The Rat Problem for the Capabilities Approach[1]

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Abstract

This Chapter examines the tension between Nussbaum's statements about rats and the commitments of the Capabilities Approach. The "Rat Problem" emerges from rats being simultaneously costly and undesirable yet morally significant as subjects of justice. While Nussbaum advocates extending wonder, compassion, and justice to all sentient creatures, rats often appear as exceptions. I argue that the category of "pest" is incompatible with the Capabilities Approach, especially its emphasis on wonder, and that conventional pest control methods violate rats' fundamental capabilities. Rather than accepting human-rat conflicts as inevitable tragedies, I propose reframing the problem as tractable through urban infrastructure reforms and integrated pest management. By addressing structural factors that create conflicts, we can move from extermination-based approaches toward arrangements that respect both human flourishing and rat capabilities.

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> And a mouse is miracle enough to stagger sextillions of infidels.
> -- Walt Whitman, "Song of myself" (1892)

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Rats scurry in the hallways and offices of philosophers' departments and occasionally appear in the pages of their books and articles—the lab rat in animal ethics, the mirror neurons of empathetic rats, Thomas Nagel's (1971) mouse, whose life cannot be absurd. Peter Vallentyne (2005) and Shelly Kagan (2019) have lamented that our taking rodent welfare to matter as much as ours entails a massive shift in resources to improve their lives. Rats and mice play various roles. Sometimes, they are like us: they laugh when tickled and act in empathetic ways toward their conspecifics; they are valuable models for biomedical research; they are smart and destructive. Other times, they are very much unlike us: incapable of meaning or outsiders too numerous to be worthy of equal consideration.

Rats are notoriously recalcitrant. They invade, scurry, scuttle, squeak, steal, infest, contaminate, and multiply, all those things too quickly for us, too close for comfort. They are hard to control, hard to catch, and hard to individualize. They are numerous. Setting aside their domesticated counterpart, the very carefully bred lab rats and pet rats, the common rats found in our streets, sewers, homes, and restaurants are *undesirable*.[2] However, as inconvenient as they are, rats are here to stay and are very adaptable. Aside from Antarctica and, more controversially, the Canadian province of Alberta, rats are found virtually everywhere on Earth.

In this chapter, I lay out what could be a problem for Martha Nussbaum's view of rats in light of her application of the Capabilities Approach to nonhuman animals (2006; 2023), namely, that protecting the capabilities of rats leads to seemingly intractable conflicts with human capabilities. I identify the sources of the problem and, taking the cue from her analysis of tragic conflicts or dilemmas, I look forward to forms of institutional design that could mitigate what I call the *Rat Problem*. Section 1 sets up the Problem. Section 2 surveys Nussbaum's positions on animals, emotions, and the harm of death. Section 3 frames the Problem as a tragic conflict but highlights the limits of the framing. Finally, Section 4 reviews potential solutions to conflicts and envisions ways of coexisting with rats.

[2] My focus is on wild (urban and rural) rats, especially the most commonly found species, the Brown rat (*Rattus norvegicus*). Under "wild rats", I include both animals found outside (in streets, sewers, and fields) and inside (in the house) but not pet rats or lab rats (domesticated strains of Brown rats). However, my remarks also apply to the Black rat (*Rattus rattus*) and the House mouse (*Mus musculus*).

1. The Rat Problem

To understand why rats pose such a challenge to the Capabilities Approach, we must first examine the scope and nature of human-rat conflicts. Rats thrive everywhere, but they are especially adapted to urban environments, exploiting resources where human population density is high. Due to increased urbanization and climate change, rat populations are expected to keep growing in cities (Richardson et al. 2025). We can split the costs into three categories.

The most significant are the *economic costs*. Rats, or rat infestations, cause property and infrastructure damage (to building structures, foundations, wiring, pipes, and insulation) through burrowing and gnawing. Annual costs comprise damages and management (expenditures to prevent or mitigate impacts). Rodents are responsible for annual losses amounting to many billions of dollars, US$27 billion in the U.S. alone (Pimentel et al. 2007; Diagne et al. 2023). The most significant part of those costs is by far agricultural losses in fields and stored crops (it is commonly estimated that up to 20 percent of the world's food supply is consumed or contaminated by rats) (Ehrlich et al. 1993). The food service and hospitality industry also incurs significant losses from infestations.

The *health* costs, while smaller economically, are more psychologically salient. First, the agricultural losses contribute to food insecurity. Second, rats carry more than 50 zoonotic pathogens and parasites, causing (or acting as vectors for) diseases including leptospirosis, hantavirus pulmonary syndrome, murine typhus, and bubonic plague (Himsworth et al. 2013). Some people are allergic to rat droppings and dander. These threats lead to city governments and research institutions spending on public health monitoring and prevention programs (Lee et al. 2022a,b) Finally, the presence of rats can activate people's fears and anxieties and has been shown to have adverse effects on mental health, especially in low-income and underserved communities, which are already more susceptible to infestations due to aging infrastructure, negligent landlords, and lack of public investment (German & Latkin 2016; Murray et al. 2024; Byers et al. 2019).

The third category is *indirect costs*, from decreased property values to productivity losses to impacts on quality of life and use of public spaces. Environmental costs include rat-induced extinctions (e.g., on islands and in New Zealand and Australia) and collateral damage of rodenticides on non-target species, including rat predators such as owls, hawks,

coyotes, bobcats, and cougars: poisoned rats do not die instantly, and weakened, are more likely to be caught. Poison accumulates in the food web, killing the very creatures that exert pressure on rat populations… (Alagona 2022, 178)

In sum, rats are costly. Rats contribute to scientific and medical research and, to a lesser extent, to the pet industry, but these are not the rats I am concerned with. The economic output of the pet and pest control industries combined, is still outweighed by the total costs of our current approach. I will later address Nussbaum's view of benefit-cost analysis (BCA).

BCA gets a bad rap among philosophers (Anderson 1993; Nussbaum 2000). Critics could argue that if the Rat Problem is a *moral* one, we cannot reduce their (dis)value to costs and benefits. I agree with Nussbaum that the Rat Problem has many features of a tragic conflict, but BCA and the tragic approach need not be mutually exclusive, as I argue later. Some of the "obvious," non-tragic questions are pertinent and surprisingly tractable. While it is tempting, after a cursory look at the economic costs, to deem rats a lost cause, notice how I framed the calculus. Nowhere did I mention *rat utility*. However, once we consider their welfare too, things look more complicated, and this is where we may benefit from reconsidering the value of BCA.[3]

If rats matter, the stakes are enormous. There are hundreds of millions, if not billions, of them. Thus, if they are subjects of justice, we might commit ourselves to a massive redistributive shift in resources to secure an adequate level of opportunity for them to flourish. This is a version of the problem that troubled Vallentyne and Kagan. If they are subjects of justice, our approach to pest control is profoundly unjust. Common rodenticides, especially anticoagulants, are incredibly inhumane, causing days of agony and bleeding to death (Elmore et al. 2024). Millions of rodents are killed globally as pests every year, often using methods with worse welfare outcomes than those available for other species (Baker et al. 2022; Mason & Littin 2003).

[3] In what follows, I set aside the vexed question of interspecies welfare comparisons (Fischer 2024). Regardless, if we assume that rat welfare matters anywhere between 10% and 90% as much as human welfare, then it matters a great deal because there are so many of them, and many may have relatively low welfare. Even crude comparisons of welfare can deliver the verdict that rat welfare is a matter of justice.

The Rat Problem is that *rats are, by and large, costly and undesirable, but they are not morally ignorable. They are objects of revulsion and sources of conflict but also subjects of justice.*

These costs suggest that treating rats as mere pests is justified. However, the CA demands that we look beyond economic calculations to consider rats as subjects of justice. This creates a fundamental tension that I examine. The first question is whether rats can become objects of wonder, as this is the shift in attitude that Nussbaum's recent work instructs us to perform. The second question concerns Nussbaum's discussions of the harm of death. In Section 4, both questions will lead to practical considerations concerning rodenticides and urban infrastructure.

2. Nussbaum on rats: from disgust to fear… or wonder?

2.1 What is a pest?

What makes a rodent a "pest"? The white rat of the sanitized lab is valued instrumentally for its scientific role before being disposed of like a used glove. The pet rat or mouse is loved and protected, often for his or her own sake. Rats and mice invading our homes and offices are disvalued, scorned, and persecuted as "vermin". These treatments do not reflect variations in cognition, sentience, or other abilities. Despite minor biological differences, they remain essentially rats or mice, equally capable of affective, cognitive, and social complexity (Andrews & Monsó 2020; Bartal 2024).

If dignity inheres in the individual, then we should not deny some the dignity afforded to others because they live in a different setting or are used for different purposes. Different treatments are shaped and reinforced by institutions and social norms, from animal research regulations to urban sanitation policies to what counts as a legitimate pet. Different contexts orient our attitudes. These are empirical, not moral facts. Pest-hood is not an inherent property. Even as a relational property, it is suspicious insofar as it mostly reflects facts about us, including prejudices, ancient fears, and bad habits (who left the garbage can open?).

> Rats succeed where human society has failed. They exploit poor sanitation and housing and multiply in areas of environmental vandalism where species-rich

> habitats have been turned into monocultures. Moreover, above all, they are attracted by the waste of war. (Shute 2024, 25)

The status of rats is reflected in language: problem animals, vermin, filthy. Mobsters and gangsters use "rat" as an insult for traitors and snitches; fascists, xenophobes, and antisemites use it as a slur for marginalized groups, enemies of the state, Jews, and immigrants. Metaphors of infestation and transgression paint outsiders and intruders as vermin to justify their persecution and extermination, a theme evoked by the British composer Benjamin Britten in his "War Requiem" (text by Wilfred Owen) and in "Our Hunting Fathers" (text by W. H. Auden) (Nussbaum 2024). Rats serve as a trope to express our hate, demean, and dehumanize outgroup members, though the symbolic and cultural connotations of rats are traditionally more positive in Asian countries such as China, Japan, or India (Shute 2024, 45). Nussbaum has long warned us of these noxious associations between animality and minorities through the use of insults, slurs, and metaphors. It is demeaning to its targets, to people, and to rats. But she sometimes falls short of extending to them the grace she extends to other creatures, from dogs to birds, from whales to elephants.

2.2 From disgust to wonder

We can now turn to Nussbaum's prescription for how we should relate to animals, including those we currently malign.

> Wonder arrests our attention and draws us out of ourselves, inspiring curiosity about an alien world. Compassion links us to the suffering animal in a powerful emotional experience. Transition-anger prepares us for action. (Nussbaum 2023, 16)

Here, Nussbaum lists the three moral emotions that she thinks are critical to extending justice to other animals when articulated under the guidance of CA. Rats commonly elicit negative emotions, especially fear and disgust. Nussbaum has little patience for many of our negative emotions when it comes to regulating our moral and public lives. In *Hiding from Humanity*, she argues that emotions such as shame and disgust often mask moral prejudice and suppress our own vulnerabilities and animal nature. They also serve to demean and oppress women and minorities. Unlike anger and fear, shame and disgust are "are especially likely to be normatively distorted, and thus unreliable as guides to public

practice" (2004, 13). In *Political Emotions* (2013a), she argues that liberal societies must cultivate certain emotions—especially hope, love and compassion—while discouraging others—e.g., fear, envy, and disgust. While emotions are central to our flourishing and moral lives, some of them are unreliable normative guides.[4] Thus, to the extent that our attitudes toward rats reflect our deepest fears and prejudices, they are more likely to track facts about us than about animals, and those facts make for poor moral guidance.

Ironically, Nussbaum has long drawn on Joseph LeDoux's work to trace the origins of fear to rodents (Nussbaum 2001a; 2013). Human fear reflects our vulnerability, from our helplessness as infants to our fear of death as we mature. Where we project our fears can be a mirror of our discomfort with our mortality. More recently, Nussbaum (2018) has argued that unexamined fear can infuse other negative emotions (envy, disgust, anger, and blame) and corrode the basis of equal relationships in democracies. Fear misleads us into false easy solutions to complex social problems such as immigration policy, unemployment or housing. Out of fear, we scapegoat and exclude. Fear has evolved in us to reject that which it comes from—a deeply shared ancestry with other animals trying to survive and protect themselves and their young. As this Chapter argues, rat-related fears are both rational and unreasonable. Rational as a response to the costs noted at the onset; unreasonable as a default response to the socially constructed category of "pest".

Still, it remains an open question *which* of our rat-related fears are rational, and the extent to which trusting them is reasonable. Qualifying her critique of disgust, Nussbaum writes: "Aristotle said that it would be pretty unreasonable to be afraid of a mouse making a noise; but, then and now, many of us are afraid of mice. We probably will not spend much time criticizing our friends for their fear of mice, but often a misplaced fear is socially significant." A case of "unreasonable fear," premised on "confused factual beliefs": a white man afraid of a Black man crossing the street in Hyde Park (2004, 33). Is the fear of mice premised on sound beliefs? Our natural fears (e.g., of snakes) can be "helpful" (i.e., were at some point evolutionarily advantageous), but they can also be "exploited", through the

[4] In utilitarian terms, fear is an unpleasant state and should be minimized unless it contributes to greater welfare. In that sense, fear *is* morally relevant. Minimizing fear could involve either helping people modulate their fears or reducing exposure to sources of fear by eliminating. From a Millian perspective, there should be no regulation of fear-inducing conduct unless it also inflicts harm on others. The mental health impacts of rat infestations can turn fears into harmful states. Thanks to Joel Levin for pressing me on this point.

association of the qualities of certain animals with those of other social groups (2013a, 321). Fearing for your crops is entirely reasonable; fearing for your life because there are rats in the neighborhood is not. Nussbaum also concedes a limited role for disgust in "nuisance law and zoning where it seems legitimate to allow offense, not just harm, to play a guiding role." (2004, 15) I worry that taking offense at face risks legitimizing, rather than questioning, the animus we direct at rats.

In *Justice for Animals*, the emotion that receives its most novel treatment is wonder. Wonder is epistemic: it requires openness, forces us out of prejudices and fears that close us off to the dignity of other creatures. It "is connected to our perception of striving: we see that creatures have a purpose, that the world is meaningful to them in some ways that we do not fully understand, and we are curious about that" (2023, 11). As such, it also orients us toward the question of justice: it is ethically significant for a creature to be able to strive.

Despite her otherwise universal extension of wonder to all sentient creatures, Nussbaum rarely pauses to wonder at (or about, or over) rats. Typically, rats pop up in her analysis as rhetorical devices to illustrate exceptions, dilemmas, and the limits of justice. Indeed, very shortly after the last quote, she notes that, even though they do not deserve blame, "the potentially dangerous nature of [their] behavior" may warrant not just "withholding compassion" but, in some cases, harming them (2023, 13). We shall return to her argument from self-defense; for now, the point is that rats do trigger disgust and fear responses instead of wonder and compassion, and that even the CA struggles to curb those natural responses. One may object that individuals cannot be responsible for their innate emotions, including displaced reactions to their mortality, and so should not be expected to manage them. Even if that were true, however, we may be *collectively* responsible for designing social environments that do not actively trigger and promote such emotions.

Can we—should we—extend wonder to "pests"? Is the very category of pest consistent with the CA? If we accept the principles of Nussbaum's most recent treatment of animals, then justice has no room for "pests." If categorizing animals as pests is antithetical

to wonder, it keeps us from getting to know them (better or at all) and leads us to form false beliefs about them.[5]

Here we can draw on Nussbaum's argument about disgust. Insofar as our counting rats as "pests" rests on disgust, it is unwarranted. Of course, we categorize animals as "pests" not only due to disgust. As we saw, rats can be more than a mere inconvenience, they are very costly. However, the connotations of "pest" are not strictly economic and rarely based on a careful assessment of the facts, including the factors that contribute to the alleged inconveniences. It is all very contextual, and humans often bear more responsibility than they admit. For these reasons, the category is too rigid and obfuscates the complexities of the circumstances that lead us to disapprove of certain animals (Brookshire 2022). I am thus inclined to associate the category with the emotion of disgust as its primary driver. Nussbaum argues that we should be skeptical about relying on disgust "as a basis for law" due to its "thought-content" (the cognitive component of the emotion), involving unreasonable ideas about contamination, disgust that "has been used throughout history to exclude and marginalize groups or people who come to embody the dominant group's fear and loathing of its own animality and mortality." (2004, 14) Extending the criticism, we can note that our attitudes to rats feature a similar thought-content and are partly compromised by that history. We cannot use them as a normative guide because they are likewise tainted by unreasonable associations.

We now have a more precise grasp of the Rat Problem. CA recommends a number of attitudinal shifts, and yet rats are often exceptions to rather than examples of such shifts. They are, in principle, subjects of justice and objects of wonder, but in practice, so recalcitrant.[6] This failure to extend wonder to rats has concrete consequences, nowhere more evident than in our approach to killing them. If rats truly are subjects of justice deserving of wonder and compassion, then how we justify ending their lives becomes a crucial test of the CA.

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[5] It would be interesting, as Jeremy Bendik-Keymer suggested to me, to ask whether this constitutes an epistemic harm or "doxastic wrong" (Basu and Schroeder 2018) *to the animals*. An argument can even be made that our displaced fears are epistemically harmful *to us* (Puddifoot and Trakas 2023).

[6] I say often, not systematically, because there is another two-fold reason rats and mice crop up in Nussbaum's writing: as model animals—intelligent, social, and capable of emotions (e.g., 2001a, 90; 2013a, 149-151; 2023, 177)—and as valuable research tools that contribute to welfare. This parallel treatment of rats, however, mainly concerns laboratory rats, not wild rats.

2.3 Killing problem animals

The CA is "about giving striving creatures a chance to flourish." (Nussbaum 2023, 81) It starts with a consideration of different, characteristic forms of striving of different animals, to fill in and adapt the details of the list of ten central capabilities to each form of life (i.e., species): 1. Life; 2. Bodily Health; 3. Bodily Integrity; 4. Senses, Imagination, and Thought; 5. Emotions; 6. Practical Reason; 7. Affiliation; 8. Other Species; 9. Play; 10. Control Over Environment. Unsurprisingly by now, a solid case can be made that rats are a paradigm of the applicability of the entire list to nonhuman animals.

These facts inform our conception of the characteristic flourishing of each, which in turn informs our conception of their entitlements—the threshold for a decent life that every creature deserves as a matter of justice. While leaving space for freedom ("the choice to act [on one's secured capabilities] is up to them"), the CA "emphasizes *material empowerment*." (Nussbaum 2023, 80) That is, we want subjects of justice to really be able to act on them if they want. CA is more than "high-sounding words on paper." It requires significant material investment, shifts in resources. You may recall that this is where the original Rat Problem arose from.

Applying the CA to rodents requires careful consideration of what constitutes their species-specific flourishing. Rats are remarkably adaptable creatures. They reproduce quickly, can adapt to a wide range of habitats, and are excellent problem-solvers. They are opportunistic feeders, commensals, and urban exploiters, which is why they thrive across such a wide range of habitats and especially amidst dense human populations (Alagona 2022, 76). Urban environments have selected for specific capacities (rapid breeding, nocturnal behavior, wariness of humans) while suppressing others to some extent (complex social behaviors, daytime activity, exploration). Overall, rats' ability to strive and thrive is not in doubt. Granted, this sneaky adaptability feeds into our fears, and perhaps not coincidentally, these are traits that antisemites have historically associated with Jews to justify antisemitic fears. More generally, "[p]eople may learn by association to fear groups whom culture associates with stealth or hiding, or with being wily and sinuous—all stereotypes used to demonize minority groups." (Nussbaum 2013a, 321). We should be

careful when praising qualities that have historically played a perverse role in persecution.[7] Nevertheless, these qualities exemplify rats' remarkable striving.

The first capability is life, and Nussbaum dedicates an entire chapter to the harm of death in *Justice for Animals* (and a significant section in *Frontiers of Justice*). I will say more about tragic conflicts in the next Section. For now, I simply want to pause on a few passages where Nussbaum mulls over the permissibility of killing rats. Generally, she favors nonlethal approaches to conflicts. Her position is, roughly, that we should avoid killing rats when reasonable alternatives are available. Still, we can read between the lines a mild discomfort with the prospect of *living with them* and a relatively low bar for permissibly killing them. To wit, "rats are just living their ratty lives, and so forth; but the potentially dangerous nature of the behavior may justify us in withholding compassion." (2023, 13) Or consider these earlier quotes:

> if it is possible to sterilize them and prevent spread that way, rather than through killing, it seems all the better to do that. With animals above the threshold of sentience, rats for example, it seems to me that here, too, we may admit the wisdom in Utilitarianism and say that *the primary goal should be painless, humane killing if there has to be killing*—and there might have to be, to prevent the spread of disease or damage to human children and other animals. On the other hand, once again, *sterilization and other nonviolent methods are morally preferable*. (2006, 371; emphasis mine)

Which is it, humane killing or alternatives? Are the latter, in fact, available? What does it say about the importance of the first capability that some species are seen primarily as threats to be dealt with rather than as striving creatures in their own right? Nussbaum seems to agree: Killing should not be the default choice. As we shall see in Section 4, evidence suggests that it may not be feasible to rely exclusively on non-lethal methods. Still, it should not be the default because it is at best ineffective, at worst counterproductive. (Alagona 2022, 177)

While she objects to utilitarianism on several fronts (e.g., hedonism about well-being, welfarism, aggregation, and maximization), Nussbaum aligns with it on others (e.g.,

[7] Thanks to Net Lipshitz for raising this concern.

broadly teleological approach to justice). She is of two minds when it comes to the harm of death, however.

> [T]here are many animals concerning whom Bentham and Hare are probably correct: they have conscious interests, but these interests do not extend into the future in such a way as to give them temporally extended projects of a type that sudden death would frustrate. (2006, 385)

Regarding the "humane killing" of animals such as rats ("to prevent health problems for human or other animal populations"), the CA broadens the question beyond strictly experiential goods and bads: are there "centrally valuable forms of capability in such animal lives that are cut short by sudden painless death"? (386) What makes death harmful is the *interruption of temporally extended projects* (Nussbaum 2013b). The question is whether all sentient creatures can have such projects. Primates, elephants, birds, rodents, cattle, pigs, marine mammals, dogs, cats, and horses can (Nussbaum 2023, 167). However, she asserts (incorrectly, in my view) that fish live fully in the present and so are not harmed by a truly painless death, or at least not harmed unjustly. She is not quite claiming that painless death is *no harm at all*—life is the first capability for all, not just for some. But death is not *very bad* for certain animals. In her view, rats do invest in temporally extended projects, hence death can harm them, but not very much. The harm of death is then a matter of degree.

Though we are "likely to be self-serving" and "biased toward our form of life" (2006, 387), rats seem to occupy a lower rung than their fellow mammals:

> Where animals are killed to stop harm that they would otherwise do (killing rats in cities, for example), … the harm of killing varies with the form of life involved, and in the case of a rat, the harm is not comparable to the harm of killing a healthy dog; a rat has many fewer interests and capabilities to be frustrated—although … this does not mean that its life is per se less valuable. (2006, 388)

Though again, Nussbaum notes that alternatives such as sterilization are "clearly morally preferable", *Frontiers of Justice* leaves us in an ambiguous place. The problem is that it seems all too easy to justify the killing: rats are "lower" animals, they "threaten" us, there are "too many" of them, alternatives are ineffective, and so on. All these ill-supported

beliefs end up reinforcing the status quo: we kill because we have not bothered to look into the roots of the predicament.

In *Justice for Animals*, Nussbaum claims that we should "avoid a defensive exterminationist approach". (Nussbaum 2023, 253) And she rightly notes that "often we make the mistake of thinking a creature is a pest simply because it frightens us" and that "[s]ometimes, too, the fault is our own." Yet, as we saw, she does not shy away from seeing rats as a nuisance and justifies the withholding of compassion.

The most coherent version of Nussbaum's argument for the (limited) permissibility of killing rats is one from *self-defense*. Here is its most explicit statement, focused on "'pests,' i.e., animals who constantly attempt to harm us."

> Many of these (roaches, mosquitoes, flies) are insects anyway, but we should also put street rats … into this category. Here Bentham thought that killing was acceptable by a principle of self-defense, and I basically agree. However, most sensible self-defense statutes require the assailed to retreat first before using deadly force. The analog, in this case, would be for humans to use nonlethal means of self-defense, such as contraception, rather than killing, wherever they can. (2023, 167)

Even if rats are subjects of justice, it may be permissible to kill them, barring absolute pacifism. But our justifications must clear a higher bar than if they were not subjects of justice. Let us reconstruct the argument:

1. Killing thwarts a sentient animal's striving.
2. Thwarting a sentient animal's striving is *pro tanto* morally wrong.
3. Rats are sentient animals.
4. Therefore, killing rats is *pro tanto* morally wrong.
5. It is all things considered permissible to kill sentient animals in self-defense to protect our interests when they are significantly threatened and alternatives are not available.
6. Rats significantly threaten our interests.
7. Sometimes, alternatives to killing rats are not available to protect our interests.

8. Therefore, it is sometimes all things considered permissible to kill rats in self-defense.[8]

We have already covered Nussbaum's ambiguous position on the harm of death (and wrongness of killing). For present purposes, let's assume that premises 1-3 are not controversial. Even granting premise 4, it does not follow that we may *never* permissibly kill rats.

I will not dispute the particular version of the principle of self-defense captured in premise 5, though I will note that a right to self-defense can be forfeited. Remember Schute's quote: "Rats succeed where human society has failed." If we are immediately responsible for the conditions that lead rats to threaten us, we may forfeit our right. Even innocent threats may sometimes be liable to be killed, but the bar is higher when we bear partial responsibility for creating the threat. In such cases, we cannot appeal to the principle in premise 5.

Now, maybe rats forfeited *their* right not to be killed by threatening us, in which case the principle applies. Nussbaum herself hedges the scope of the principle: circumstances activate the principle only after the assailed has had a chance to retreat, which failed to eliminate the threat. However, though Nussbaum glosses over this point, it is crucial: the activation of the principle requires a *credible threat*. Moreover, the required sort of credible threat typically includes threats to life, bodily integrity, and safety, and it is not clear to me that, for all their faults, rats commonly clear that bar. Despite the facts listed in Section 1, we tend to overstate the threats posed by rats as well as the relative efficacy of lethal over nonlethal methods. In other words, the justified application of the principle may be limited and likely not be used to justify our standard approach to the Rat Problem. To further examine premise 6, consider the following (mildly) surprising facts:

- Rats are less numerous and spread out than we think, do not travel great distances, and prefer to remain underground (Shute 2024, 59-62);
- Lethal methods are ineffective in the long run (if effective at all):

[8] She also appeals to the principle to tolerate some instances of predation, e.g., letting coyotes and cats kill rats "and some other nuisance animals can be covered under a self-defense principle" and "opens up food sources for many creatures." (Nussbaum 2023, 252)

- Populations bounce back (through increased fertility) after culling (Elmore et al. 2024; Himsworth et al. 2012); Alagona 2022, 177)
- Rats evolve immunity to poisons (ibid.)
- Disrupting colonies *increases* the chances of spreading pathogens (Lee et al. 2018).

The point is: the threats actually posed by rats *can* be blown out of proportion (again, not entirely without reason; see above), often by the pest control industry, which, by exploiting our fears, fuels an ineffective cycle of overreaction (baiting) and neglect (open trash cans). We keep inviting rats and then punishing them for accepting the invitation.

Thus, premises 6 and 7 should be qualified: rats do not systematically threaten our interests, and alternatives may be preferable to standard methods. I reject Nussbaum's characterization of "pests" as those "animals who constantly attempt to harm us." This is not an apt act description. Even if some of these animals did harm us, most of them do not intend to harm us, much less "constantly." Many animals that we consider nuisance or problem animals are misanthropic: they would rather avoid *us*, though they may seek out byproducts of our activities (trash, compost, unleashed pets, and warm attics).

Finally, the framing of such threats takes place against the background of an enduring "war on rats." (Lee et al. 2022a) While experimental contraceptive methods are being used in New York City, Mayor Eric Adams, his "rat czar", Director of Rodent Mitigation Kathy Corradi, and NYC Parks Commissioner Iris Rodriguez-Rosa are waging an explicit war against rats. Conservationists in New Zealand are waging an all-out war against non-native species, especially introduced mammals (Morris 2020). Even if such wars were just (in cause *and* in methods), which they probably are not, they are unlikely to be successful (Milburn and Van Goozen 2023).

I thus reject the framing of intentional harm and reiterate my position on "pests": CA has no room for them.[9] I have outlined a general Rat Problem for moral theory and argued that Nussbaum's positions on the problem fall short of the commitments of the CA. She wants to extend justice, compassion, and wonder to all sentient creatures. At the same time, what entitlements rats have, in practice, appears partly determined by the status quo.

[9] To me, writing "Many of these … are insects anyway" indicates a failure of wonder extension, an attitude uncharacteristic of Nussbaum's otherwise admirable call to pay attention to animals not "so like us."

Rats just don't fit. In the next Section, I cast the problem as a tragic conflict, but I ask if the framing is helpful or obscures more tractable solutions.

3. Tragic conflicts

Conflicts become tragic when they appear impossible to resolve, when we face two incompatible demands. For instance, two (or more) capabilities cannot be simultaneously guaranteed or when securing one group's capabilities entails sacrificing another group's. Tragic conflicts leave a moral residue: whatever choice we make, we inevitably compromise on something else we nevertheless ought to do.

Framed in typical economics fashion, tragic conflicts entail trade-offs. However, trade-offs are a general feature of human endeavors simply due to finite time and resources. Some conflicts are distinctive because of the moral nature of their costs, or the genuine wrongs they entail. Trade-offs are the answer you get when you ask what Nussbaum calls "the obvious question" (2000): What are the options, and what are their respective expected value? Run a benefit-cost analysis, optimize, and accept the trade-offs (you buy your preferred car on sale, but the only available color is orange). Relatively low-stakes questions, low-stakes answers.

The "tragic question," on the other hand, feels weightier. It asks us to consider what led us here. Such questions typically involve the fundamental entitlements of subjects of justice. Nussbaum argues that the benefit-cost analysis cannot tell the whole story because some costs are simply unacceptable. Even if we end up paying them, we must express dismay at having had to face the choice in the first place. Thus, Nussbaum recommends taking a "Hegelian" approach to such conflicts, whereby decision-makers strive for the "cancellation" or "sublation" (*Aufhebung*) of the conflict. Tragic conflicts leave a residue but also prompt further questions: How can we fix our institutions and policies so that we do not have to face those choices in the future? The status quo cannot be used as an excuse to keep facing tragic choices.

Nussbaum has applied this analysis to a range of issues involving animals, though its difficulty in handling trade-offs has been noted (e.g., Linch and Holland 2017). In *Justice for Animals*, she identifies four "areas of unease": medical experimentation, meat eating, hunting in traditional cultures, and conflicts over space and resources. Human-

animal conflicts abound, and if animals are subjects of justice, we should expect some of those conflicts to bear tragic features. In *Frontiers of Justice*, she writes:

> The world we live in contains persistent and often tragic conflicts between the well-being of human beings and the well-being of animals. Some bad treatment of animals can be eliminated without severe losses in human well-being [animals for fur, industrial animal agriculture] … The use of animals for food in general is a much more difficult case … [She then goes on to allege the unknown global risks of a shift to vegetarianism weighed against the pleasant life and painless killing of animals]. (2006, 402)

The conflict she grapples with the most is animal experimentation. Its tragic shape arises from the imperative of saving both human and animal lives, clashing with the suffering and premature death inflicted on animals. Of course, conflicts with wildlife can be tragic, too. "We should admit, then, that there will be an ineliminable residue of tragedy in the relationships between humans and animals." (2006, 404)

I foreshadowed my position earlier: apparent tragic conflicts often reflect unexamined assumptions about what is unavoidable. We can imagine what a just world would be like, where those conflicts *can* be avoided. Such is the province of ideal theory. It may give us direction, but it will not, on its own, help us make *our* world more just. Practical constraints must be reckoned with. However, we often take for granted things we ought not to. How we treat rats, or rather, the conditions that lead us to treat them so, are among those. What I plan to do in the remainder of this paper is shift the Rat Problem from the status of a tragic conflict to a thorny but tractable problem, within the bounds of non-ideal theory.

Framing trade-offs as a strictly economic question, or "the obvious question," reinforces ways of thinking about human-rodent relationships that ignore and may even worsen "the tragic question." The very fact that we can create economic value from rats (through research, pest control) depends on maintaining rather than resolving the underlying conflicts. It is tempting to bracket the laundry list of costs we started with and treat rats as creatures with dignity and an equal claim to justice. But this, in turn, raises the specter of tragedy, for honoring the status of rats entails forgoing a number of benefits that allegedly underpin human flourishing, from scientific discoveries to the right to live in a

sanitary environment. Rats thus illustrate the ineliminability of conflict, "since creatures threaten one another's safety and since fostering the good of one creature may actually create a greater threat to another." (Nussbaum 2001b, 1541) Nussbaum goes on, in a striking passage,

> It would be nice to think that rats could all be shipped off to a rat community where they could live untroubled lives without infecting or endangering other animals; something like this probably can be done with field mice … But killing rats does not seem to be a heinous moral evil, and it may in many cases be the least of the evils. (2001b, 1541)

When sterilization and other nonlethal methods are not realistic, Nussbaum argues, we have no choice but to kill rats. Still, animals are often trapped in these circumstances partly through our fault, so we must take on some responsibility for dealing with the conflict in ways that do not further compromise these animals' entitlements. (Delon 2020; 2021) The CA is committed to resolving the tension between ineliminable conflicts and the demand that we acknowledge the wrongs and seek to minimize their occurrence. This "reaffirms dispositions to behave well toward them where no such urgent exigencies intervene" and "prepares us for a world" where such conflicts are less frequent (Nussbaum 2023, 404-405). It is committed to fostering coexistence through reasonable mutual accommodations.

By making our spaces *less* attractive to rats, we could create a *more* hospitable environment for them, one that does not involve (futile) attempts at extermination. Conflicts require some intervention. While the CA is committed to leaving animals free to initiate their activities and make their own choices, it is also committed to arranging environments to enable them to secure their capabilities. (Holland 2008; Delon 2021)

How can we do this? First, we must acknowledge the difficulty but then press on: "Hegelian change is not always possible, but who knows what we can do until we exercise political imagination?" (Nussbaum 2023, 176; cf. Bendik-Keymer 2023) Nussbaum's roadmap looks as follows:

1. Identify plural ends that a just society must achieve (capabilities).
2. Recognize tragic conflict between capabilities (analyze them and show they both are essential).

3. Imagine a solution that would allow both capabilities to be fulfilled up to a reasonable threshold level.

This chapter, I hope, has made some headway into the first two steps: the lives of rats matter, pest control thwarts important capabilities of theirs (life, reproduction, socialization, and so on), but so do infestations thwart central human capabilities such as Bodily Health, Control Over One's Environment, Emotions (they instill fear and disgust in us) and Other Species (they damage our dispositions to relate to fellow creatures with positive emotions). We are facing a genuine conflict, though, by emphasizing its tragic nature, we unwittingly reinforce the status quo and underplay our responsibility. The overarching goal of CA is to generate the political structures necessary to realize the multiple goods in tension. In the last Section, I outline Hegelian change (step 3). However, it will appear that some of the required changes were beneath our eyes the whole time—sometimes, we do not want to ask the painfully obvious questions.

4. Beyond conflicts

In this Section, starting from the observation that conventional citywide management approaches are largely unsuccessful (Lee et al. 2022a,b), I suggest alternative approaches, focused on infrastructure first, and then population control.

4.1. Infrastructure

Consider simple waste management improvements: rat-proofing public and private trashcans and replacing open-air dumpsters and landfills with secure underground collecting bins. Fine delinquent residents and restaurants. Subsidize investments in rat-proof receptacles. What are the likely consequences? Improved sanitation for human beings and fewer attractants for rodents. Still, rats will find their niche, only further away, less likely to create friction, and plausibly less numerous. We get clean streets; they get to live and prosper.

Contrast this with the status quo. The traditional urban infrastructure generates the conflicts we then call tragic and reinforces disgust and fear toward rats—think of dark alleys and overflowing dumpsters, leaky walls and littered curbs. Alternative waste

management could foster different attitudes: curiosity and even appreciation for the adaptability of rodents.

This form of institutional design is a corollary of the Hegelian commitment to removing the sources of tragic conflicts. Thus, instead of accepting human-rodent conflict as inevitable, we redesign the structures that create and perpetuate these conflicts. The key point is, while the move appears Hegelian, the question to ask should have been *obvious*: Why are rats coming? Oh, yes, our garbage cans are terrible; our waste management is sloppy. The conflicts, rather than tragedy, reflect a lack of imagination.

However, we should not understate the recalcitrant nature of the status quo. I called waste management improvements a case of institutional design because they are a response to what we may call *infrastructure lock-in*. "Lock-in" refers to how past infrastructure investments create path dependence, making alternative approaches prohibitively expensive despite their potential superiority. Once cities have built extensive sewer systems, utility tunnels, and waste management networks in particular ways, the enormous sunk costs make rebuilding them nearly impossible, even when the current design creates ideal conditions for rat populations. Infrastructure lock-in is problematic because it traps us in suboptimal systems: the massive upfront costs of redesigning urban infrastructure to be rat-resistant appear prohibitive compared to ongoing reactive spending, even though the latter perpetually fails to solve the underlying problem and compounds costs over time.

The pest control industry employs ineffective "techniques and mentalities that continue to wreak ecological damage while causing suffering on an industrial scale", and it "causes so much harm while failing to address actual problems" (Alagona 2022, 175). We spend heavily on reactive measures (repairs, pest control, healthcare) instead of investing in preventive measures (Integrated Pest Management). The ongoing costs of the status quo, noted earlier, make it harder to invest in preventive/forward-looking practices. For example, a city might spend millions annually on repairing rat damage to underground cables, making it harder to justify the significant upfront cost of rat-proof utility systems. Some of those costs are compounded by the cascading effect: damaged pipes, water leaks, soil erosion, and weakened foundations. Each step multiplies the costs required to fix the problem, which makes structural solutions even more challenging to implement.

Eventually, most expenses are directed toward emergency (and most likely recurrent) repairs and extermination rather than redesign.

Lock-in entrenches vulnerabilities. Urban environments provide ideal food sources and shelter for rats, while sewers and utility tunnels offer ideal traveling routes and breeding grounds. Our infrastructure is simultaneously rat-*friendly* and rat-*hostile*: we unintentionally create ideal conditions for rat populations through necessary urban systems, then attempt to manage the resulting infestations with poisoned baits, glue traps, and snap traps rather than addressing the structural invitation.

These infrastructure constraints are reinforced by vested interests in the reactive approach. The pest control industry and repair services profit from managing problems rather than preventing them. Exterminators will help seal entry points, but their business model depends on recurring infestations. This creates a political economy that resists the structural changes needed to break free from infrastructure lock-in. Those who could advocate for preventive redesign have financial incentives to maintain the profitable cycle of attraction and extermination.

All of this seems obvious, and yet our failures have become normalized. Addressing infrastructure lock-in requires both structural changes and new approaches to population management. While redesigning urban systems may take decades, we can, in the meantime, implement more humane methods of population control.

4.2.Non-lethal methods

Non-lethal methods are part of a wider toolkit known as Integrated Pest Management (IMP). This is an area of active research, and the evidence is suggestive. In what follows, I draw on recent reports by Holly Elmore and collaborators at Rethink Priorities to consider promising alternatives to standard pest control.

The first step is to ask: What are we trying to achieve? Typically, population control. Culling is one means to this end, but so is reducing births, which in turn reduces the need for lethal methods. Elmore and her collaborators outline three primary methods for reducing births while noting that they are not a panacea and may have to be used "in concert with lethal control methods that are more humane than rodenticides" (e.g., traps and asphyxiants). The three methods are *resource reduction* (e.g., containing food waste and limiting water accessibility); *habitat reduction* (e.g., filling in abandoned burrows and

cracks in wall interiors and sealing off entry points); and *effective birth control* (e.g., EPA-approved ContraPest). Elmore et al. are adamant that an array of methods may have to be used. (Elmore et al. 2023a;b) Furthermore, the pest control landscape is opaque to most consumers. Many products advertised as humane and effective, including some fertility control products, are inhumane, ineffective, or both. A compromise form of IPM that the authors highlight is that of Newton, Mass., which used a "multi-pronged approach that balances humaneness, cost, and effectiveness concerns." Their approach consisted of:

- Garbage containment strategies.
- Eliminating outdoor nests and burrows with BurrowRx (CO-based asphyxiant).
- ContraPest for interior spaces.
- Reducing habitat by increasing the amount of rodent-proofing required in new construction and increasing inspections to improve compliance.

This non-ideal approach to harm reduction involves preventing some animals from realizing certain capabilities, including life, health, reproduction, and control over their environment. But the key is that it purports to do so to a much lesser extent than conventional methods. Harm is assumed to be unavoidable. However, even a Hegelian approach to tragic conflicts should not lead us to neglect opportunities to minimize harm, including violations of capabilities, where we can. One might still object to the approach that it fails to ask the tragic question, but this would be a mistake. Instead, IPM shows how benefit-cost analysis and the Hegelian approach may not be mutually exclusive. In practice, it deals in trade-offs and readily accepts compromises between different capabilities, but so does Nussbaum when it comes to rats, as we saw. In spirit, IPM, too, is forward-looking and envisions a future where rodenticides will no longer be needed.[10]

IPM also ties into the CA in interesting ways. Rodent populations are controlled by predation, disease, resource competition, and, of course, extermination, all of which involve harms. Nonlethal population control through contraception interferes with one or more of the rats' capabilities. Nussbaum has long advocated for direct human intervention in the wild, so interventionism itself is not the issue. Instead, it is that birth control may thwart a

[10] The "hardline" method could backfire: "if ContraPest is not paired with minimally cruel lethal control methods, then jurisdictions may conclude that ContraPest is not sufficiently effective or fast-acting and revert to using only rodenticides."

rat's striving. At the same time, nonlethal methods enable rats to exercise more of their capabilities, including those that may be interfered with, than conventional methods. Smaller populations provide more opportunities for complex social behaviors, exploring more territory, and developing less antagonistic relationships with humans.

This also connects to Nussbaum's distinction between *basic* capabilities (what creatures can, in principle, do), *internal* capabilities (what they could do under the right circumstances), and *combined* capabilities (internal capabilities combined with suitable external conditions for the exercise of the function), which are what a just society should guarantee. Rats in the current hostile urban environment may not have access to an adequate level of combined capabilities. They live in complex social networks and exhibit cooperative behaviors, but these capabilities are often suppressed in environments where they must constantly evade human persecution. IPM brings us closer to guaranteeing their combined capabilities. This involves the difficult prioritization of capabilities (e.g., life, health, exploration, and social behavior over reproductive freedom), which brings us back to trade-offs and requires careful consideration of what the flourishing of rats entails and how it weighs against the welfare of other species (Budolfson et al. 2024; Fischer 2024). However, technical interventions in population control and infrastructure represent only part of the solution. The deeper challenge lies in transforming our emotional and cultural relationships with rats, a transformation that requires rethinking how we design shared urban spaces.

5. Conclusion

We can now return to emotions. I have argued that rats, like other subjects of justice, warrant wonder and compassion, not just fear and rather than disgust. I have also argued that a step toward a more just coexistence in urban environments involves institutional design. IPM is part of this picture, but the picture is larger. Elsewhere, I have discussed Nussbaum's analysis of urban parks and what they could teach us about human-animal coexistence. (Delon 2021) In *Political Emotions* (2013a), Nussbaum argues that public parks serve multiple political functions. They are not just green spaces but institutions that foster certain emotions critical to democracy. For instance, Frederick Law Olmsted designed Central Park to create encounters between social classes that might otherwise

never interact. The park's design deliberately shaped how people would move through space and encounter each other. Similar remarks apply to what animals we encounter and how.

Parks can be sites of conflict precisely because they are shared spaces. The presence of rats in parks challenges our conception of public space. Who are these spaces really for? When we design streets, parks, backyards, and back alleys to exclude rats (through poison bait stations, for instance), we make political decisions about which creatures count as legitimate users of public space. Our policy choices concerning green infrastructure (e.g., parks, corridors), ecosystem management, buildings and developments, waste, water, and roads can all affect urban animal welfare. (White et al. 2024). The CA commits us to considering structural design strategies that foster rather than prevent coexistence with animals in urban spaces. In contrast, parks can serve as spaces where people encounter rats in ways that might foster positive attitudes rather than disgust. (Imagine: rat-inclusive wildlife watching; see e.g., Sullivan 2004) Nussbaum (2024) shows how Britten's depiction of rats evokes the violence and persecution of war, forcing concert audiences to empathize with these maligned creatures. Urban parks could serve as our concert halls, creating spaces where we encounter rats not as pests but as fellow creatures navigating the built environment. So, the key is to design environments that enable us to observe and understand rats' capabilities more fully so that our judgments about what constitutes their flourishing become more informed by actual observation rather than prejudice. In the process, we could also start shedding some of our negative emotions and replacing them with a gradual attunement to unfairly maligned forms of life. Wonder is a tall order, for now, but it can open new ways of living together.

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