Bioethical Inquiry
DOI 10.1007/s11673-015-9645-5

ORIGINAL RESEARCH

The Tortoise Transformation as a Prospect for Life Extension

Timothy F. Murphy

Received: 3 October 2013 / Accepted: 1 February 2015

Abstract The value of extending the human lifespan remains a key philosophical debate in bioethics. In building a case against the extension of the species-typical human life, Nicolas Agar considers the prospect of transforming human beings near the end of their lives into Galapagos tortoises, which would then live on decades longer. A central question at stake in this transformation is the persistence of human consciousness as a condition of the value of the transformation. Agar entertains the idea that consciousness could persist in some measure, but he thinks little is to be gained from the transformation because the experiences available to tortoises pale in comparison to those available to human beings. Moreover, he thinks persisting human consciousness and values would degrade over time, being remade by tortoise needs and environment. The value available in the transformation would not, then, make the additional years of life desirable. Agar's account does not, however, dispose of the tortoise transformation as a defensible preference. Some people might still want this kind of transformation for symbolic reasons, but it would probably be better that no human consciousness persist, since that consciousness would be inexpressible as such. Even so, it is not irrational to prefer various kinds of lifespan extension even if they involve significant modifications to human consciousness and values.

T. F. Murphy (✉)
Department of Medical Education m/c 591, 808 S. Wood St.,
University of Illinois College of Medicine at Chicago,
Chicago, IL 60612-7309, USA
e-mail: tmurphy@uic.edu

Keywords Ageing · Ethics · Life extension · Senescence · Tortoises

Nicholas Agar paints a dispiriting picture of the effects of extending the human lifespan significantly through techniques conferring negligible senescence. Should we choose those hypothetical techniques, Agar imagines that the terms of extended life would undercut the very experiences that make existence rewarding. Among other things, Agar argues that radically longer-living people would become highly risk-aversive and be unwilling to face the risks of going out to a movie let alone the risks of mountain climbing. These risk-aversive effects would be all the more pronounced if life extension techniques offered an ever-receding horizon of added years, namely if human beings could always and at any point turn to biogenetic modifications to add more years of life, which is exactly what some advocates of life extension are hoping for. The current framework by which we derive meaning from the experiences in our lives is such, Agar says, that we may rationally assert a preference for the lifespan we now have instead of choosing significantly—even vastly longer—lives (Agar 2010).

Along the way to those conclusions, Agar considers the prospect of a human-to-tortoise transformation to show exactly how the experiences of life matter, regardless of the years of life gained by life extension. Suppose that biomedicine could offer people near the end of their human years the option of transformation into a Galapagos tortoise that would live on for another twenty to seventy years. Agar is doubtful that people would opt

Published online: 02 July 2015

for this kind of transformation because the life that would follow would not offer the kinds of experiences that now make our lives valuable (Agar 2010). This conclusion is arguable, given what a tortoise transformation might mean to some people. For example, most people in the United States die in hospitals, at the end stage of chronic diseases, *no matter* that most say they would prefer to die under other circumstances, namely at home and without aggressive medical interventions (Morin 1997). Given the chance to avoid the standard U.S. death, some people might accept transformation into a tortoise in order to live several more decades and—not incidentally—die under terms of their own choosing. I will make the case here that we could rationally assert a preference for a life-extending tortoise transformation, even though this choice is subject to important caveats concerning the persistence of human consciousness, as I will show below. Ultimately, however, the likely terms of a tortoise transformation help to show why people could rationally prefer much longer lives as a matter of principle, no matter that the terms of that life would change profoundly.

Does Human Consciousness Persist Across the Tortoise Transformation?

One key question in the value of the tortoise transformation is of a metaphysical nature: would a human consciousness persist in any way? Agar makes a few gestures to indicate that consciousness *would* persist: "Volunteers for the [transformation] procedure would remain conscious through the multiple genetic and surgical procedures to ensure the preservation of their identities" (Agar 2010, 111). He otherwise says very little about the matter. For the sake of the discussion, let me consider two mutually exclusive outcomes in turn: (1) that some degree of human consciousness persists after the conclusion of the tortoise transformation and (2) that no measure of specifically human consciousness persists. Let's call the transformed beings "tortans." It turns out, as I will show, that the desirability of a tortan existence does not depend entirely on the persistence of human consciousness. In fact, the persistence of some measure of human consciousness would probably be a good reason to reject the tortoise transformation as a means of life extension, though not for the reasons Agar suggests.

The Persistence of Human Consciousness

As one possible outcome of the tortoise transformation, let's suppose that human consciousness persists even as its biological substrate changes from human to tortoise. In what way might human consciousness persist? Perhaps tortans would retain a hybrid awareness that somehow fully balances past human consciousness alongside current tortoise sentience. Or perhaps the residue of human consciousness is only partial, consisting of key memories or cognitive powers at the core of our identities. I expect that for some people the persistence of human consciousness in ways like these would be the very point of a tortoise transformation. If what one wants out of a tortoise transformation is the experience of continuing survival, one would presumably want to have some conscious sense that one's tortan existence is continuous with one's human existence and that one has thereby evaded imminent death.

For his part, Agar does not expect much value to flow from transformations of this kind since he predicts that any surviving consciousness would necessarily change over time. He says: "Transformation into a tortoise would involve substantial cognitive diminishment with obvious consequences for our values" (Agar 2010, 112). I take him to mean here that human consciousness and morality would degrade over time, to the point that they could hardly resemble those traits in human beings. If so, anyone expecting to "live on" in tortoise form would be confounded by their radically altered interests and values. The tortan life would eventually undercut anything of distinctively human character, so why bother?

In an important way, Agar's speculations are overly optimistic about the value of persisting human consciousness. Despite the tortoise transformation being an entirely hypothetical exercise, it still runs into a conceptual difficulty, namely the possibility of a human consciousness experiencing itself and expressing itself in a non-human substrate. It is unlikely that a specifically human consciousness—one capable of knowing one's self as human in the past or knowing oneself to be in some way human after the tortoise transformation—could persist in a tortan in any recognizable way, from either a first-person or third-person point of view. If we think of an animal's sentience as the expression of its underlying neurology in relation to its environment, it is unclear how human sentience could continue to exist in a reptile that has no neurological basis for such a

consciousness in kind or a biological need for it. In a tortoise transformation, we would almost certainly lose whatever features of human consciousness depend on a *continuing* sensory reinforcement from a human (and not reptilian) body, among other things. Or again, we would lose whatever features of consciousness depend on interactions with other human beings. This is all by way of saying that it is doubtful that reptilian neurology would be capable of sustaining an individuated human consciousness, as against submerging it into its own sentience.

I suppose one could argue that if we could succeed in transforming a human body into a tortoise, we could also have the ability to carry out the modifications necessary to sustain a specifically human consciousness, or some measure of it. Even if we make this concession, there are reasons to be sceptical that the forms of consciousness that persisted after the transformation would prove of value since any such human consciousness would probably be experienced as a locked-in state. Tortans would have no means to express that consciousness, perhaps even to themselves, since all experiences would have to be mediated by tortoise biology. One could never touch a human body in the ways one had before nor be touched as human. One could never talk to another human being. One could never again see the sun the way a human sees it. Through the liberty afforded by fiction, Franz Kafka could attribute human consciousness, perceptions, and anxieties to Gregor Samsa after his transformation into a hard-shelled, monstrous, and verminous bug. Kafka was therefore free to harmonize sentience, consciousness, and body parts in any way that suited his story. But on the terms Agar sets out, tortans would be locked off from experiences as human, except possibly in memory. In such a state, tortans might find it intolerable never again to express oneself as a human being or to perceive as a human. Tortans might well come to regret the transformation that was originally valued as a means of life-prolongation. To avoid this outcome, it might be better if no human consciousness persisted in a tortoise transformation, so that one would not experience the degradation and loss of human capacities that would necessarily accompany tortan existence.

No Residue of Human Consciousness

The loss of a specifically human consciousness in the tortoise transformation would protect completely against the risk of any locked-in state. One would not, either, experience alienation from one's prior human values or be witness to their degradation. But if the tortoise transformation involved no persistence of human consciousness, would anyone want it? Maybe, and not only because human beings can be defiantly idiosyncratic in their choices.

People might want a tortan future for a variety of reasons. Some people at the onset of a debilitating disorder—such as amyotrophic lateral sclerosis (ALS)—might want the transformation as a way of avoiding the downward spiral of that disease without bringing one's life to an end by suicide. Or perhaps some people might simply like the idea of living on past their allotted human years, no matter that they might have no experience of their persistence as an individual once human and now tortan; even a transformation like this might blunt the anguish over one's impending death. The transformation could also be interpreted as a way to lift the effects of death from family and friends. Rather than carry out a funeral, family and friends could release a tortan into the ocean and wish it well in its journey ahead. One could even understand the transformation as a contribution to the welfare of the endangered Galapagos species! This kind of life-extension would not either trigger many of the social problems that some commentators foresee in extending lives in ways that—according to them—only pile on more socially burdensome years of human life: depressed birth rates, increased damage to the environment, disruptions of intergenerational relationships, blocked employment opportunities for the young, and a sapping of the vitality of life in general (Callahan 2012; Presidential Commission on Bioethics 2003).

Even if people understood that a tortoise transformation would end their lives as they know them, and extinguish their consciousness, some might still want the change as a way of asserting their values. The idea of one's life persisting in other forms—as an animating force continuous with one's own, even without a conscious or experiential connection to it—has precedent in certain religious and philosophical beliefs of metempsychosis (or transmigration). The prospect of a tortoise transformation might count simply as an opportunity for self-directed transmigration! For some people, therefore, the transformation would be desirable for symbolic purposes in postponing death, for example, as a symbolic counter-narrative to the implacable outcome otherwise scripted by human biology. On this understanding, people would not live on in a way that presupposes

that their identity also lives on. In any case, choosing to believe that one "lives on" in some sense through a tortoise transformation has as much intelligibility to it as beliefs that one can survive death in other ways that do not involve the persistence of a self-conscious identity.

Some Additional Ruminations About Species-to-Species Transformations

Since his is an entirely hypothetical exercise, Agar is not obliged to present many details of the tortoise transformation, and he does not. The exercise does, however, open the door to speculation about what a science able to effect that kind of transformation might also be able to do. If clinicians could carry out a transformation from human to tortoise, would the powers of science really be confined to that transformation alone, or would other kinds of transformations not also be possible? Not only do certain tortoises live longer lives than human beings, some whales, saltwater clams, tube worms, and sea urchins typically live much longer than human beings as well. Some plants can live thousands of years. It could be that some peculiarity of scientific history would leave researchers *only* able to transform human beings into tortoises, but assuming that species-to-species transformations were understood as a matter of general biological principles, I see no reason why other transformations would remain beyond reach. Human beings might have a whole bestiary of choices ahead of them as they choose to modify themselves in the name of longer lives.

What's more, if clinicians could transform human beings into tortoises, it would not be surprising if they could also carry out transformations in the other direction. The state of science presupposed by a human-to-tortoise transformation would almost certainly have the power to rescue human beings from disease *without* having to transform them into other animals. Why would it be necessarily easier as a technique of biomedical management to transform an entire human being into a tortoise rather than simply generate replacement organs and tissues for use by someone who needs them? For example, the yawning need in transplantation medicine for human kidneys might be fully resolved if clinicians could routinely turn tortoise kidneys into human kidneys. A development like that would offer significant means of extending individual lives but maybe also extending the lifespan as such, if deteriorating organs and tissues could be replaced indefinitely. This is all to say that the science implied by human-to-tortoise transformations would almost necessarily presuppose collateral developments that could offer a variety of options in life-extension, both in an individual lifespan and in the species-typical lifespan.

It is also worth notice that Agar's discussion goes forward on the assumption that people would seek a tortoise transformation only at the point at which disease and disorder put death imminently on the horizon. This is not an unreasonable assumption, but then again who knows? Perhaps a committed and healthy environmentalist might wish to modify herself into a tortoise for symbolic reasons at a comparatively young age. Such a transformation might have political resonance and help advance environmental awareness, especially the first few times it happened. Agar further assumes that the transformation would end with the resultant tortoise as the *same age* as the original human and that the tortoise would live on only the number of years allotted to an animal of the human's age. Once we are so far down the road of speculation that we could carry out tortoise transformations, it is unclear why we should make this assumption. Why not assume in a transformation this profound that the "new" organism could be younger—by reason of its newly formed organs and tissues—than the antecedent organism? After all, any tortoise organs and tissues will have to be new as the kinds of things they are. Regardless of the age of the antecedent organism, the expected future lifespan of a newly formed tortoise could be considerably longer if its biological clock were reset by the transformation, subject, of course, to all the vagaries of life in the ocean. The prospect of these additional years might be persuasive as yet another reason to seek out a tortoise transformation.

Conclusions

For Nicolas Agar, the prospect of continuing human consciousness seems to be part of the initial attraction of a human-to-tortoise transformation. Why would anyone want to live on that way without a continuing self-conscious identity? Agar tries to show, however, that any human consciousness that persisted under these circumstances would prove unrewarding. He thinks the repetitious nature of tortoise days, changes in one's

values wrought by one's needs as a tortoise, and degradation of human cognitive powers would work against the value of tortan life, no matter that tortans outlived their human antecedents. Agar does allow that there might be some valuable experiences available to a human transformed into a tortoise, but no one has, of course, any way of knowing whether that would be possible, and no tortans could communicate that outcome after their transformation. At face value, it does not appear that the experiences available to a tortoise would be sufficiently valuable to override the losses incurred in the surrender of human consciousness. In these ways, the tortoise transformation is consistent with Agar's general case against radical life extension: its terms diminish its value.

In fact, the persistence of human consciousness in a tortan would probably be even worse in its effects than Agar allows. For one thing, it might be startling after the transformation to experience one's self only ever again as a tortoise and never again as a human. It might be inexpressibly depressing or even maddening to experience one's humanity only as an historical artefact, devoid of even the possibility of contemporaneous human experiences and relationships. That's to assume that human consciousness could, in fact, persist. Given the dependence of sentience on an organism's neurology, it is unlikely that human consciousness could persist in any meaningful way. The extinction of specifically human consciousness—and, thereby, identity—is the far more likely outcome of a tortan transformation.

Even so, it does not follow that a tortoise transformation would be unattractive to all people hoping for extensions of their lives. Even if no human consciousness persisted after the tortoise transformation, some people might find the option valuable as an expression of their values. In this regard, it is perhaps worth pointing out that life without self-consciousness—let alone an individuated self-consciousness—has precedent in the life of *every* human being, namely in the period of embryonic and fetal development. The value of a tortan life could be interpreted—and embraced—as a return to that kind of prior existence, without necessarily thinking one's life per se is thereby extinguished.

I have belaboured Agar's tortoise exercise because it represents a boundary case by which to measure the value of human lifespan extension. If tortoise transformations are defensible as a matter of principle, then human lifespan extension of other kinds—such as modifications conferring negligible senescence—seem defensible as well, despite the objections Agar and others raise (Callahan 2013; Kass 2004). As mentioned, Agar imagines human beings who enjoy negligible senescence as wanting lives walled off from risk as far as possible and as undesirable for that reason. No doubt, a Roman centurion would look on the life of a contemporary university professor as pale and uneventful in the extreme, but academic life has value enough to those of us in it. In any case, we should not suppose that longer-lived people—even much longer-lived people—will not find projects and accomplishments equal to their years. Neither should we suppose that our existing form of consciousness—and its concomitant values—must remain the benchmark of all value in the futures chosen by human beings for ourselves and our descendants.

References

Agar, N. 2010. *Humanity's end: Why we should reject radical enhancement*. Cambridge: The MIT Press.

Callahan, D. 2012. *In search of the good: A life in bioethics*. Cambridge: The MIT Press.

Callahan, D. 2013. On dying after your time. *The New York Times*, November 30. www.nytimes.com/2013/12/01/opinion/sunday/on-dying-after-your-time.html?_r=0. Accessed June 11, 2015.

Kass, L. 2004. *Life, liberty, and the defense of dignity*. San Francisco: Encounter Books.

Morin, R. 1997. Last requests: How we want to die. *The Washington Post*, December 15. www.washingtonpost.com/wp-srv/politics/polls/wat/archives/wat121597.html. Accessed June 11, 2015.

Presidential Commission on Bioethics. 2003. Beyond therapy: Biotechnology and the pursuit of happiness. Washington, DC: Presidential Commission on Bioethics. https://bioethicsarchive.georgetown.edu/pcbe/reports/beyondtherapy/index.html. Accessed June 11, 2015.