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# THE RIPENESS OF OLD AGE: AN ENACTIVE PERSPECTIVE ON WELLBEING IN LATER LIFE

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## *abstract*

*The prevalence of wellbeing-related afflictions such as depression is, globally, on the rise in the elderly population. In this paper, subjective and intersubjective experiential dimensions of such afflictions are explicated through the theoretical framework of enactivism. Drawing on the cyclic agent-environment relation that is at the heart of enactivism, one can yield novel insights into the nature of age-based deteriorations, along with innovative therapeutic interventions and lifestyle changes that can help to preserve the 'ripeness' of old age.*

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## *keywords*

*ageing, wellbeing, enactivism*

**1. Introduction** Ageing is a growing worldwide concern. Official predictions state that the global population of persons over the age of 65 will more than double over the next 25 years, with the number of persons over the age of 80 tripling across the same period (UN DESA, 2019). Not only is this growth likely to strain already over-burdened health and social services across many countries, it will also impact familial and wider political-cultural expectations regarding responsibilities for elderly care. For the elderly themselves, progression towards an increasingly lopsided global population could induce an array of personal, social, financial and health-related issues (see, for example, Kingston et al., 2018 and Tang et al., 2022).

Conversely, an ageing population is a happy indication of more successful health regimes that allow individuals increased time in which to enjoy the endless curiosities of life. However, this converse perspective only holds true if the extension of age incorporates an extension to the positive qualities of one's life. In other words, living longer can only be viewed in a positive light, subjectively and from a wider social outlook, if wellbeing is favourably maintained.

In this paper, it will be argued that an enactive<sup>1</sup> approach to later life successfully explains numerous afflictions of old age and, in so doing, cultivates fruitful terrain from which elderly wellbeing may be analysed and, subsequently, enhanced.

**2. An Enactive Perspective on Ageing** In its 'traditional' form<sup>2</sup>, the paradigm of enactivism finds its roots in the biological concept of *autopoiesis*, for which an entity recursively self-defines as a "concrete unity in space" by interacting with its environment in such a way that the network of processes that facilitate its environmental interactions are continuously regenerated (Maturana and Varela, 1980, p. 78). Autopoiesis was conceived so as to define the self-preservation of living cells: a cell generates its own metabolic network and membrane (i.e. its physical boundary) through internalised, interdependent chemical processes, which are reciprocally constrained by the cell membrane, and therein specifies the environmental interactions that bring about structural changes (ibid.). Enactivists' theoretical starting point is to argue that there is continuity between the foundational building blocks of life – that is, living cells – and the complex minds that we find in subjects such as humans (ibid.; Varela, Thompson & Rosch, 1991; Thompson, 2007). More specifically, enactivists extend the notion of autopoiesis from the biochemical foundations

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1 See section 2.

2 By 'traditional', I refer to *biological enactivism* (Jonas, 1966; Maturana and Varela, 1972).

of living cells by arguing that active subjects cognise in virtue of (self-)generating a domain of sense-making through interactions with surrounding environments. The achievement of such sense-making (i.e. cognition) requires the activity of subjects to encompass the interdependent qualities of *autonomy*, *emergence*, *embodiment* and *experience*<sup>3</sup> (De Jaegher and Di Paolo, 2007). Put broadly, it is through the self-governed bodily interactions of an agent with its environment that subjectively meaningful possibilities for action emerge, with these enacted possibilities recursively generating and maintaining the agent and its sense-making processes as a discernible systemic unity. Accordingly, the central crux of enactivism is that cognitive subjects are not ‘parachuted’ into a world which is then analysed from a disembodied and decontextualised viewpoint; rather, cognition emerges through ongoing patterns of interaction between embodied subjects and the meaningful surroundings in which they are embedded.

A consequence of enactivism is thus that the ontology of sense-making necessarily depends on the active state of an agent in its environment. An oft-overlooked aspect of such activity is that sense-making varies in accordance with the natural ageing of an agent and, crucially, the manner in which agent-environment interactions develop. So, from a relatively crude physical perspective, the sense-making of human infants differs from that of adults in virtue of infants’ smaller physical stature and the difference in afforded possibilities for (inter)action that this entails. The same reasoning takes one to the sensible conclusion that sense-making differs for every subject due to physicality – and the myriad other biospsychosocial factors that are unique to each subject – and the variety of environmental affordances that follow accordingly. Unlike more ‘orthodox’<sup>4</sup> approaches to cognition and selfhood, such variation in environmental engagement is not merely a question of analysing this variety in accordance with a typical input-process-output sequence, for which the ‘process’ occurs from a systemically isolated perspective; rather, this agent-environment variety is part and parcel of the *constitution* of any given sense-making agent.

Perhaps more pressingly, the (inter-)activity of any given subject is regularly a ‘participatory’ phenomenon, involving one or more cognising ‘others’. As De Jaegher & Di Paolo (2007) explain, certain instances of social engagement involve recursive coordination of agents’ dynamic activity, resulting in new ‘participatory’ domains of sense-making. These participatory domains emerge from the coordinated behaviours of the involved agents, which sustain the interaction, whilst the interaction processes themselves regulate the ongoing behaviour of the agents (invoking, once more, the notion of autopoietic circularity). There is thus “regulated coupling” between individual relational behaviours and social interaction processes, with the individual autonomy of agents persisting – in an altered form – alongside the autonomy of the interaction itself (ibid., p. 493).

A canonical example of such ‘regulated coupling’ is the game of charades, in which a performer and her teammates “adjust their sense-making in a way that converges towards the ‘right’ gesture and the ‘right’ interpretation” (ibid., p. 501). The back-and-forth interactive

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<sup>3</sup> An agent is *autonomous* when recursive agent-environment interactions establish and maintain a unifying boundary, thereby creating a self-organised systemic unity whose further interactions depend on the possibilities that are generated by the unity’s ongoing activity (Varela, 1979; Wheeler, 2011). As such autonomy depends on the macrobehaviour of agent-environment interactions, such a systemic unity is an *emergent* phenomenon. For a systemic unity that enacts its world, it is necessarily *embodied* in that “the body is the ultimate source of significance” (Di Paolo et al., 2010, p. 42) – the animate locus of autonomy through which meaning is generated and, as such bodily autonomy requires active engagement with the environment, the lived *experience* of such a unity is inevitably relevant.

<sup>4</sup> The ‘orthodoxy’ is a ‘Cartesian’ approach based on the notions of *computationalism* and *representationalism* (see Clark, 2001).

process, encompassing the performer's actions and her teammates' interpretations of such actions, is a co-constructed phenomenon that "evolves through patterns of coordination and breakdowns" (ibid.). Importantly, this kind of back-and-forth co-construction of meaning can be extrapolated to a spectrum of everyday social scenarios, from the unplanned coordination of two individuals trying to move past one another in a cramped space, through to the practised synchrony of dancers or the habitual routines of romantic couples.

For present purposes, the extrapolation of participatory sense-making to everyday social life takes on renewed significance. Enactivism's focus on the (embodied and experiential) self-sustained emergent autonomy of sense-making not only provides fecund terrain from which to analyse subjective variations in worldly engagement, including those related to age, but also, when extended to the social domain, provides reasons why the participatory dimensions of sense-making have specific impact on the (inter)activity of aged persons.

### 3. Wellbeing in an Aged Person's Enacted World

As one ages, there is a natural deterioration in one's cognition and physicality, and, ipso facto, one's social capabilities. This is an irreversible aspect of ageing. However, what is rarely explored are the ways in which such deteriorations impact on an elderly person's phenomenological experience of their world and, therefore, their wellbeing.

Using the theory of enactivism, one can explore these deteriorations – and associated afflictions of wellbeing – in an explanatorily detailed manner. Specifically, it allows for explanations from subjective, interactive and ontological perspectives.

#### 3.1. *The Subjective-Experiential Impact of Physical and Social Deterioration in Elderly Persons*

For the most part, when one engages with one's everyday world, one does so in a fluent and non-deliberative manner. As I reach for a mug of tea or scratch an itch on my cheek, for instance, I do not pause to analyse the intricacies of such actions or calculate the physical requirements of my body; rather, I execute the necessary movements with a 'mindless' fluidity, or "absorbed coping" (Dreyfus, 2007, p. 374), that emerges from my well-practised expertise of being embedded in a familiar world in which mugs of tea and itches accompany commonplace experiences. With such occurrences, there is a kind of seamless 'pairing' between an expert agent's present needs and disposition (e.g. my desire for a drink of tea), and the possibilities for action that the immediate environment affords (e.g. the expected presence of a cup of tea in my vicinity).

In general, philosophical and psychological considerations of such everyday actions tend to be approached from the stance of the *acting* agent. So, if one is concerned with understanding the phenomenology of tea-drinking, one typically needs to understand the real-life 'flow' of an agent drinking a cup of tea (Csikszentmihalyi, 1990). However, there exists an important intersect of this understanding which is less frequently considered; namely, the perspective of the *act-able* agent. Rather than focusing on actions themselves, this perspective requires attention to an agent's (potential and realised) *capacity* to act in certain ways. To investigate the phenomenology of tea-drinking, for example, requires, in part, attention to the fact that an agent *can* engage with a mug of tea appropriately. In other words, as I seamlessly reach for my mug of tea – attending to the mug as an entity that is 'for tea-drinking' (cf. Dreyfus, 2007 and Heidegger, 1972) – I simultaneously experience myself as *capable* of tea-drinking. Like the action itself, this experience is not deliberative; it is an unreflective awareness of myself as a 'being who is capable of tea-drinking'. Implicated within everyday agential actions, then, is (self-)awareness of oneself as a 'bodily power' for acting in specific ways (Noë, 2009, p. 77): "in perceiving something as graspable, throwable or kickable, we are experiencing ourselves as bodies that can grasp, throw or kick" (Gallese and Sinigaglia, 2011, p. 127).

We find, therefore, that everyday experience necessitates a sense of self that is "given to us

as a manifold of possibilities for action” (ibid., p. 130), which is an integral phenomenological dimension of being. To reiterate, such sense of self does not emerge from deliberation or a concentrated kind of introspection; instead, it is an implicit appreciation of one’s body as capable of performing in a specific way (Higgins, 2017).

Applying such reasoning to ageing, one can appreciate that there is an important subjective dimension to the enactment of one’s world, which is infrequently considered from the perspective of elderly persons. Specifically, as one’s physical and social abilities naturally decline, there is a simultaneous obfuscation in one’s implicit awareness of oneself as a ‘bodily power’ to act. In accordance with an enactive stance, implicit self-awareness of this kind is an emergent feature of an embodied agent’s recursively maintained interactions with its environment, so awareness of decline in one’s abilities feeds back into the possibilities for action that one’s environment affords (that, reciprocally, feed back into how one acts, and so on).

To exemplify this, re-consider the everyday activity of reaching for a mug of tea. Typically, such an act unfolds unproblematically in virtue of one’s expert practised engagement in the act of tea-drinking. However, as one ages, the necessary physical capabilities for tea-drinking decline: one’s musculature weakens; orienting one’s reach and grasp may become difficult; keeping the cup balanced could become harder; remembering where the tea is placed and actually seeing it may become less easy. In tandem with these behaviours is the implicit awareness of oneself as *less capable* of reaching, grasping, stretching, balancing, seeing, remembering, and so on. When one considers the ongoing reciprocal feedback between how one acts and the possibilities for action that are afforded by one’s environment, then even seemingly inane everyday actions such as drinking tea can have profound effects on one’s ongoing enactment. Alongside tea-drinking, the myriad other everyday actions that comprise one’s meaningful existence may become tainted by deteriorations in one’s implicit awareness of oneself as a ‘bodily power’ that is capable of acting in specific ways.

Such deterioration may be gradual, in which case awareness of it may remain implicit and there would thus be little impact on wellbeing. However, across the elderly population, it is common that a single incident – a fall, virus, infection, or just an act of misremembering or forgetting – may have deep-lying consequences, often leading to multi-morbidities (Goodwin et al., 2013).

When a single incident leads to further complications in everyday existence, the awareness of decline in one’s ‘bodily power’ will become explicit. This is problematic in that some everyday behaviours will consequently manifest as challenges to one’s active sense-making, instead of the smooth fluidity that one is accustomed to with routine actions. The usual ‘transparency’ of one’s behaviour will be experienced as permeated by aspects of ‘opacity’ (Limanowski and Friston, 2015). Consider, for example, an elderly person returning home following a short hospitalisation due to a fall. Although there are no guarantees in how a person will respond to such an event, it is probable that such a person – as with anyone recovering from injury – will find previously unencumbered behaviours now require deliberative effort. This may be simple everyday acts such as the aforementioned drinking of a mug of tea, or dressing oneself, having a shower, preparing food, going to the shops, or completing a crossword. Such acts appear phenomenologically mundane, but they are the lifeblood of one’s everyday experience of one’s world. When such previously seamless acts become burdensome, or require cognitive reflection for successful execution – no matter how minimal – there are repercussions: as Dreyfus (2012) explains, “if you try to reflect on the intelligibility of the situation, that is, if you try to think about why things are going so well [...] or so badly...]you will at best perform competently” (2). In other words, when a previously

‘mindless’ act experientially manifests in a determinate way, the ‘smoothness’ of one’s activity will, at best, be lessened and, at worst, become completely disjointed.

Even when decline is a natural part of a gradual ageing process, it is inevitable that certain aspects of one’s capabilities to act in specific ways will become explicit in a potentially detrimental manner. For instance, natural age-related sensory alterations to one’s voice or eyesight, or any other physical ‘weaknesses’, may result in one feeling ‘out-of-joint’ with one’s self (cf. Sheets-Johnstone, 2009 on *progeria*). It is unsurprising – particularly from the perspective of the recursive agent-environment feedback that is a central tenet of enactivism – that such natural changes in one’s physical being may result in a loss of self-confidence in elderly persons (Orth et al., 2010). What’s more, this loss of self-confidence can itself lead to a loss of self-motivation (Alexopoulos, 2005); that is, if one has little confidence in performing once-easy everyday actions, one may simply become less motivated to do so, which will, as a matter of course, have further impact on one’s subsequent capacity and confidence in performing said actions. Much like the negative spirals that accompany depression, elderly persons may become ‘trapped’ in harmful cycles of decline (Kraaij et al., 2002).

### 3.2. *The Intersubjective-Experiential Impact of Deterioration in Elderly Persons*

Recall that a central tenet of enactivism is the manner in which it gives rise to ‘participatory’ domains of sense-making (De Jaeger & Di Paolo, 2007). Such sense-making involves two or more agents generating a new autonomous domain through the (intentional or circumstantial) coordination of their activity, which reciprocally regulates their ongoing behaviour. In many examples of participatory sense-making, the intersubjective autonomous domain that emerges is the result of significant contributions from all of the involved parties (see section 2 on charades). However, in some interactions, the contributions of individual agents can be notably lopsided. For example, within social scenarios between doctors and patients, caregivers and infants, teachers and students, or judges and defendants, there may frequently be a ‘one-sided’ character to the engagement, with one of the individuals dominating the interactive process. Although in such “asymmetric interactions” (Di Paolo et al., 2010, 446) there persists (minimal) co-regulation of activity between the authoritative and submissive agents, such that there is still a ‘participatory’ nature to the engagement, one finds an almost negligible contribution to regulating interactive dynamics from the perspective of the submissive agent.

For elderly persons, occupation of the ‘submissive’ role within one-sided interactions inevitably becomes more common. Recall, for instance, that natural age-related deteriorations not only encompass detrimental costs for one’s ‘bodily power’ but also one’s (self-)awareness of oneself as a bodily power, and, consequently, one’s self-confidence and self-motivation may be impacted. This is compounded by the frequency with which elderly persons are less respected by more youthful counterparts in many countries (Ng and Lim-Soh, 2021; WHO, 2021). The result is that autonomous domains of sense-making that emerge between elderly persons and some (younger) other(s) may become skewed towards the individual autonomy – inclusive of the dispositions, beliefs, actions and intentions – of the younger person.

Furthermore, in interactions between ‘equal’ participants, there is a kind of rhythmic equality with which the participatory domain (self-)regulates the ongoing sense-making of the involved individuals (Gallagher, 2005). However, once an elderly person is involved, for whom physical and resultant social capabilities have been affected by the natural ageing process, the capability to contribute ‘equally’ to the maintenance (and ongoing reciprocal regulation) of the interactive process is also affected. Whereas youthful, able-

bodied participants will contribute impartially to the maintenance of an interactive system that is not individualistically dominated by any single agent, in such a way that there is a distributive rhythm emerging from (and sustaining) all parties, elderly persons may struggle to match the interactive ‘rhythm’ of more youthful counterparts.<sup>5</sup> More than merely being a question of synchrony across bodily expressivity, this can have further experiential connotations; namely, the “mutual *affective resonance*”<sup>6</sup> (Fuchs and De Jaegher 2009, p. 478) that emerges in participatory sense-making will be disrupted. Such affective resonance is an inherent accompaniment to the physical rhythmic coordination of interactions; that is, as individuals implicitly modulate behaviours and thereby engender coordinated activity, there is, simultaneously, an implicit coordination of *affective processes* that canalise the involved individuals towards a similar emotional register (Damasio, 2010). Beyond the physical aspects of rhythmic coordination that accompany interactions, there may therefore be a lack of affective attunement for many elderly persons, or, if it is to be achieved, it may require more concerted effort for involved parties.

Once more, then, one can appreciate how ageing may import a significant experiential struggle for elderly persons, in this instance with respect to difficulties in rhythmic consonance of interactions. As with section 3.1., such issues are not ubiquitous for elderly persons, but prevalence will increase in tandem with the inescapable deterioration of an ageing body.

### 3.3. ‘Frailty’ and Deterioration in Elderly Persons

What is it to be ‘elderly’? Arguably, the physical and social deteriorations that have been central to sections 3.1. and 3.2. are the very definition of ‘ageing’; similarly, such deteriorations should, perhaps, encapsulate the concept of ‘elderly’, rather than an arbitrary chronological number.

One means by which these deteriorations may be described is through the notion of *frailty*: “increased vulnerability to stressors due to impairments in multiple, inter-related systems that lead to decline in homeostatic reserve and resiliency” (Bergman et al., 2007, 731-732). By turning to an enactivist viewpoint, one can, once more, bring out the latent social impact of this description. That is, there is an accompanying *social frailty*: decline in social homeostatic reserve and resiliency. Here, ‘social homeostasis’ is regulation of self-identity in the face of social perturbations, in a similar explanatory vein by which *autopoiesis* entails self-regulation of a discernible systemic unity in face of environmental perturbations (Jonas, 1966). Thus, as one becomes more frail, which is an inevitable consequence of ageing (notwithstanding the variation in *when* this occurs for any given individual), one’s capacity for regulation of self-identity is less robustly sustained against ‘social perturbations’. In other words, as one ages and grows more frail, the myriad social nuances that are navigated within daily interactions are more prone to disrupting one’s self-identity. This is exemplified by the ‘submissive’ roles that elderly persons frequently adopt within social interactions, as described in section 3.2., and the decline in oneself as a ‘bodily power’ for social engagement (and one’s self-awareness as such), as described in section 3.1..

Crucially, once one conceptualises the ontology of ‘elderly’ as entailing frailty,

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5 In keeping with section 1, the claim is not that *all* elderly persons will experience difficulty in impartially contributing to the distributive rhythm of interactions (nor, conversely, will all younger adults seamlessly contribute to the maintenance of such rhythms). However, due to the natural deteriorations of ageing, such experiences are inevitably more common for the elderly population.

6 “[A] finely tuned coordination of movements, rhythmic synchrony and mirroring of affective expressions” (Fuchs and De Jaegher, 2009, p. 478).

consequences surrounding mental health are primed. As has been touched upon, issues such as loss of bodily power (and awareness of this), social submission and inability to maintain social rhythmic consonance can lead to lack of self-confidence, lack of self-motivation, and harmful ‘participatory’ cycles of regulation in which one’s very sense of self is questioned and disrupted (Ratcliffe, 2014). In virtue of an enactive perspective on elderliness, an explanatory framework thus emerges that accounts, in part, for the prevalence of depression (Zebede et al., 2021; Wilkinson et al., 2018), isolation (Findlay, 2003), anxiety and affective disorders amongst the elderly population (Andreas et al., 2018).

By drawing on the paradigm of enactivism, one is, therefore, capable of delivering an ontology of ‘elderly’ that avoids chronology-based ageism by instead focusing on decline in (individualistic and social) homeostasis, accompanied by explanations of the impact on agential and social capabilities (e.g. autonomy, relatedness and affective counterparts) that are central to negative afflictions of wellbeing (Vansteenkiste and Ryan, 2013; Watson et al., 1988).

#### 4. To age is to suffer?

Across section 3., I have outlined the manner in which an enactivist outlook on ageing can yield novel insights into the subjective and intersubjective experience of elderly persons, inclusive of an ontological backdrop to such experience. As the focus of these insights has been the various ways in which decline in physical and social capabilities may be expounded, one may rightfully fear that ageing is an inescapably negative process. However, this is not necessarily the case.

Whilst it is true that physical decline and its social consequences are, ultimately, unavoidable, one need not yield to the potentiated negative cycles that have been discussed. As natural physical deterioration is the first domino for much of the negativity that can occur in later life, it is, first and foremost, the body that should be targeted in the habitual and therapeutic protection of one’s wellbeing. What’s more, with embodiment being one of the core features of enactivism, culminating in the autonomous experience of sense-making, preservation of one’s physical body is, simultaneously, preservation of a key feature of one’s cognition, therein directly impacting one’s mental wellbeing. This focus on embodiment is in keeping with current trends from across healthcare, neuroscientific, psychotherapeutic and lifestyle research. For example, dance therapy (Hwang and Braun, 2015), Tai Chi (Leung et al., 2022), resistance training (Antoniak and Grieg, 2017) and exercise-based video-gaming (Taylor et al., 2018) have all been shown to contribute to healthy ageing in the elderly population. Whilst there are nuances unique to each of these activities, there is a common thread that connects them: the body is centralised as a conduit for overall wellbeing.

As an example of this, consider the movement-based practice of Tai Chi, which has been a long-standing pastime of elderly persons across parts of Asia, particularly China (Birdee et al., 2013), and has growing prevalence in the Western world (Barnes et al., 2008). Through its attention to flowing movements that aim at static and dynamic bodily postures, accompanied by structured breathing, Tai Chi is inherently multi-modal and enhances mind-body self-awareness. It has been shown to have a wide range of physical (Hall et al., 2017; Wang, Y. et al., 2022; Yeh et al., 2009) and mental health benefits (Jiang et al., 2022; Wang, C. et al., 2010; Wang, F. et al., 2014). From a broad viewpoint, such benefits are in keeping with those associated with most forms of exercise across the spectrum of adulthood, such as improved physical capacity, positive activation of neurotrophic factors (Coelho et al., 2013), and increased neurotransmitter activity (Lin & Kuo, 2013) – particularly dopamine sensitivity (Juarez and Samanez-Larkin, 2019). However, the connection between such benefits and Tai Chi can be deepened and refined from an enactive perspective. Firstly, as enactivism extols the view that the body has a *constitutive* role in cognitive processing (e.g. Goldin-Meadow, 2003; Noe,

2009)<sup>7</sup>, the physical benefits that Tai Chi yields are, simultaneously, integral cognitive benefits. Indeed, empirical evidence suggests that postural configurations of the kind involved in Tai Chi influence – or, for the enactivist, *constitute* – cognitive performances related to persistence (Riskind and Gotay, 1982), assertiveness (Carney, Cuddy and Yap, 2015) and creativity (Kwon and Kim, 2015). The deliberate training of the body therefore inculcates cognitive transformations that can be directly conducive to enhanced wellbeing. Secondly, the inherent interrelatedness of body and mind extends to encompass cognitive-emotional processes, such that the postural configurations of Tai Chi can also be viewed as constituting the regulation of positive affect (Osypiuk, Thompson and Wayne, 2018). Beyond analytical cognitive processing, the body training of Tai Chi thereby also includes affective amelioration. In this manner, Tai Chi – and associated movement-based practices such as dance therapy, resistance training and exercise-based video-gaming – are shown, by focusing on the body, to be capable of cultivating positive cognitive-emotional processes.

Complementary to this is the *mindful* attention that is a necessary component of the aforementioned movement-based practices. Through deliberate consideration of bodily movements, which is essential in Tai Chi (or dance, or resistance training), one finds that one engenders the kind of directed attention to one's own physical presence that is an essential component of *mindfulness* (Williams and Penman, 2011). In so doing, one can reduce stress and anxiety (Siegel, 2007), as well as enjoying physical benefits such as improved functioning of the immune system and increasing levels of the enzyme telomerase, which is a predictor of long-term cell viability and which typically decreases with age (Jacobs et al., 2011). In other words, the simple physical movements and attentiveness that are inherent to practices such as Tai Chi involve the mind-body *enactment* of restorative and health-boosting customs.

Yet again, we thus find that an enactive framework explicates the safeguarding of wellbeing due to its centralisation of the mind-constituting body as the meaning-creating locus of autonomy.

In our increasingly aged world, it seems that enactivism not only provides a theoretical framework that innovatively contributes to explanations of negative experiences that are common to elderly persons, but also delivers an interventionist paradigm by which such afflictions can be redressed. It is through such theorisation – and the interdisciplinary spandrels that it encourages – that the 'ripeness' of old age can be globally preserved and enhanced.

Throughout this paper, it has been argued that an enactive perspective provides a novel framework for our understanding of ageing, through which common afflictions of old age can be coherently explicated. This framework rests on analysing the issue of ageing from the enactive foundation of the (inter-)activity of self-sustained, emergent and autonomous sense-making agents. When the sense-making agents in question are elderly persons, it becomes apparent that there is a trend for specific aspects of worldly engagement to arise with ever-increasing frequency as one ages. From a subjective perspective, this includes decline in one's bodily power to act and the implicit self-awareness of such power. From an intersubjective perspective, it encompasses social submission and rhythmic dissonance within interactions.

Ontologically, the foundation for such theorisation is the conceptualisation of 'elderly' as being encapsulated by decline in homeostatic existence. Once more, it is from an enactivist's viewpoint that this can be satisfactorily explicated, drawing on the concept of *autopoiesis* to

## 5. Conclusion

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<sup>7</sup> This aligns with others strands of '4E cognition', for which cognitive processes are 'embodied', 'embedded', 'extended' and 'enactive' (see Ward and Stapleton, 2012 for an overview).

introduce the notion of ‘social homeostasis’ as regulation of self-identity in the face of social perturbations.

Whilst the disruption of social homeostasis is an inevitable consequence of the natural process of ageing, the final section addresses the descending arrow of time. Although ‘time waits for no one’, ageing need not be a degenerative slide: through body-focused movement therapies, one can preserve positive cognitive-emotional balance. Indeed, with appropriate socio-cultural adjustments and an appreciation of wellness-enhancing practices, old age can be transformed from an experiential nadir to a phase of wisdom, serenity, camaraderie, reverence and vivacity.

#### REFERENCES

- Antoniak, A., & Greig, C. (2017). The effect of combined resistance exercise training and vitamin D3 supplementation on musculoskeletal health and function in older adults. *BMJ Open*, 7(7);
- Barnes, P., Bloom, B., & Nahin, R. (2008). Complementary and alternative medicine use among adults and children: United States, 2007. *Natl Health Stat Report*, 12, 1-23;
- Bergman, H., Ferrucci, L., Guralnik, J., Hogan, D., Hummel, S., Karunanathan, S., & Wolfson, C. (2007). Frailty: An Emerging Research and Clinical Paradigm—Issues and Controversies. *The Journals of Gerontology: Series A*, 62(7), 731-737;
- Birdee, G., Cai, H., Xiang, Y., Yang, G., & Li, H. (2013). T'ai chi as exercise among middle-aged and elderly Chinese in urban China. *J Altern Complement Med*, 19, 550-557;
- Carney, D., Cuddy, A., & Yap, A. (2015). Review and summary of research on the embodied effects of expansive (vs. contractive) nonverbal displays. *Psychol. Sci.*, 26, 657-663. doi: 10.1177/0956797614566855;
- Clark, A. (2001). *Mindware*. Oxford University Press;
- Coelho, F., Gobbi, S., Andreatto, C., Corazza, D., Pedroso, R., & Santos-Galduróz, R. (2013). Physical exercise modulates peripheral levels of brain-derived neurotrophic factor (BDNF): a systematic review of experimental studies in the elderly. *Arch. Gerontol. Geriatr.*, 56, 10-15. doi: 10.1016/j.archger.2012.06.003;
- Damasio, A. (2010). *Self Comes to Mind: Constructing the Conscious Brain*. Vintage;
- De Jaegher, H., & Di Paolo, E. (2007). Participatory sense-making: an enactive approach to social cognition. *Phenomenology and the Cognitive Sciences*, 6, 485-507;
- Di Paolo, E., Rohde, M., & De Jaegher, H. (2010). Horizons for the enactive mind: Values, social interaction, and play. In J. Stewart, O. Gapenne, & E. Di Paolo (Eds.), *Enaction: Towards a New Paradigm for Cognitive Science*. MIT Press;
- Dreyfus, H. (2007). Response to McDowell. *Inquiry*, 50(4), 371-377;
- Dreyfus, H. (2012). The Mystery of the Background qua Background. In Z. Radman (Ed.), *Knowing Without Thinking: mind, action, cognition, and the phenomenon of the background*. Palgrave MacMillan, 1-12;
- Fuchs, T., & De Jaegher, H. (2009). Enactive Intersubjectivity: Participatory Sense-Making and Mutual Incorporation. *Phenomenology and the Cognitive Sciences*, 8(4), 465-486;
- Gallagher, S. (2005). *How the Body Shapes the Mind*. Oxford University Press;
- Gallese, V., & Sinigaglia, C. (2011). How the Body in Action Shapes the Self. *Journal of Consciousness Studies*, 18(7-8), 117-143;
- Goldin-Meadow, S. (2003). *Hearing Gesture: How Our Hands Help Us Think*. Harvard University Press;
- Goodwin, N., Sonola, L., Thiel, V., & Kodner, D. (2013). *Co-ordinated care for people with complex chronic conditions*. The King's Fund;
- Hall, A., Copesey, B., Richmond, H., Thompson, J., Ferreira, M., Latimer, J., & Maher, C.G. (2017).

- Effectiveness of Tai Chi for chronic musculoskeletal pain conditions: updated systematic review and meta-analysis. *Phys Ther.*, 97(2), 227-238;
- Heidegger, M. (1927/1972). *Being and Time* (J. Macquarrie & E. Robinson, Trans.). Blackwell;
- Hwang, P., & Braun, K. (2015). The Effectiveness of Dance Interventions to Improve Older Adults' Health: A Systematic Literature Review. *Altern Ther Health Med.*, 21(5), 64-70;
- Jacobs, T., Epel, E., Lin, J., Blackburn, E., Wolkowitz, O., & Bridwell, D. et al. (2011). Intensive meditation training, immune cell telomerase activity, and psychological mediators. *Psychoneuroendocrinology*, 36(5), 664-681;
- Jonas, H. (1966/2001). *The Phenomenon of Life: Toward a Philosophical Biology*. University of Chicago Press;
- Juarez, E., & Samanez-Larkin, G. (2019). Exercise, Dopamine, and Cognition in Older Age. *Trends in Cognitive Sciences*, 23(12), 986-988;
- Kingston, A., Robinson, L., Booth, H., Knapp, M., & Jagger, C. (2018). MODEM project. Projections of multi-morbidity in the older population in England to 2035: estimates from the Population Ageing and Care Simulation (PACSim) model. *Age and Ageing*, 47(3), 374-380. doi: 10.1093/ageing/afx201;
- Kraaij, V., Arensman, E., & Spinhoven, P. (2002). Negative Life Events and Depression in Elderly Persons: A Meta-Analysis. *The Journals of Gerontology: Series B*, 57(1), 87-94;
- Kwon, J., & Kim, S. (2015). The effect of posture on stress and self-esteem: comparing contractive and neutral postures. In J. Rotschedl & K. Cermakova (Eds.), *Proceedings of the 18th International Academic Conference*, 397-404. International Institute of Social and Economic Sciences;
- Leung, L., Tam, H., & Ho, J. (2022). Effectiveness of Tai Chi on older adults: A systematic review of systematic reviews with re-meta-analysis. *Archives of Gerontology and Geriatrics*, 103, 104796;
- Limanowski, J., & Friston, K. (2018). Seeing the Dark: Grounding Phenomenal Transparency and Opacity in Precision Estimation for Active Inference. *Frontiers in Psychology*, 9;
- Lin, T., & Kuo, Y. (2013). Exercise benefits brain function: the monoamine connection. *Brain Sciences*, 3(1), 39-53. doi: 10.3390/brainsci3010039;
- Maturana, H., & Varela, F. (1980). *Autopoiesis and Cognition: the Realization of the Living*. Reidel Publishing;
- Noë, A. (2009). *Out of Our Heads: Why You Are Not Your Brain*. Hill & Wang;
- Orth, U., Trzesniewski, K., & Robins, R. (2010). Self-Esteem Development From Young Adulthood to Old Age: A Cohort-Sequential Longitudinal Study. *Journal of Personality and Social Psychology*, 98(4), 645-658;
- Osypiuk, K., Thompson, E., & Wayne, P. (2018). Can Tai Chi and Qigong Postures Shape Our Mood? Toward an Embodied Cognition Framework for Mind-Body Research. *Front. Hum. Neurosci.*, 12, 174. doi: 10.3389/fnhum.2018.00174;
- Ratcliffe, M. (2014). *Experiences of Depression: a study in phenomenology*. Oxford University Press;
- Riskind, J., & Gotay, C. (1982). Physical posture: could it have regulatory or feedback effects on motivation and emotion? *Motiv. Emot.*, 6, 273-298. doi: 10.1007/BF00992249;
- Siegel, D. (2007). *The mindful brain: Reflection and attunement in the cultivation of well-being*. W.W. Norton & Company;
- Tang, B., Li, Z., Hu, S., & Xiong, J. (2022). Economic Implications of Health Care Burden for Elderly Population. *INQUIRY*, 59. doi:10.1177/00469580221121511;
- Taylor, L., Kerse, N., Frakking, T., & Maddison, R. (2018). Active video games for improving physical performance measures in older people: A meta-analysis. *Journal of Geriatric Physical Therapy*, 41(2), 108-123;

- United Nations Department of Economic and Social Affairs (UN DESA). (2019). *World Population Ageing 2019: Highlights* (ST/ESA/SER.A/430);
- Varela, F., Thompson, E., & Rosch, E. (1991). *The Embodied Mind: Cognitive Science and Human Experience*. MIT Press;
- Wang, C., Bannuru, R., Ramel, J., Kupelnick, B., Scott, T., & Schmid, C. (2010). Tai Chi on psychological well-being: Systematic review and meta-analysis. *BMC Complementary and Alternative Medicine*, 10(23). <https://doi.org/10.1186/1472-6882-10-23>;
- Wang, F., Lee, E., Wu, T., Benson, H., & Fricchione, G. (2014). The effects of Tai Chi on depression, anxiety, and psychological well-being: A systematic review and meta-analysis. *International Journal of Behavioral Medicine*, 21, 605-617. <https://doi.org/10.1007/s12529-013-9351-9>;
- Ward, D., & Stapleton, M. (2012). 'Es are good': Cognition as enacted, embodied, embedded, affective, and extended. In F. Paglieri (Ed.), *Consciousness in Interaction: The Role of the Natural and Social Context in Shaping Consciousness* (pp. 89-104). John Benjamins Publishing;
- Williams, M., & Penman, D. (2011). *Mindfulness: The Eight-Week Meditation Programme for a Frantic World*. Piatkus;
- Yeh, G., Wang, C., Wayne, P., & Phillips, R. (2009). Tai Chi exercise for patients with cardiovascular conditions and risk factors: A systematic review. *Journal of Cardiopulmonary Rehabilitation and Prevention*, 29, 152-160.