

- Sperber, D. (1997). Intuitive and reflective beliefs. *Mind and Language*, 12, 17.
- Sperber, D., & Baumard, N. (2012). Moral reputation: An evolutionary and cognitive perspective. *Mind & Language*, 27, 495–518. doi:10.1111/mila.12000.
- Sperber, D., & Wilson, D. (1995). *Relevance. Communication and cognition* (2nd ed.). Blackwell.
- Stoler, A. L. (2001). Tense and tender ties: The politics of comparison in North American history and (post) colonial studies. *The Journal of American History*, 88(3), 829–865.
- Stonehouse, E. E., & Friedman, O. (2021). Unsolicited but acceptable: Non-owners can access property if the owner benefits. *Journal of Experimental Psychology: General*, 150(1), 135.
- Strassmann, J. E., & Queller, D. C. (2014). Privatization and property in biology. *Animal Behaviour*, 92, 305–311.
- Sutherland, E. H. (1937). *The professional thief. By a professional thief. Annotated and interpreted by Edwin H. Sutherland*.
- Tatone, D., Geraci, A., & Csibra, G. (2015). Giving and taking: Representational building blocks of active resource-transfer events in human infants. *Cognition*, 137, 47–62. doi:10.1016/j.cognition.2014.12.007.
- Taylor, A. (2004). From petitions to partyism: Antislavery and the domestication of Maine politics in the 1840s and 1850s. *New England Quarterly*, 77, 70–88.
- Taylor, J. S. (2018). The case against the case for colonialism. *International Journal of Applied Philosophy*, 32(1), 19–32. doi:10.5840/ijap2018820100.
- Tooby, J., & Cosmides, L. (1988). The evolution of war and its cognitive foundations. *Institute for Evolutionary Studies Technical Report*, 88(1), 1–15.
- Tooby, J., & Cosmides, L. (Eds.). (2005). *Conceptual foundations of evolutionary psychology*. John Wiley & Sons Inc.
- Tooby, J., Cosmides, L., & Price, M. E. (2006). Cognitive adaptations for naïve person exchange: The evolutionary roots of organizational behavior. *Managerial and Decision Economics*, 27(2–3), 103–129.
- Umbres, R. (2022). *Living with distrust: Morality and cooperation in a Romanian village*. Oxford University Press, Incorporated.
- van Creveld, M. (2013). *Wargames: From gladiators to gigabytes*. Cambridge University Press.
- Verkuyten, M., Sierksma, J., & Martinovic, B. (2015a). First arrival and collective land ownership: How children reason about who owns the land. *Social Development*, 24(4), 868–882.
- Verkuyten, M., Sierksma, J., & Thijs, J. (2015b). First arrival and owning the land: How children reason about ownership of territory. *Journal of Environmental Psychology*, 41, 58–64.
- Watson, B. A. (2010). The impact of the American doctrine of discovery on native land rights in Australia, Canada, and New Zealand. *Seattle University Law Review*, 34, 507.
- Welch, M. R., Rivera, R. E. N., Conway, B. P., Yonkoski, J., Lupton, P. M., & Giancola, R. (2005). Determinants and consequences of social trust. *Sociological Inquiry*, 75, 453–473.
- Williams, G. C. (1966). *Adaptation and natural selection. A critique of some current evolutionary thought*. Princeton University Press.
- Wilson, M., & Daly, M. (1992). The man who mistook his wife for a chattel. In J. H. Barkow & L. Cosmides (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 289–322). Oxford University Press.
- Yoder, K. J., & Decety, J. (2018). The neuroscience of morality and social decision-making. *Psychology, Crime & Law*, 24(3), 279–295.
- Young, J. O., & Brunk, C. G. (2012). *The ethics of cultural appropriation*. John Wiley & Sons.

Open Peer Commentary

Reciprocal contracts – not competitive acquisition – explain the moral psychology of ownership

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Abstract

We applaud Boyer's attempt to ground the psychology of ownership partly in a cooperative logic. In this commentary, we propose to go further and ground the psychology of ownership solely in a cooperative logic. The predictions of bargaining theory, we argue, completely contradict the actual features of ownership intuitions. Ownership is only about the calculation of mutually beneficial, reciprocal contracts.

We welcome Boyer's paper because, to our knowledge, it is the first to suggest that ownership derives not only from a competitive but also, in part, from a cooperative logic. In this commentary, however, we propose that it is possible to go even further and discard the competitive logic altogether to explain ownership. The perception of an individual's ability to monopolize a thing by force, we argue, is only at the origin of possession (P(.) in Boyer's framework), and it does not at all explain ownership (L(.) in Boyer's framework) as a moral right.

Alongside a critique of the competitive half of Boyer's theory, our commentary is thus above all an opportunity to emphasize, in agreement with Boyer, the extent to which the usual competitive theories fail to explain ownership.

Competitive theories of ownership are based on the Hawk–Dove–Bourgeois game (Maynard-Smith & Parker, 1976) or the Asymmetric War of Attrition (Hammerstein & Parker, 1982), and more generally on the notion of correlated equilibria (Aumann, 1974). They interpret ownership as an evolutionarily stable outcome of a bargaining game in which individuals use a symmetry break to allocate resources while avoiding costly disputes. Many researchers have argued that this logic explains not only the resolution of resource conflicts in nonhuman animals, but also human intuitions about ownership (DeScioli & Wilson, 2011; Gintis, 2007; Hoffman & Yoeli, 2022).

However, as Boyer also explains, the simplest form of this theory does not explain ownership *per se*. Rather, it explains the existence of any arbitrary convention for allocating resources. In particular, the conflict between an owner and an intruder can be resolved either by a convention that favors the owner (the private property strategy) or by a convention that favors the intruder (the anti-private property strategy), and nothing favors the private property equilibrium over the anti-private property one (Mesterton-Gibbons & Sherratt, 2014). For the private property strategy to prevail, the owner and the invader must be asymmetric in their bargaining power, for example, because the owner has a greater resource holding potential or benefits more from the resource and is therefore more interested in defending it (Fayed, Jennions, & Backwell, 2008; Kemp & Wiklund, 2004; Kokko, 2013). In this case, the anti-private property equilibrium sometimes disappears in favor of the private property equilibrium.

We agree that this set of theories explains how conflicts can be resolved in nonhuman animals. We also agree that it explains *possession* of resources in humans – that is, that people sometimes have exclusive access to resources in the sense that no one is *able* to take these resources from them. This set of theories, however, completely contradicts human intuitions about *ownership* – that is, intuitions that people are the *legitimate* owners of some resources.

Most strikingly, bargaining theory explains ownership as a consequence of power asymmetries. Thus, it predicts that being stronger than someone else, or having more interests in defending a resource, should not only provide the *possibility* to access that

resource, but should also always make that gain *morally legitimate*. Yet being stronger than someone else, or needing a resource more than they do, does not give you a legitimate right to access that resource. It makes it possible to *steal* that resource by force, but people see this precisely as a *violation* of ownership, not as a consequence of it.

Sure, in some specific cases, power struggles and property rights coincide. Sometimes, the first person to arrive at a resource both (i) is the legitimate owner of that resource, and (ii) has a bargaining advantage due to a structural asymmetry. Similarly, sometimes the person who has invested in the processing of a resource both (i) is the rightful owner of that resource, and (ii) has a bargaining advantage because she has more to lose if she was deprived of that resource.

But these are only special cases. Most resources do not give rise to any significant bargaining asymmetry between the first and second discoverer. Yet people consider the first discoverer to have a right to the thing he found. Likewise, anterior investments into a resource are most often sunk costs that do not increase the marginal benefit of further fighting over this resource. Yet people view individuals who have invested in a resource as their legitimate owners even if their investments are sunk. People intuit that others remain the rightful owners of their property even when they temporarily leave it *physically*, that is, even when they entirely give up any bargaining advantage. By contrast, non-human animals, which have no *ownership rights* but only *possessions*, must permanently maintain a favorable bargaining position to defend their resources.

Rather than from an interplay between competition and cooperation, ownership intuitions emerge from computations of a full-fledged cooperative contract. Ownership is one of many manifestations of a more general psychological mechanism, namely moral cognition, whose evolved function is to maximize the mutual benefits of reciprocal interactions, independently and often in contradiction with immediate bargaining power (André, Fitouchi, Debove, & Baumard, 2022).

When we intuit that some people have privileged rights of access to things, we do the same computations as when we calculate that people deserve to receive their fair share of a cake they contributed to produce. In the case of ownership, the mutually beneficial contract is the following (see André et al., 2022 for more details). Each individual prefers to refrain from exploiting things produced by others provided that others, in return, are willing to grant them exclusive access to things they found or produced. This reciprocal contract is mutually beneficial in that each party prefers being guaranteed the fruits of his labor than not being guaranteed those fruits while being allowed to exploit others' resources.

This purely cooperative view of ownership intuitions explains their fine-grained design features better than a partly competitive theory. In particular, it explains the fact that ownership is often tied to prior investments in things, since it is especially in the area of investment protection that private property is mutually beneficial (see André et al., 2022 for more details).

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References

André, J. B., Fitouchi, L., Debove, S., & Baumard, N. (2022). An evolutionary contractualist theory of morality. *PsyArxiv*. doi:10.31234/osf.io/2hxgu.

- Aumann, R. J. (1974). Subjectivity and correlation in randomized strategies. *Journal of Mathematical Economics*, 1, 67–96.
- DeScioli, P., & Wilson, B. J. (2011). The territorial foundations of human property. *Evolution and Human Behavior*, 32, 297–304.
- Fayed, S. A., Jennions, M. D., & Backwell, P. R. (2008). What factors contribute to an ownership advantage? *Biology Letters*, 4, 143–145.
- Gintis, H. (2007). The evolution of private property. *Journal of Economic Behavior & Organization*, 64(1), 1–16.
- Hammerstein, P., & Parker, G. a. (1982). The asymmetric war of attrition. *Journal of Theoretical Biology*, 96, 647–682.
- Hoffman, M., & Yoeli, E. (2022). *Hidden games: the surprising power of game theory to explain irrational human behaviour*. Hachette UK.
- Kemp, D. J., & Wiklund, C. (2004). Residency effects in animal contests. *Proceedings of the Royal Society B: Biological Sciences*, 271, 1707–1711.
- Kokko, H. (2013). Dyadic contests: Modelling fights between two individuals. In I. C. W. Hardy & M. Briffa (Eds.), *Animal contests* (pp. 5–33). Cambridge University Press.
- Maynard-Smith, J., & Parker, G. A. (1976). Logic of asymmetric contests. *Animal Behaviour*, 24, 159–175.
- Mesterton-Gibbons, M., & Sherratt, T. N. (2014). Bourgeois versus anti-Bourgeois: A model of infinite regress. *Animal Behaviour*, 89, 171–183.

The evolutionary psychology of ownership is rooted in the Lockean liberal principle of self-ownership

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Abstract

The psychology of ownership is rooted in self-ownership. The human brain has an evolved interoceptive sense of owning the body that supports self-ownership and the ownership of external things as extensions of the self-owning self. In this way, evolutionary neuroscience supports a Lockean liberal conception of equal natural rights rooted in natural self-ownership.

Boyer argues persuasively for the interaction of two cognitive systems to explain the psychology of ownership. But in doing this, he fails to recognize that there is a third cognitive system for *self-ownership* that is the true root of the evolutionary psychology of ownership. In explaining “the interaction of cognitive systems that are not about ownership as such,” Pascal ignores the evolved intuitive psychology of self-ownership, which really is “about ownership as such.”

At the center of Boyer's model is the “conceptual tag” of “(Agent, thing).” This assumes without explanation that human beings have an intuitive sense of themselves as *agents* who claim *ownership* of *things*. He provides no evolutionary explanation for why and how human beings have this intuition. The best explanation for this is the evolved neurobiology of self-ownership and self-owning agency: If human beings did not have any sense of owning themselves, they could not claim ownership of things external to them as extensions of their self-owning selves.

John Locke saw that the natural desire for ownership or property was rooted in the natural psychology of self-ownership – that “every Man has a Property in his own Person,” and this “no Body