refer to this example of a social constructivist theory, the "doing age" concept helps to map aging as contingent social interactions between humans.

In recent years, another wave of scholars has brought forward the idea of once again strengthening the role of the materiality of age and aging—that is, both aging bodies and their material environments (e.g., Calasanti, 2003; Gubrium and Holstein, 2008; Baars, 2010; Buse and Twigg, 2015; Artner et al., 2017).[1] These scholars of material gerontology highlight the function of things, technology and spaces within aging processes not with respect to their representative function but rather with respect to the interplay of human bodies and types of non-human materiality. Julia Twigg (2007, 2013), for example, analyzes the relationship between aging and clothes to show that clothing can be, among other things, a medium for remembering one's own experiences.

It is clear that studies on aging refer not just to these three theoretical episodes: biological gerontology, constructivist ideas, and now material gerontology. We certainly find a huge diversity of theoretical approaches under these three headings, which we won't be able to discuss in this paper. But in fact, by highlighting these rough subdivisions and taking a closer look at some examples we will point out the new theoretical assessments of discourse and their interplay with materiality. By introducing here the concept of "material-discursive practices" (Barad, 2003, p. 818), a core idea of new materialism, we want to re-emphasize if not re-discover how both materiality and discourses can be theorized and investigated in aging studies.

Therefore, in this paper, we want to focus closely on aging processes that proceed within material environments. In order to take such a micro-level perspective in the social sciences

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[1]The discussion about the importance of reflecting materiality during the processes of the construction of knowledge and social environments started much earlier outside the studies on aging, e.g. in the sociology of science (cf. Pickering, 1993), in certain constructivist circles (cf. Foucault, 1978; Berger and Luckmann , 2009 [1969], p. 37; p. 125) as well as in the wider context of science and technology studies (e.g., Pinch and Bijker, 1984) and actor-network-theory (ANT) (e.g., Johnson, 1988).

seriously, we ask *where* and *how* humans and non-humans actually refer to each other in specific situations and thus *make* a relation—that is, a mutual entanglement (Pickering, 1993; Barad, 2003, 2007) between humans and non-human elements (such as technologies, fabrics). Our aim is to theoretically map aging processes in order to understand *where* and *how* age and aging actually take place in everyday life.

By referring to scholars of new materialism, we will presume that aging processes do not proceed exclusively *in* the human body. Instead we want to convince our readers that age and aging are co-products of human interactions, discourses, things, technical artifacts, possessions, and mobilities, among other things. From such a perspective, aging becomes a complex process in which human bodies and all kinds of materiality can be involved.

To actually answer the question as to *how* and *where* aging processes take place in material environments we will present some examples of mutual entanglements of different materialities and non-material elements (such as e.g., the ideals of aging). But unlike the early theoretical episode of biological gerontology, we don't want to present aging as simply physiological processes. Neither do we propose to analyze aging as just discursive and symbolic performance. In contrast, we would like to show, how aging can be seen as a bodily process that is situated within material and non-material environments. In keeping with this intention we switch our focus to questions like: what function do walkers have within the process of aging, in the context of a society in which active aging has become the norm? How do clothes turn a person into an "old" person? Do "old" people live in technologically equipped homes (with e.g., AAL technologies) or do they age because they move into such homes and subsequently perform certain sociotechnical practices?

By choosing one example of the constructivist theories—the "doing age" concept—we highlight the potential of this approach, but also suggest the value of including the materiality of age and aging into gerontological analyses. Since we are promoting the debate on the importance of materiality in the aging process, we will introduce mostly Anglophone gerontologists (Calasanti, 2003; Twigg, 2007; Baars, 2010). In order to enrich the theoretical debate, we use ideas from new materialism. New materialism (Dolphijn and van der Tuin, 2012) is a recent term for a nexus of theories that are currently being discussed in gender studies as well as science and technology studies (STS), such as the "agential realism" of Karen Barad (2003, 2007), the "Deleuzian materialism" of Rosi Braidotti ([1994] 2011), and the "posthumanism" of Donna Haraway (2007). In this context we will propose that new materialist concepts enable a paradigm shift away from determinism and constructivism toward performativity and materialism (Barad, 2003; van der Tuin, 2008; Dolphijn and van der Tuin, 2012; Coole, 2013). By reflecting those preceding theoretical debates, those new materialists take language, discourse, and knowledge into account and also turn toward material processes, thus linking meanings with materiality (Barad, 2003).

In order to grasp the dialectic relationship between discourses, knowledge, meaning, and materiality, new materialist scholars refer to a particular understanding of materiality: materiality

is neither an invariant, essential and pre-existing element nor simply a discursive effect but an ongoing discursive construct *and* material formation that is co-constituted in reference to its material environment. For example, aging processes are discursively mediated through social and cultural assumptions and expectations, informed by ideals alike "active aging" and "successful aging" (Lassen and Moreira, 2014). At the same time, aging processes are shaping activities that express those ideals; e.g., through a specific posture and practice, through certain usages of artifacts, through the selection of spaces to live in, etc. The new materialist understanding of material environment highlights the idea that bodies, things, technical artifacts, possessions, mobilities, and knowledge, among other things, are mutually entangled with each other in specific situations. What and how they are entangled in each particular situation, however, depends on the research design in the broadest sense or—to use Karen Barad's term—the "apparatus" (Barad, 2007, pp. 218; more in section Some Methodological Consequences).

In this paper we will propose that a new materialist-inspired understanding of aging processes enables the analysis of age and aging as a co-product of material-discursive practices in everyday life, which are constituted in a specific sociocultural context and time. This understanding could help to map the complexity of bodily processes in order to offer a more nuanced understanding of the many facets of age and aging (Höppner, 2015a,b, 2017a).

In the following section we turn, for an example, toward the social constructivist concept of "doing age" and toward a section on material concepts of gerontology, both focusing on their potentials and limits (section The Social Constructivist Concept of "Doing Age" and Material Gerontological Concepts of Age and Aging). Then, from the perspective of new materialism, we address two current limits of the conceptualization of aging processes: first, the lack of explanations of *where* aging processes actually take place, which is the question of how bodies and their limitations are theorized; and second, the lack of explanations of *how* aging processes actually take place—which is the question as to how agency is constituted within aging processes (section A New Materialist-Inspired Understanding of Aging Processes). Using findings of our own research in section Some Methodological Consequences, we suggest some methodological ideas for analyzing aging processes through the lens of new materialism with a particular focus on bodily limitations and agency. Finally, we discuss our understanding of aging processes in order to enrich current gerontological research by emphasizing the decentralization of the human actor. This could help, as we wish to propose, to map the complexity of aging processes as relational co-products of humans and non-humans in everyday life (section A New Materialist-Inspired Understanding of Aging Processes: A Final Discussion).

THE SOCIAL CONSTRUCTIVIST CONCEPT OF "DOING AGE" AND MATERIAL GERONTOLOGICAL CONCEPTS OF AGE AND AGING

As we sketched out in the introduction, the three episodes of gerontological theory that we chose (see above) grasp age and aging differently: While traditional gerontological research centers age and aging exclusively in the human body and envisions age and aging as a biologically determined process, social constructivist scholars rearrange this point of reference by highlighting the discursive production of aging bodies (in more detail cf. Saake, 2006). Generally, social constructivist concepts consider discourses as elements that frame, generate, and influence age and aging. Scholars not only map social assumptions and bodily norms that are currently linked to age and aging, they also reflect the hegemonic ascriptions of meanings and expectations. Such a perspective decodes age and aging as social constructs that are deeply woven into stereotypes, norms, and social hierarchies, such as those of gender and class (Backes, 2001; Schroeter, 2005). Furthermore, age and aging are not put on a level with dependencies, deficits, and care needs. Scholars instead define the later years as a period in the life course that comprises individual lifestyles as well as particular experiences, attitudes, and practices (Dannefer and Settersten, 2010; Denninger et al., 2014). These particularities again are entangled with institutional, economic, social, cultural, and political structures, such as the average social healthcare services, the organizational structure of retirement security, as well as the state of the labor market in general (van Dyk, 2015, pp. 6 et seq.; McMullin, 2000).

Social Constructivism

Since the term social constructivism brings together quite different ideas under a single roof (see Gubrium and Holstein, 2008), we present only one example of a prominent social constructivist concept in some detail: the concept of "doing age" developed by Cheryl Laz (1998) and later broadened by Klaus Schroeter (2005, 2007, 2012). The "doing age" concept assumes that age and aging take place in the form of a *social praxis* within daily interactions between people. Thus, age is not a social role or an individual and physiological feature, but an interactive process of performance and social ascription. Age differences are presumed to be socially constructed, and thereby social hierarchies are promoted and (re)shaped (Schroeter, 2005, p. 250).

Klaus Schroeter (2012, p. 160) indeed questions the human body as one with clear and fixed boundaries by pointing to the interplay of verbalization and bodily appearance: Schroeter states that the meaning of age and aging is verbally transmitted during human interactions. Those meanings influence how people talk and even act toward each other. Under consideration, for instance, is gray hair and wrinkled skin; these physical traits indicate advanced age. This interplay in turn determines the normative conventions of communication, such as certain polite forms, customs, experiences etc.

However, if age is socially constructed and performed, the question arises as to what role the body and sensual experiences may play within these interactive processes. According to van Dyk (2015), aging has a dual character: on the one hand, age is a marker of difference as seen above. On the other hand, *old age* describes a physically experienceable and very individually distinct process of the transformation of an organism, such as changes in skin and tissue, as well as mental and physiological capacities. The body implements its own processes, from the

reduction of bone density to erectile dysfunction (Calasanti and Slevin, 2001, pp. 70 et seq.). The dual character of age unfolds itself in a dialectical manner: aging, as an eminent individual experience, can only be lived and interpreted in terms of cultural representations within the framework of institutional processing policy, such as pension payments and healthcare services. Thus, social interpellations and normalizations both enable and restrict the experiences and practices of aging (van Dyk, 2015, p. 117). This means that the physicality of the body and the impact of state regulations become two factors of the aging process, which play a significant role in its unfolding. Neither is the focus of the "doing age" concept.

Another blind patch concerns the material environment in the aging process. The example of clothes illustrates this argument: The "doing age" concept addresses the symbolic qualities of clothes. Here, clothes are analyzed for their gendered symbolism as being a typical feature of femininity or masculinity, of young or old age. Scholars analyze rollators as symbols in the performance of illness. That is, in the context of a study using the "doing age" concept, meanings ascribed to the material environment are more likely to be defined and thus reproduced than they are to be questioned. This focus misses the actual interplay of clothes and bodies: Don't high heels inhibit running? Don't heavy coats weigh us down and rollators set the pace?

The social constructivist idea, which considers the material environment—such as clothes—in its symbolic function, also specifies a certain understanding of agency: Social constructivist scholars conceptualize age and aging as a social practice of and between humans. In this understanding, humans are the only ones focused on, as active "producers" of age and aging (Schroeter, 2007). For example, humans display their age through their decision to wear or use particular material objects (e.g., heavy coats and rollators) which then become symbols of aging. In accordance with the concept of "doing age," (only) humans actively make or do not make decisions, and thus have or do not have agency. Agency, in the sense of the capacity of humans to act of their own free will, is assumed to be inseparable from the human body. But as we have seen, the interplay of human and non-human entities such as clothes and rollators influences how we as humans walk, how much weight we feel on our shoulders, and how quickly we can maneuver in supermarkets or on sidewalks.

Those examples show that the "doing age" concept reaches its limits when it comes to the materiality of age and aging. Despite the important enhancements of constructivist concepts, the "doing age" concept faces the risk of neglecting physical abilities and bodily changes as well as the material environment in its functions and limitations in theorizing aging processes (Twigg, 1997; Cruikshank, 2009; Abramson, 2015).

Material Gerontology

In the last decade, scholars of the social and cultural sciences have developed a new interest in the material side of social interactions. The term *material turn* highlights this growing interest in the role played by things within individual and collective processes. In this context, material gerontological scholars developed different conceptions of age and aging that take into account things and their interplay with humans.

Scholars from material culture studies and STS, for an example, analyze *things of care* regarding their materiality and functionality. Artner et al. (2017) carve out ideas of care inscribed into typical care artifacts in their anthology with the same title: For example, one sub-project of *things of care* focuses on the agency of things of care, using the example of the nursing bed, which produces both autonomy and dependency (Heitmann-Möller and Remmers, 2017; also Keil, 2017). Another sub-project outlines the significance of a handbag for older women with dementia: it is shown that using the "right" biographical object—like a handbag—can support care work, e.g. in view of reducing doses of medicine (Depner and Kollewe, 2017; Kollewe, 2017). A general popular topic in aging studies is the currently hegemonic ideal of *anti-aging*: e.g., Pfaller and Schweda (2017) demonstrate how sport programs, food supplements, hormone therapies, beauty and lifestyle products et al. provoke and at the same time enable new forms of aging. Further, Urban (2018) works out which ideas of health and illness are generated in home care settings with Ambient Assisted Living Technologies (AAL). Considering the same technologies, Kollewe (2017) takes a closer look at emerging daily routines. She points out that older people and assistive technologies are mutual entangled. Their interplay (re)produces a certain form of activity—which corresponds to the paradigm of *active aging* (Kollewe, 2017). Endter and Kienitz (2017) demonstrate in exemplary manner how, in the alliance of humans and things, things, too, can age, while the human is aging.

Despite the differences of these chosen examples, material gerontology scholars have in common that they show how humans and things connected with care interrelate during daily routines. The scholars present in detail how things structure, change, and stabilize care work and care settings and the aging process in general. In sum, these scholars show that humans are not singular actors in the field of care and aging; thus, care as well as aging processes cannot be exclusively centered in humans, but must take non-humans into account.

In taking this stance, the material gerontology scholars differ from those of the first theoretical episode, who ontologized the human aging process. Regarding the second theoretical episode, the material gerontologists are not trying to re-invent the wheel: They take into account a discursive dimension, e.g., the hegemonic ideals of *active aging* and *anti-aging* as influential factors for the aging process. Quoting for example the above-cited article of Pfaller and Schweda, they envision the discursive dimension as productive: discourses engage people in certain activities and thus become a source for different economies (e.g., regarding the second health market and the digital economy).

Taking such multiple dialectic processes into account can be fruitful for a better understanding of the complexity of aging processes. How this complexity could be dealt with in the manner of the new materialists will be described in the next part.

A NEW MATERIALIST-INSPIRED UNDERSTANDING OF AGING PROCESSES

In the tradition of the *material turn,* scholars of gender and STS have started to consider the materiality of both the human

body and the environment as part of their analyses (e.g., Pinch and Bijker, 1984; Callon, 1986; Bijker, 1993, 2012; Butler, 1997). The contrast of their work in comparison with that of scholars who follow the "doing age" concept can be characterized by answering two analytical questions. First, as we have already seen, new materialist scholars do not exclusively favor symbolic qualities (e.g., clothes that are typically female or male, items such as rollators that are linked to illness), but also consider how materiality is interrelated with a certain age. *So where does the aging process actually take place: in the human body, in the material environment—or rather in both at the same time?* Second, we showed that the concept of "doing age" conceptualizes age and aging as a social practice of and between humans. In this understanding, exclusively humans are focused on as "active producers" or actors of age(ing) (Schroeter, 2007). For example, humans display their age through their decision to wear or use particular objects (e.g., clothes, rollators). In accordance with the concept of "doing age," (only) humans actively make or do not make decisions, and thus have or do not have agency. Agency in the sense of the capacity of humans to be active agents is assumed to be inseparable from the human body. By contrast, the cited work of material gerontologists stresses the productive involvement of material artifacts such as handbags, nursing beds or AAL technology. *Based on this, the question arises, how do age and aging actually take place?* In the following section(s), we want to answer these two questions from the perspective of new materialism.

Where Do Age and Aging Actually Take Place? Rethinking Bodily Limitations

New materialist scholars state that age occurs neither solely through the agency of humans, their bodies, physical qualities, and experiences nor solely through the objects in their environment, such as clothes or nursing beds. In fact, new materialist scholars presume that bodies, things, technological artifacts, possessions, mobility, and knowledge are, among other things, essential parts of age and aging. This understanding contests traditional ways of thinking of bodies and agencies in gerontological research (see also Hinton and van der Tuin, 2014). In their analyses, new materialist scholars focus on the concrete performance of bodies and thus the processes through which bodies are linked to meanings, such as the classification of being "old." In a new materialist perspective it is not enough to ask "how discourse comes to matter": it is also relevant to ask "how matter comes to matter" (Barad, 2007, p. 210). To describe this paradigm shift, Karen Barad uses the idea of "material-discursive practices" (2003, p. 818) to emphasize that material and discursive practices are always linked to each other and that materiality and discourse are in fact in some sense constituted within these entanglements. This bears two consequences:

1) The idea of material-discursive practices can be used to conceptualize how meaning and materiality are linked to each other: Using the example of Pfaller and Schweda again, the body, for example, changes its tissue structure over the years. Especially against the background of the ideal

of *anti-aging*, is this understood as a fearful event, which again motivates practices that include human and non-human kinds of materiality. Some of those practices (e.g., cosmetic corrections) are driven by artifacts (e.g., chemical products, dietary supplements, surgical tools), which again change the tissue structure.

2) The concept of "material-discursive practices" reflects the specific way that the interrelation between the material environment of bodies and its relation to human bodies can be understood: In this understanding, the human body cannot be conceptualized as an enclosed entity with a fixed material structure. Instead, scholars use the term "ontology" to point out that they assume that human bodies are temporary "matterings" (physical existences with specific importance) with altering boundaries. The same applies to non-human bodies (Haraway, 1989, 1991; Barad, 2007).

But how can we present such a dissolving of limitations in human ontology? A new materialist perspective opens the question of what *an* "old" body actually is. Does an old body either end at the artificial hip-joint or the rollator, even though both expand the abilities and sensations of the body? Does a recently implanted pacemaker rejuvenate a person's body, because the body now has a strong, regular, and "young" heart beat? Even though these technically induced changes could allow persons to perform activities they maybe have not practiced for years that, in turn, could have its physical and emotional effects. The sense experiences and physical appearance then could be those of a much younger self.

Taking up this perspective of altering boundaries, aging does not happen exclusively in and by human bodies, but also in and through material environments as well as due to social ascriptions of meanings: All dimensions together—the body, the material environments, and the social ascriptions of meanings—co-constitute a body as an "old" body. In this manner, new materialist scholars argue that "old" bodies are temporary "matterings" and thus have *flexible boundaries* in relation to their material environments (Haraway, 1989, 1991; Barad, 2007). *Flexible bodies* are not simply extended by things, e.g., a rollator, or changed by technological alteration, e.g., through the insertion of a cardiac pacemaker. Rather, bodies are flexible when new aging processes are co-produced through the use of things or the insertion of technologies within so-called "person-thing-technology-networks" (Haraway, 1989, 1991; Ihde, 1990; Höppner, 2017b; Urban, 2017a).

The implication for material gerontologists is that they should decentralize the human body—in which age and aging are traditionally centered—in their analyses. In fact, though, humans and non-humans, technologies, discourses, and spaces need to be understood as potential co-producers in the analyses of age and aging processes, as potential agents among other agents. For this reason, new materialist assumptions oblige researchers to turn away from stating causal processes, which are determined by biological features and/or social constructions. Instead, they prefer a relational co-production of age and aging as the starting point for analyses.

How Do Age and Aging Actually Take Place? Rethinking Agencies

The understanding of agency as a human capacity is widespread in the social sciences. However, in recent decades, agency has been framed in a broader context, e.g., as being affected by and related to influential factors such as ability, class, gender, and ethnicity (Barker, 2005, p. 448). Socialization theories define agency as a result and feature of socialization processes. Biographical experiences are recognized as co-determining for future actions (Emirbayer and Mische, 1998; Grundmann, 2006).

Inspired by those ideas, new materialist scholars call the human-centered understanding of agency into question. They argue that agency is not an attribute that people and/or things "have" (Barad, 2007, p. 194). Instead, agency is considered to be an "ongoing reconfiguring of the world" (Barad, 2003, p. 818), which is realized in "material-discursive processes." We will illustrate this argument by giving some examples.

Most homes of elderly people in Western societies are single households. *Aging-in-place* has become an ideal of aging in autonomy and self-determination even for people with several handicaps (Schillmeier and Domenech, 2010, pp. 2, 6). Although new types of residential arrangements may exist, technical enhancements of the home like Ambient Assistive Technologies are becoming increasingly popular. While alarm buttons have been in use to help people when they fall since the 1970s, nowadays smart technologies can assist the elderly even in moments when they are unable to act. Through the use of sensors and cameras that produce new data which is transferred to professionals and others, for example family members, the elderly are enabled to live in their own living quarters even after developing handicaps. At the same time these technologies lead to new practices of aging, ranging from active engagement in behaviors to avoid (false) alarms (Kollewe, 2017) to the avoidance of fond habits such as sexual behaviors (Urban, 2017a): Of course, sensors do not directly induce an abstinent aging process. However, they are not programmed to differentiate clearly between practices: For example, bed sensors are not programmed to differentiate between an epileptic seizure and sexual behaviors. Due to the limited algorithms behind the sensors, users might avoid sexual behaviors in order to avoid publicizing them. This, in turn induces a sense of shame, which again could entail abstinence. Sexual behaviors in later years could be framed as a matter of shame since society connects them with ideals of beauty (see in more detail section Some Methodological Consequences), and those are thoroughly age-critical (cf. Mehlmann and Ruby, 2010).

Using the example of health technologies, Nelly Oudshoorn (2011) shows not only that high-tech home care delegates and redistributes care but also that patients need to take a different stance with regard to their own bodies; they have to become competent users of various technologies, through which they tame, discipline, observe, and diagnose themselves. Monika Urban (2017b) takes this further and points out the significance that social and cultural inequalities gain in the context of the demanding processes of becoming a competent user and manager of one's own health in relation to high-tech home care.

In this process she reconstructs the entanglements of the ideals of aging, the formation of new knowledge, and new physical routines (see in more detail section Some Methodological Consequences). Using the example of personal items, Grit Höppner (2015a,b, 2017a) demonstrates that the reference to photographs and "things of memories" (e.g., a mountain that someone climbed in the past) is closely connected with verbal and nonverbal communication and thus with the production of aging processes as articulations of agency during interviews, such as temporarily interrupting, compensating for, confirming, or actualizing one's own age, or distinguishing oneself from peers by virtue of age differences (see in more detail section Some Methodological Consequences).

These examples demonstrate the sorts of complex ways in which discourses, emotions, bodies, practices, things, and technologies are entangled; each of them is agential within person-thing-technology networks. Within these entanglements aging processes are constituted or, in other words, these entanglements co-produce the "matterings" of age and aging (cf. Barad, 2003; van der Tuin, 2008; Schmitz and Degele, 2010; Höppner, 2017a). Following Braidotti (2014), this could be called a *posthuman* aging process in which agency is shared between humans and non-humans. Since new materialist scholars assume that processes of ascription take place in mutual entanglements of humans and non-humans (cf. also Kriebernegg et al., 2014), humans can be considered as being only one agential actor in producing age(ing) in the sense that they ascribe meanings to things, technologies, spaces, etc. and embody these ascriptions.

The new materialist assumption that agency is not centered in the individual human but is rather co-constituted within material-discursive processes that are linked to age, evokes new questions that in turn generate new insights for the understanding of age and aging processes. In a new materialist perspective scholars ask not only *who* actually ages *what*, but also, *what* ages *whom*: does the person age the rollator or does the rollator age the person? Don't heavy coats make it more difficult to move jauntily? Do poorly fitting dental prostheses ruin the pleasure of eating, and lead to poor nutrition, and awkward social interactions? (For more information on the dialectical dynamic cf. Endter and Kienitz, 2017).

SOME METHODOLOGICAL CONSEQUENCES

Rethinking aging as a co-constitutive process—in which discourses as well as bodies, spaces, things, and technologies produce agency through mutual entanglements—has methodological consequences for social scientific research on aging; it calls for a specific way to generate, transcribe, and analyze the data.

According to Barad's theory of "agential realism," aging can be understood as a phenomenon she calls "the ontological inseparability of intra-acting agencies" (Barad, 2003, pp. 803 et seq.). "Intra-action" is a neologism introduced by Barad, which signals a special challenge to the social sciences: materiality and meaning are no longer fixed and antecedent entities. Materiality

and meaning, and thus their relation to each other, are instead constituted within the very process—in our example—of aging. For Barad, phenomena do not precede their interaction; rather aging *emerges* through particular intra-actions. In other words, agency develops in mutual references between ontologies, which are differentiated into humans and non-humans; persons and things, technologies, spaces, artifacts etc. The meaning of age and aging is (re-)negotiated within this interplay.

Two examples, given below, will provide a brief overview of varying methodological considerations.

I) Grit Höppner has shown how agency can be generated, transcribed, and analyzed in the context of becoming old. She suggests defining the verbal und nonverbal communication during interviews as kinds of agency that are negotiated between interviewee and interviewer. In accordance with Barad's concept of "material-discursive practices," she conceptualizes verbal statements and attached meanings as being inseparably entangled with nonverbal articulations of the body; thus, she does not separate verbally articulated opinions, experiences, and attitudes from nonverbally articulated gestures, facial expressions, or ways of speaking. The statement "I feel old" is probably articulated with a quiet voice and a ducked posture. At the same time, these nonverbal articulations condition the statement "I feel old," more than the statement "I feel young." In order to analyze material-discursive practices in a sociological interview analysis, the "language-analysis-based transcript system" (Selting et al., 1998, author's translation) helps to mark all the statements and simultaneously articulated nonverbal expressions, such as breaks [e.g., (.) (3 s)], sounds (e.g., <laughs>), changes in the voice (<faster> <slower> <louder> <quieter>), lengthening (: :: :::), accented words (ACCENT), and tone pitches at the end of a unit of a sentence (?,;-.). Additional observations complete the transcripts. A particular type of analysis—sequence analysis—helps to map the material-discursive practices that co-produce the phenomenon of "becoming old" through verbal and nonverbal articulations that develop within the mutual entanglements between humans and their material environments. In order to consider Barad's idea of "material-discursive" in its complexity, Höppner additionally suggests taking into account the way in which absent and present persons and things are referred to during the interviews and how they intra-act with interviewee and interviewer. The aim is to retrace continuities and discontinuities of communications processes caused by references to persons and things. For example, an 82-year old man, sitting in a ducked posture and speaking quietly in well-regulated sentences, suddenly changes his appearance. In this situation his posture becomes upright and his voice louder than before, he breathes deeply, uses more nested sentences and competes for speaking time. In this situation, the man is referring to a mountain that he once climbed. The reference to the remembered mountain helps the man to verbally and nonverbally embody his ideas of being healthy and active. This kind of interview analysis shows that age is a discursive and simultaneously a somatic praxis that is

embodied. Consequently, these methodological ideas are neither limited to the content of interview transcripts nor to the question of how content is communicated; rather they show how features that interviewees link to (remembered) things materialize through a specific way of speaking, through posture, and through forms of breathing (for more detail see Höppner, 2015a,b, 2017a). The analysis also illustrates that not only ethnographic research but also interview research is able to reconstruct bodily processes (see also Atkinson et al., 2003, pp. 97–117).

II) Taking a different view, Monika Urban choses an ethnographic approach (e.g., *Focused Ethnography* by Knoblauch, 2001) to reconstruct how and what kind of agency evolves in households equipped with Ambient Assisted Living technologies and technologies for home-based monitoring of chronic conditions. With regard to the actual technological developments, she asks how digital health technologies and high-tech care spaces foster certain forms of agency within aging processes. As an analytical frame within which to examine the material-discursive practices, she uses Barad's (2007, pp. 218 et seq.) methodological idea of the apparatus. This idea distinguishes itself from the concept of the actor-network theory, which envisions assemblages of humans and non-humans producing phenomena such as automatic door closers and their influence on passers-by (e.g., Johnson, 1988). For Barad, envisioning an apparatus raises the question of what conditions of possibility for practices and agencies are created in a certain setting for humans as well as for e.g., technologies. Envisioning the apparatus makes it possible to map the agency taking place within technically equipped households. This doesn't mean merely mapping the daily routines of seniors dealing with sensors as well as with the consequences of the datafication of bodily functions. It can very well include comprehending the algorithms the technologies are based on—for example, as we have demonstrated earlier, certain bed sensors obviously don't allow for sex between seniors with handicaps. This again raises the question as to what ideals are inscribed in technologies and what motives and knowledge induce seniors to use these technologies in consequence. On the other hand, it is not only the emerging ideals that are in question (e.g., that specific sociotechnical practices stabilize the current ideal of "active aging"). But also the sheer production of material beings comes into focus (e.g., aging processes that provide the conditions for agency). That means an apparatus, in Barad's sense, produces a phenomenon and thus creates the conditions for material-discursive processes. Hence, such an apparatus neither determines meanings and material beings, nor ideational concepts. It nevertheless provides the conditions for differentiation processes, such as the opposition of human and non-human, young and old, and the inclusion and exclusion of matterings within the scope of a phenomenon (for more detail see Urban, 2017b, 2018).

To sum up those methodological considerations: In research projects following the ideas of new materialism, the apparatus is constituted by various decisions of the researcher, such as the

decision to use a particular theoretical framing, to reconstruct certain practices in specific settings, a transcript system, and a method for analyzing the data generated, among other things.[2] All these decisions influence how aging is perceived and how agencies are identified during a research process. As a general principle, from the perspective of new materialism, the aim is to reconstruct the material-discursive processes that condition the development of a phenomenon such as aging.

A NEW MATERIALIST-INSPIRED UNDERSTANDING OF AGING PROCESSES: A FINAL DISCUSSION

In this paper, we have suggested rethinking social constructivist and material gerontological assumptions on ontologies and agencies for materialist-inspired gerontological research. We highlighted the necessity to rethink the limitations of human bodies by considering the material environment in aging processes. In this attempt, we displayed how the decentralization of the human actor helps to map the complexity of aging processes. We have pointed out that, from a new materialist perspective, aging is not exclusively limited to humans, their abilities and experiences, nor does it just depend on human social environments. We stated that aging instead comprises an ongoing process of boundary-drawings, through which ontologies and their relations to each other are formed and provided with meanings.

The new materialist episode stands out from the two other theoretical episodes cited, which analyze aging merely as a meaning, an ascription of meaning, a social construct, or a physical feature. In contrast, new materialist ideas highlight the idea that aging is a meaning, an ascription of meaning and thus a social construct; *and* that it is simultaneously a temporarily material co-formation, and thus a specific mattering, comprising numerous mediums that transport meanings and embody the materiality of age. This means that the focus on the conditions through which the material-discursive processes of age and aging take place, can take a step toward a specific kind of biological matter of aging—neither defining the biology as determinist nature nor displaying aging as simply a discursive effect. However, since we propose social scientific analyses of aging, the means to analyze the biological matter of aging are limited to bodily expressions and perceptions. An interdisciplinary cooperation, for example with medicine, would allow for the consideration of further bodily data (e.g., heartbeat) and the working out of how these data are linked to aging processes.

New materialist assumptions enable us researchers to define aging not as linear courses, but as co-formations taking place within relational processes that constantly re-shape the experience of age and aging. Accordingly, concepts of new materialism enrich the analysis of aging processes, for example regarding the relation between spaces, architectures, technologies, commodity items, and human bodies. Consequently, such an analysis not only emphasizes the function of human bodies and their material environments for aging processes, it also questions where and how age and aging are actually and precisely performed, against the background of ideals of aging and their material environments.

AUTHOR CONTRIBUTIONS

The ideas and hypothesis tested in this paper are developed by GH and MU. GH and MU wrote the first draft of the manuscript together, contributed to manuscript revision, and read and approved the submitted version.

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[2]It has been pointed out much earlier by constructivists (e.g. Schneider, 1985; Woolgar and Pawluch, 1985) that scholars construct social phenomena themselves by defining their object of research.

REFERENCES

Abramson, C. M. (2015). *The End Game. How Inequality Shapes Our Final Years*. Cambridge: Harvard University Press.

Artner, L., Atzl, I., Depner, A., Heitmann-Möller, A., and Kollewe, C. (2017). *Pflegedinge. Materialitäten in Pflege und Care*. Bielefeld: Transcript.

Atkinson, P., Coffey, A. J., and Delamont, S. (2003). *Key Themes in Qualitative Research. Continuities and Changes*. Waltnut Creek, CA: AltaMira.

Baars, J. (2010): "Time and ageing: enduring and emerging issues," in *The SAGE Handbook of Social Gerontology*, eds D. Dannefer and C. Phillipson (New York, NY; London: SAGE Publishers), 367–376.

Backes, G. M. (2001). *Zur Konstruktion Sozialer Ordnungen des Alter(n)s*. Opladen: Leske + Budrich.

Backes, G. M. (2008). "Potentiale des Alter(n)s – Perspektiven des homo vitae longae?" in *Das erzwungene Paradies des Alters? Fragen an eine Kritische Gerontologie*, eds A. Amann and F. Kolland (Wiesbaden: VS Verlag), 63–100.

Barad, K. (2003). Posthumanist performativity: toward an understanding of how matter comes to matter. *Signs J. Women Cult. Soc.* 28, 801–831. doi: 10.1086/345321

Barad, K. (2007). *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham, NC: Duke University Press.

Barker, C. (2005). *Cultural Studies: Theory and Practice*. London: Sage.

Berger, P., and Luckmann, T. (2009 [1969]). *Die Gesellschaftliche Konstruktion der Wirklichkeit*, 22nd Edn. Frankfurt am Main: Fischer.

Bijker, W. E. (1993). Do not despair: there is life after constructivism. *Sci. Hum. Values* 18, 113–138. doi: 10.1177/016224399301800107

Bijker, W. E. (2012[1987]). "The social construction of bakelite: toward a theory of invention," in *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, eds W. Bijker, T. Hughes, and T. Pinch (Cambridge: MIT Press), 155–182.

Braidotti, R. ([1994] 2011). *Nomadic Subjects. Embodiment and Sexual Difference in Contemporary Feminist Theory*, 2 Edn. New York, NY: Columbia University Press.

Braidotti, R. (2014). *Posthumanismus. Leben jenseits des Menschen*. Frankfurt: Campus.

Buse, C., and Twigg, J. (2015). Materialising memories. Exploring the stories of people with dementia through dress. *Ageing Soc.* 36, 1115–1135. doi: 10.1017/S0144686X15000185

Butler, J. (1997). *Körper von Gewicht*. Frankfurt am Main: Suhrkamp.

Calasanti, T. M. (2003). "Theorizing age relations," in *The Need for Theory: Critical Approaches to Social Gerontology,* eds S. Biggs, A. Lowenstein, and J. Hendricks (Amityville, NY: Baywood), 199–218.

Calasanti, T. M., and Slevin, K. F. (2001). *Gender, Sozial Inequality and Aging*. Oxford: Alta Mira Press.

Callon, M. (1986). "Some elements of a sociology of translation: domestication of the scallops and the fisherman of St Brieuc Bay," in *Power, Action and Belief: A New Sociology of Knowledge?* ed J. Law (London et al., Routledge and Keagan Paul), 196–233.

Coole, D. (2013). Agentic capacities and capacious historical materialism: thinking with new materialisms in the political sciences. *Millennium J. Int. Stud.* 41, 451–469. doi: 10.1177/0305829813481006

Cruikshank, M. (2009). *Learning to Be Old. Gender, Culture, and Aging.* Plymouth: Roman and Mittlefield.

Dannefer, D., and Settersten, R. A. (2010). "The study of the life course: implications for social gerontology," in *The SAGE Handbook of Social Gerontology*, eds D. Dannefer and C. Phillipson (Los Angeles: Sage), 3–19.

Denninger, T., van Dyk, S., Lessenich, S., and Richter, A. (2014). *Leben im Ruhestand. Zur Neuverhandlung des Alters in der Aktivgesellschaft.* Bielefeld: transcript.

Depner, A., and Kollewe, C. (2017). "High-Tech und Handtasche. Gegenstände und ihre Rolle in der Pflege und Unterstützung älterer und alter Menschen," in: *Alter(n) als Soziale und Kulturelle Praxis. Ordnungen, Beziehungen, Materialitäten* eds C. Endter and S. Kienitz (Bielefeld: Transcript), 301–326.

Dolphijn, R., and van der Tuin, I. (2012). *New Materialism: Interviews and CARTOGRAPHIES.* Ann Arbor, MI: Open Humanities Press.

Emirbayer, M., and Mische, A. (1998). What Is Agency? *Am. J. Sociol.* 103, 962–1023. doi: 10.1086/231294

Endter, C., and Kienitz, S. (2017). "Materielle beziehungen. zur dialektik der dinge des alter(n)s," in *Alter(n) als Soziale und Kulturelle Praxis, Ordnungen - Beziehungen – Materialitäten*, eds C. Endter and S. Kienitz (Bielefeld: Transcript), 327–344.

Foucault, M. (1978). *Discipline and Punish. The Birth of the Prison.* New York, NY: Vintage Books.

Grundmann, M. (2006). *Sozialisation. Skizze einer allgemeinen Theorie.* Konstanz: UVK.

Gubrium, J., and Holstein, J. (2008). "Narrative ethnography," in *Handbook of Emergent Methods*, eds S. Hesse-Biber and P. Leavy (New York, NY: The Guilford Press), 241–264.

Haraway, D. (1989). The biopolitics of postmodern bodies: determinations of self in immune system discourse. *J. Femin. Cult. Stud.* 1, 3–43.

Haraway, D. (1991). *Simians, Cyborgs, and Women: The Reinvention of Nature.* London; New York, NY: Routledge.

Haraway, D. J. (2007). *When Species Meet.* Minneapolis, MN: University of Minnesota Press.

Heitmann-Möller, A., and Remmers, H. (2017). "Pflegebett und Agency. Eine untersuchung aus der perspektive der Akteur-netzwerk-theorie von Bruno Latour," in *Pflegedinge. Materialitäten in Pflege und Care*, eds L. Artner, I. Atzl, A. Depner, A. Heitmann-Möller, and C. Kollewe (Bielefeld: Transcript), 133–162.

Hinton, P., and van der Tuin, I. (2014). Preface. *Women A Cult. Rev.* 25, 1–8. doi: 10.1080/09574042.2014.903781

Höppner, G. (2015a). "Becoming with things" in interviews: materialisierungsprozesse von wiener renter_innen am beispiel von bergerzählungen. *Body Politics* 3, 213–234. Available online at: http://bodypolitics.de/de/wp-content/uploads/2016/09/Heft_06_03_Hoeppner_Interviews_End-1.pdf

Höppner, G. (2015b). Embodying of the self during interviews: an agential realist account of the non-verbal embodying processes of elderly people. *Curr. Sociol.* 65, 356–375. doi: 10.1177/0011392115618515

Höppner, G. (2017a). "Alter(n) non-verbal verkörpern: eine posthumanistisch-performative Analyse des Körperwissens von Renter_innen in Interviews," in *Körperwissen II: Alter(n) und vergängliche Körper*, eds R. Keller and M. Meuser (Wiesbaden: VS Verlag), 183–207.

Höppner, G. (2017b). Rethinking socialization research through the lens of new materialism. *Front. Sociol.* 2:13. doi: 10.3389/fsoc.2017.00013

Ihde, D. (1990). *Technology and the Lifeworld.* Bloomington, IN: Indiana University Press.

Johnson, J. [Bruno Latour] (1988). Mixing humans and nonhumans together: the sociology of a door-closer. *Soc. Probl.* 35, 298–310. doi: 10.2307/800624

Keil, M. (2017). "Alter(n) in der horizontale oder ein Bett ohne Ruhe," in *Alter(n) als Soziale und Kulturelle Praxis, Ordnungen - Beziehungen – Materialitäten*, eds C. Endter and S. Kienitz (Bielefeld: Transcript), 289–300.

Kriebernegg, U., Maierhofer, R., and Ratzenböck, B. (eds.). (2014). "Re-thinking material realities and cultural representations of age and aging," in *Alive and Kicking at All Ages. Cultural Constructions of Health and Life Course Identity,* (Bielefeld: Transcript), 9–20.

Knoblauch, H. (2001). Fokussierte ethnographie: soziologie, ethnologie und die neue welle der ethnographie. *Sozialer Sinn* 2, 123–141. doi: 10.1515/sosi-2001-0105

Kollewe, C. (2017). "(In-)Aktivitäten des täglichen Lebens. Die Kategorisierung und Gestaltung des Alltags älterer und alter Menschen durch Technologien des Ambient Assisted Living," in *Pflegedinge. Materialitäten in Pflege und Care*, eds L. Artner, I. Atzl, A. Depner, A. Heitmann-Möller, and C. Kollewe (Bielefeld: Transcript), 91–126.

Kruse, A. (2010). *Potenziale im Alter. Chancen und Aufgaben für Individuum und Gesellschaft.* Heidelberg: Akademische Verlagsgesellschaft AKA.

Lassen, A., and Moreira, T. (2014). Unmaking old age: political and cognitive formats of active ageing. *J. Ageing Stud.* 2014, 33–46. doi: 10.1016/j.jaging.2014.03.004

Laz, C. (1998). Act your age. *Sociol. Forum* 13, 85–113. doi: 10.1023/A:1022160015408

McMullin, J. A. (2000). Diversity and the state of sociological aging theory. *Gerontologist* 40, 517–530. doi: 10.1093/geront/40.5.517

Mehlmann, S., and Ruby, S. (Eds.) (2010). *Für Dein Alter siehst Du gut aus!' Von der Un/Sichtbarkeit des alternden Körpers im Horizont des demografischen Wandels. Multidisziplinäre Perspektiven.* Bielefeld: Transcript.

Oudshoorn, N. (2011). *Telecare Technologies and the Transformation of Healthcare.* Basingstoke: Palgrave Macmillan.

Pfaller, L., and Schweda, M. (2017). "Altern zwischen Medikalisierung und reflexiver Praxis. Der Alltag im Zeichen des Anti-Aging," in *Alter(n) als Soziale und Kulturelle Praxis, Ordnungen - Beziehungen – Materialitäten*, eds C. Endter and S. Kienitz (Bielefeld: Transcript), 157–178.

Pickering, A. (1993). The mangle of practice: agency and emergence in the sociology of science. *Am. J. Sociol.* 99, 559–589. doi: 10.1086/230316

Pinch, T., and Bijker, W. E. (1984). The social construction of facts and artifacts: or how the sociology of science and the sociology of technology might benefit each other. *Soc. Stud. Sci.* 14, 399–441. doi: 10.1177/030631284014003004

Rowe, J. W., and Kahn, R. L. (1997). Successful aging. *Gerontologist* 37, 433–440. doi: 10.1093/geront/37.4.433

Saake, I. (2006). *Die Konstruktion des Alters. Eine gesellschaftstheoretische Einführung in die Alternsforschung.* Wiesbaden: VS Verlag für Sozialwissenschaften.

Schillmeier, M., and Domenech, M. (2010). *New Technologies and Emerging Spaces of Care.* Farnham: Ashgate.

Schmitz, S., and Degele, N. (2010). "Embodying - ein dynamischer Ansatz für Körper und Geschlecht in Bewegung," in *Gendered Bodies in Motion*, eds N. Degele, S. Schmitz, E. Gramespacher, and M. Mangelsdorf (Opladen: Budrich UniPress), 13–36.

Schneider, J. W. (1985). Defining the definitional perspective on social problems. *Soc. Probl.* 32, 232–234. doi: 10.2307/800682

Schroeter, K. (2007). "Zur Symbolik des korporalen Kapitals in der 'alterslosen Altersgesellschaft', " in *Altern in Gesellschaft. Ageing – Diversity – Inclusion*, eds U. Pasero, G. M. Backes, and K. R. Schroeter (Wiesbaden: VS Verlag für Sozialwissenschaften), 129–148.

Schroeter, K. R. (2005). Doing age, korporales kapital und erfolgreiches altern. *SPIEL* 24, 147–162. Available online at: http://www.ingentaconnect.com/content/plg/spiel/2005/00000024/00000001/art00008

Schroeter, K. R. (2012). Altersbilder als Körperbilder: doing age by bodyfication, in *Individuelle und kulturelle Altersbilder*, ed. F. Berner (Wiesbaden: VS Verlag), 154–229.

Schroeter, K. R., and Künemund, H. (2010). "'Alter' als Soziale Konstruktion - eine soziologische Einführung," in *Handbuch Soziale Arbeit und Alter*, eds K. Aner and U. Karl (Wiesbaden: VS Verlag für Sozialwissenschaften), 393–401.

Selting, M., Auer, P., Barden, B., Bergmann, J., Couper-Kuhlen, E., Günthner, S., et al. (1998). *Gesprächsanalytisches Transkriptionssystem (GAT)*. Available online at: https://www.phil.uni-hannover.de/fileadmin/deutsches_seminar/publikationen/gat.pdf (Accessed April 1, 2017).

Settersten, R., and Angel, J. (2011). *Handbook of Sociology of Aging*. New York, NY: Springer.

Twigg, J. (1997). Bathing and the politics of care. *Soc. Policy Administr.* 31, 61–72. doi: 10.1111/1467-9515.00038

Twigg, J. (2007). Clothing, age and the body. A critical review. *Ageing Soc.* 27, 285–305. doi: 10.1017/S0144686X06005794

Twigg, J. (2013). *Fashion and Age. Dress, the Body and Later Life*. London: Bloomsbury Academic.

Urban, M. (2017a). "This really takes it out of you!" The senses and emotions in digital health practices of the elderly. *Digital Health* 3, 1–16. doi: 10.1177/2055207617701778

Urban, M. (2017b). "Embodying digital ageing: ageing with digital health technologies and the significance of inequalities," in *Precarity Within the Digital Age. Media Change and Social Insecurity*, eds B. Heidkamp and D. Kergel (Wiesbaden: VS Verlag), 161–176.

Urban, M. (2018): "Doing digital health. Zur Verschränkung von Leib und Netz in digitalen Gesundheitspraktiken," in *Leib und Netz – Sozialität Zwischen Verkörperung und Virtualisierung*, eds M. Klemm and R. Staples (Wiesbaden: VS Verlag), 149–173.

van der Tuin, I. (2008). Deflationary logic: response to sara ahmed's "imaginary prohibitions: some preliminary remarks on the founding gestures of the new materialism." *Eur. J. Womens Stud.* 15, 411–416. doi: 10.1177/1350506808095297

van Dyk, S. (2015). *Soziologie des Alters*. Bielefeld: Transcipt.

West, C., and Zimmerman, D. (1987). *Doing gender. Gender Soc.* 1, 125–151. doi: 10.1177/0891243287001002002

WHO (2002). *Active Ageing*: *A Policy Framework*. Geneva: WHO.

Woolgar, S., and Pawluch, D. (1985). Ontological gerrymandering: the anatomy of social problems explanations. *Soc. Probl.* 32, 214–227. doi: 10.2307/800680