

Survival of the Disciplines: Is International Relations Fit for the New Millennium?

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Abstract

Iver Neumann argues that International Relations (IR) is going to have to engage with a broader set of empirical data and wider inter-disciplinary insights, especially from evolutionary biology. I endorse the debate and extend the challenge, making four key points: (1) our empirical data must extend to the deep origins of human societies, and look more at policy successes rather than failures; (2) our scientific toolkit must integrate rather than differentiate psychology and biology, because the former is in large part a product of the latter; (3) evolution continues to be misinterpreted, especially in the condemnation of functionalism, the myth of biological determinism, the perceived lack of relevance to IR theory, and the idea that social facts cannot have biological roots; and (4) there are other issues of more genuine importance, including the levels of analysis problem (getting from the biology of individuals to the behaviour of states), and the levels of selection problem (the predictions of group selection and individual selection for human nature). I conclude that, despite big challenges of communication and collaboration, the benefits of integration with the natural sciences far outweigh the benefits of disciplinary isolation, offering new knowledge, methods, consilience, and parsimony that will help IR to flourish rather than flounder in the Age of Biology.

Keywords

International relations, evolution, biology, psychology, human nature, Iver Neumann

Iver Neumann's inaugural lecture at the LSE¹ is a breath of fresh air. In nature, innovation requires genetic recombination or mutation to escape from old ways of doing things to new ones. Often, such experiments lead to instant death. But sometimes they lead to great advances. The installation of Iver Neumann in his new chair at the LSE seems to have succeeded in creating a novel recombination, as well as sparking some interesting mutations of old ideas, that open up new ways of thinking about the history, contemporary challenges, and future opportunities of IR. This new approach may face

1. Iver Neumann, 'International Relations as a Social Science', *Millennium* 43, no. 1 (2014), 330–350.

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considerable heat given its challenge to entrenched paradigms, but it is exactly what is needed to get us out of the trenches and into the new millennium. We are now entering the ‘Age of Biology’, in which genetics, molecular biology, medicine, neuroscience and evolutionary biology are radically changing our understanding of human behaviour and social life.² The question is, will the social sciences sink or swim with the tide?

Having applauded Neumann for sticking his head up above the trenches, I would like to extend and develop his proposals, as well as striking down some misunderstandings. First, taking up his theme of our narrow pool of data, I propose that (a) we extend our timeframe to look at inter-group relations across *all* of human history, and that means at least 2 million years; and (b) we widen our scope to look less at when things go wrong – crises, policy failures and wars – and more at when things go right. Both will help to see and understand the role of evolution in human behaviour. Second, taking up the theme of new tools, I commend Neumann’s foresight and open mindedness in addressing the looming influence of biology on all social sciences, and on IR in particular. However, I propose that (a) we need to be prepared to examine nasty as well as nice predictions – natural selection is blind to morality and we may not like what we find; and (b) we need to recognise some bigger challenges, as well as wider opportunities, for politics in the Age of Biology. Most notably, even if one accepts that evolution underlies the behaviour of human beings, why should that have anything to do with the behaviour of the state or the international system?

Censored Data: History and the Universe of Cases

‘Big data’ is all the rage these days. The information technology revolution is gathering data faster than we can digest it, and there are enormous and detailed datasets on pretty much everything we can imagine and presumably much more that we cannot. IR might feel somewhat left out of this revolution, except for participating in the REF pantomime, but it should not. As Neumann notes, human history is already a vast dataset of inter-group interactions of which we barely scratch the surface. I fully endorse his call to extend our attention back to the earliest civilisations, as well as subsets of smaller polities. The dynamics in these older and wider data will no doubt show important differences from the modern international system, but they may also have important similarities. Exploring both divergences and common patterns promises to reveal new insights and generate more general theories. So I certainly do not critique this call to the archives. Rather, I propose to radically extend it. Neumann defines IR’s subject matter as ‘political and social life that plays out in a setting where there is a plurality of polities’. Although we could argue forever about the definition of ‘polities’, I suggest that human groups have *never* been without politics, and the politics of inter-group relations is as old as – indeed older than – human beings themselves. If so, the data start somewhere around 7 million to 2 million years ago. And in Africa, not Europe.

The Depths of History: Looking at the Origins of Human Societies

If we are serious about understanding human nature, social organisation, and the dynamics of interacting groups, then ‘international relations’ has a much greater dataset to draw on than we might have imagined. Humans have not been dealing with other groups or ‘polities’

2. J. Stavridis, ‘The Dawning of the Age of Biology’, *Financial Times*, 19 January 2014.

only since 1648, or since the Roman Empire, or even since the first city-states. Humans have been living in meta-populations of clustered groups for several million years, a pattern of social organisation that long pre-dates our own species and is common to all primates and many other mammals. As different as they may seem, there are nevertheless consistent patterns of social, organisational, and spatial behaviour among them, and these patterns include us. Nor is anarchy something unique to the world after 1648, or to some other juncture in recorded history. Whatever rules and norms may have existed *within* early human (or other) groups, there was never any Leviathan governing relations *between* them.

For both of these reasons – the vintage of politics and of anarchy – we should explore the social, organisational, and inter-group dynamics among human groups of the Pleistocene epoch as well as the Holocene. All we usually go on is events that took place in the latest blink of the eye in human history – say, since 1648 or 1816. Of course, more recent history may be a closer match to IR today. But if we are interested in human nature, general theory, and the origins of political behaviour, then a bigger dataset is not just more data but an imperative of research design. It also offers greater theoretical parsimony. Differences over time may indeed be as important as similarities, but these will themselves be instructive. What is it, exactly, that makes IR different today? Since we do not usually compare then and now, we do not have an answer. Our theories are only relevant to the microcosm in which we have developed and tested them, and we might therefore find these theories too narrow and brittle as we move backwards or forwards into new eras. With a wider dataset, a more general theoretical framework, and a larger set of tools of analysis, we can develop more general theories that can account for inter-group behaviour, as well as its changes, over a longer period of time.³

The Disasters of History: Looking at Successes Rather than Failures

There is another reason to worry about our data. Our cases tend to be not only limited in time, but also limited in the type of events that we focus on. As well as biases towards the west and great powers, we notably tend to focus on bad stuff – crises, conflict, policy failures and war. Often, this amounts to selecting on the dependent variable (we often study the causes of war by looking at war). But more pervasive is the general problem that we find ourselves more puzzled and compelled to examine why and when things go wrong, rather than why and when things go right. This is not entirely surprising. Who wants to study periods where nothing much happens, or uncontroversial policies that work, or why so many states keep having multiple instances of non-war? Even within the cases we do study, we tend to focus on bad over good. In studies of war, for example, we file away victories but remain vexed by defeat. Successes may be dissected in military establishments, but they are rarely subjected to the same intensity of scrutiny or theorising as defeats.⁴

The reason I flag this issue up here is because it becomes especially important when we start bringing in psychology and biology. Why? Because psychology and biology

3. See, for example, P. Turchin, T.E. Currie, E.A.L. Turner and S. Gavrillets, 'War, space, and the evolution of Old World complex societies.' *Proceedings of the National Academy of Sciences* 110 (2013), 16384–16389.

4. D.D.P. Johnson and D.R. Tierney, *Failing to Win: Perceptions of Victory and Defeat in International Politics* (Cambridge, Mass.: Harvard University Press, 2006).

have tended to be used as bolt-on explanations to account for why things go *wrong* – groupthink, cognitive bias, emotions, the failings of human nature and so on. But this leads to a lopsided view of the role of psychology and biology in human affairs. If psychological and biological traits only promote disaster and defeat, why are we laden with such defects? Why didn't natural selection stamp out these costly traits? This paradox suggests we are looking at things the wrong way around. Instead, we might start with the premise that psychological and biological traits are adaptations. We have these traits for good reason – they are mechanisms that evolved because they *helped* us navigate the physical and social world and succeed within it. This is not always the case today, since our cognitive and physiological mechanisms were shaped in an ancestral environment with different challenges and different prevailing costs and benefits. But we carry these traits with us all the time. If we look at *bad* outcomes, we are likely to find psychological and biological biases lurking in the background. But if we were also to look at *good* outcomes, we are likely to find them lurking there too. Psychological and biological dispositions will continue to be seen as mistakes or problems until we widen our dataset to look at successes as well. Psychological and biological dispositions may, in fact, have strategic advantages.⁵

The Scientific Toolkit: Politics in the Age of Biology

Neumann argues that 'IR should relate to other sciences that concern themselves with the same subject matter'.⁶ For him, this subject matter is defined as 'political and social life that plays out in a setting where there is a plurality of polities',⁷ and he concludes that 'to find our main competitors, we must look outside the social sciences'.⁸ Neumann advances Marcel Mauss's idea that, 'if we want to understand human action, we need to take into consideration three systems: the psychological, the physiological, and the social'.⁹ I would broadly agree, and as Neumann argues this puts us firmly in the fields of psychology and biology, with biology the 'contender that is of much more pressing interest'.¹⁰ So far so good and I agree. Note, however, that psychology and biology are inextricably linked. Human behaviour cannot emerge spontaneously out of biological materials. Rather, it is manifested via judgment and decision-making mechanisms, which are the stuff of psychology. Psychological traits are evolution's way of making us do whatever improved Darwinian fitness in our evolutionary history. There is something of a division of labour in accounting for human behaviour, but psychology and biology are not separate 'competitors'. They are both essential elements of the same evolutionary theory.

5. D.D.P. Johnson, D.T. Blumstein, J.H. Fowler and M.G. Haselton, 'The Evolution of Error: Error Management, Cognitive Constraints, and Adaptive Decision-Making Biases', *Trends in Ecology and Evolution* 28 (2013): 474–481.

6. Iver B. Neumann, 'International Relations as a Social Science', *Millennium*, 43, no. 1 (2014): 332.

7. *Ibid.*, 334.

8. *Ibid.*, 341.

9. *Ibid.*

10. *Ibid.*, 345.

Psychology: What Humans Think and Do

Psychology has done the heavy legwork of documenting how humans make judgments and decisions, how these deviate from rational choice theory, and identifying sources of variation – the contexts in which we are more or less likely to manifest this or that disposition. The field has problems, as Neumann notes, such as having focused so heavily on western subject populations. But I suggest that psychology poses a bigger empirical question for IR, and a bigger theoretical problem for biology.

First, the empirical problem. While psychologists have worked hard mapping out a range (some would say a laundry list) of psychological dispositions and biases, we often do not know whether they are manifested in *political contexts* or among *political decision-makers*. It has become common to lift psychological phenomena found in abstract laboratory experiments on US college students, and transplant them to explain the behaviour of political actors in real-world political settings. It may be the case that such biases *do* translate directly from the lab to the halls of government, from college students to elite decision-makers, and from individuals to decision-making groups. However, that is an empirical question, and we will not be sure of the answer until we do our *own* experiments that test these assumptions in politically relevant contexts. This will be a long process, partly because there is a lot of work to do, and partly because there is no tradition of experimental research in international relations, and thus only a few people at the coalface. We are making small pigeon steps forward in testing whether psychological and physiological dispositions also occur in politically relevant experimental settings,¹¹ as well as testing predictions derived from biology and psychology in case studies of real-world events.¹² There is much to be done, but behavioural economists and a growing cadre of political scientists are working in this direction.

Now the bigger theoretical problem. Psychology tends to be descriptive. It tells us *what* people think or do. But it does not tell us *why*. This is especially the case with cognitive biases where the emphasis has been on empirical description rather than story telling.¹³ If the *why* question is addressed at all, it is often couched in terms of a ‘psychological adaptation’, a disposition to help us cope with or manage the complexity or stresses of life. But in Darwinian terms that is no explanation at all. It just begs the question – why do we need to do that? For a full understanding of

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11. E.g., D.D.P. Johnson, R. McDermott, J. Cowden and D. Tingley, ‘Dead Certain: Confidence and Conservatism Predict Aggression in Simulated International Crisis Decision-making’, *Human Nature* 23 (2012): 98–126; R. McDermott, D. Tingley, J. Cowden, G. Frazzetto and D.D.P. Johnson, ‘Monoamine Oxidase A Gene (MAOA) Predicts Behavioral Aggression Following Provocation’, *Proceedings of the National Academy of Sciences* 106 (2009): 2118–23.
 12. E.g., D.D.P. Johnson and D.R. Tierney, ‘The Rubicon Theory of War: How the Path to conflict Reaches the Point of No Return’, *International Security* 36 (2011): 7–40; R. McDermott, *Presidential Leadership, Illness, and Decision Making* (Cambridge: Cambridge University Press, 2007); S.P. Rosen, *War and Human Nature* (Princeton, NJ: Princeton University Press, 2004).
 13. T. Gilovich, D. Griffin and D. Kahneman, eds, *Heuristics and Biases: The Psychology of Intuitive Judgment* (Cambridge: Cambridge University Press, 2002); J.H. Kagel and A.E. Roth, eds, *The Handbook of Experimental Economics* (Princeton, NJ: Princeton University Press, 1995).

psychological dispositions, we have to examine if and how evolved psychological traits increased Darwinian fitness.¹⁴ If they did not, they should have been selected out of the population (there are reasons why that sometimes does not happen, but in general the point stands). This is precisely why we now have the ‘new’ science of evolutionary psychology.¹⁵ It seeks to understand human psychological phenomena within the framework of natural selection. This matters for IR because we want to know *why* people, leaders, organisations and states do things, not just *what* they do. IR theories are theories of *why* states behave the way they do; *what* they do is merely empirical evidence for or against the theory. The why question resides ultimately not in psychology, but biology.¹⁶

Biology: Why People Think and Do

So biology is where we end up when we try to understand human preferences, judgments, and decision-making. But it is more than that. Biology also provides the physiological *mechanisms* that generate psychological outcomes. To understand human behaviour is no longer to understand the human mind, it is to understand the entire organism that contains and interacts with it. Not only physical traits but also mental traits are affected by genes, biochemistry, hormones and other physiological processes. Many of these physiological mechanisms within a given individual have specifically *social* causes and consequences. Durkheim’s dictum that ‘social phenomena should be explained in terms of other social phenomena’ is too narrow for 21st-century science. Many social phenomena are now well known to be influenced by biological mechanisms.¹⁷ For example, genes affect our ideological preferences and voting behaviour. Hormones such as testosterone and oxytocin influence our behaviour towards other people, and indeed are influenced *by* other people’s behaviour towards us. Mirror neurons can change our own emotional state merely by observing others. No biologist would dispute that both physiological and social factors are important to the overall picture (as are the many interactions between them), but to reject biological underpinnings of social behaviour because of a cherished dictum declared a century ago, when science was so far behind where it is now, would be idiotic. Indeed, the very social mechanisms that Durkheim himself sought to explain, such as ritual and social cohesion, can now be understood as resting on underlying

14. J.H. Barkow, L. Cosmides and J. Tooby, eds, *The Adapted Mind: Evolutionary Psychology and the Generation of Culture* (Oxford: Oxford University Press, 1992); D.M. Buss, *Evolutionary Psychology: The New Science of the Mind* (Harlow: Pearson, 2013).

15. Buss, *Evolutionary Psychology*; S. Pinker, *The Blank Slate: The Modern Denial of Human Nature* (New York: Penguin Putnam, 2002); R. Wright, *The Moral Animal: Why We Are, the Way We Are, The New Science of Evolutionary Psychology* (New York: Random House, 1994).

16. A. Gat, ‘So Why Do People Fight? Evolutionary Theory and the Causes of War’, *European Journal of International Relations* 15 (2009): 571–99.

17. For many examples, see J.R. Hibbing, K.B. Smith and J.R. Alford, *Predisposed: Liberals, Conservatives, and the Biology of Political Differences* (New York, NY: Routledge, 2013); S.P. Rosen, *War and Human Nature* (Princeton, NJ: Princeton University Press, 2004).

biological mechanisms such as costly signalling and the cognitive neuroscience of ritual experience.¹⁸

Open Minds: The Fear and Fudging of Biology

Neumann is generous in his openness to biological approaches to IR. Despite a healthy scepticism, he does not let social science paradigms prevent him from calling for a meeting of disciplines. This is precisely the kind of outward thinking that is needed if different fields are going to take each other seriously to resolve joint problems. But let me address the two critiques he makes of this work. The first is the charge that my work is ‘functionalist’, and the second is the horror at Bradley Thayer putting biology at the heart of realist theory. Thirdly, I point out that even nurture is conditioned by nature.

The Fault in Functionalism: Tinbergen’s Four Causes of Behaviour

To critique a biologist’s work as ‘functionalist’ is amusing. If a trait is not functional, then it would never have been favoured by natural selection (except in special conditions). This is the whole point of the inquiry. It is like critiquing a political scientist’s work for looking at policies. Traits have to *do* something positive for an organism’s fitness to survive and spread. In anthropology and other social sciences, ‘functionalism’ has attracted a bad name, because why should a trait have to be ‘for’ anything, and how would we define or measure its success anyway? Modern evolutionary biology does not have this problem because traits are not favoured by natural selection unless they are ‘for’ something, and defining and measuring success is specified by the biological bottom line – Darwinian fitness. If we are to take biology seriously then we have to reorient ourselves to think in terms of function. This is the whole point of Darwinian logic.

It is nevertheless important to recognise that function does not represent the full gamut of evolutionary analysis or explanation. Nobel Laureate Niko Tinbergen¹⁹ is famous in the discipline for stressing that there are *four* possible explanations of any biological trait: (1) phylogeny (its evolutionary history and ancestral states); (2) proximate mechanism (the physiological mechanisms that cause it to occur); (3) development (its expression from birth to maturity); and, finally (4) function (what it does for Darwinian fitness). Function is only one of these four questions, and we need to investigate all of them if we are to develop a full understanding of why a given behaviour exists – *or persists*, since functions may no longer be fulfilled. We have an appendix but it doesn’t help us anymore and can kill us. We have a

18. P. Boyer and P. Liernard, ‘Ritual Behavior in Obsessive and Normal Individuals’, *Current Directions in Psychological Science* 17 (2008): 291–94; R. Sosis and C. Alcorta, ‘Signaling, Solidarity, and the Sacred: The Evolution of Religious Behavior’, *Evolutionary Anthropology* 12 (2003): 264–74; H. Whitehouse, ‘Ritual, Cognition, and Evolution’, in *Grounding the Social Sciences in the Cognitive Sciences*, ed. R. Sun (Cambridge, MA: MIT Press, 2012).

19. N. Tinbergen, ‘On Aims and Methods in Ethology’, *Zeitschrift für Tierpsychologie* 20 (1963): 410–33.

craving for sugar and salt but that doesn't help us much anymore and can kill us too. Evolutionary baggage, physiological mechanisms, and developmental pathways are not functional explanations, but they remain vital to explain why evolved preferences and behaviours can persist today even when they have become maladaptive or lethal. Functionalism is our primary interest, but it does not blind us to alternative explanations of behaviour. In fact, it is precisely the mapping out of when and why functionality fails that can lead to the most important insights for understanding human behaviour in the modern social and political environment.

Fear: The Myth of Biological Determinism

The second charge is that, while my work is OK because it remains a kind of 'social analysis', identifying sources of variation that predicts one type of behaviour in one setting and different behaviour in other settings, the work of other biologists linking evolution to human nature is flawed because it is deterministic, forcing social facts out of biological facts (against Durkheim's cherished dictum). This is, however, a gross misunderstanding of the logic.

The persistence of the myth that biological explanations of behaviour are deterministic is astonishing. The idea was demolished decades ago – and by biologists themselves, not social scientists. The educational curriculum should really be altered to destroy this poisonous superstition once and for all. It strongly impairs scholar's and laypeople's understanding of and openness to biology. No biologist is a determinist, and there is no version of biological or evolutionary theory out there which a biologist could use to derive such a stance.

In contrast to any form of determinism, biology affects outcomes in a probabilistic way, just like any other variable. As Bradley Thayer likes to remind people, biology is good probability, not destiny. What is remarkable is how asymmetric the understanding of this critical point is between the social and natural sciences. No biologist worth his or her salt thinks human behaviour is 100 per cent nature and 0 per cent culture, but it is quite easy to find social scientists who think human behaviour is 0 per cent nature and 100 per cent culture. People worry about extremist views coming out of biology, but the only extremists on this issue seem to be social scientists. Even among those who accept nature as somewhat more than 0 per cent, as Neumann puts it, 'the social scientists' wager is that socially produced meaning ... is so strong amongst humans as to be the decisive force in human life'.²⁰ Whether decisive means 25, 50 or 75 per cent, we don't know, but most biologists would not challenge any of those figures.

Neumann seems to merely have added to the mountain of people who have fallen into the biology-equals-determinism trap. It is clearly a very deep pit and will continue to claim more victims. Having fallen in, Neumann laudably accepts that IR needs to engage with biology, but poses the next step as a dichotomy: 'The question is *how* we do it. Do we, *contra* Spencer, confirm ourselves as *social* scientists by

20. Iver B. Neumann, 'International Relations as a Social Science', *Millennium*, 43, no. 1 (2014): 345.

insisting on explaining social stuff with other social stuff, or do we, *pro* Spencer, simply argue that biology determines social behaviour?' If readers get a single take-home point from this article, it must be that no one has to choose between these extreme and erroneous paths.

Biology does not 'determine social behaviour', and biologists would be the first to say so (check anything by Richard Dawkins, Steven Pinker, David Sloan Wilson, E.O. Wilson, Robert Trivers, W.D. Hamilton, Charles Darwin or any other prominent biologist). But Neumann sees current work in the biology of international relations diverging along each of these two paths – one to a land of plenty and the other to Hell. He sees my work as safely within the remit of the former, because of the focus on explaining sources of variation in psychological and biological phenomena. This is a deliberate effort to avoid the determinism charge, and to avoid Waltz's overly simplistic but now folkloric notion that a constant (e.g. some trait of human nature) cannot explain differences in war and peace.²¹ By contrast, Neumann sees the work of Bradley Thayer as falling into the second camp, deterministic and Spencerian. This is a baseless charge. Thayer explicitly denounces Spencer and his social Darwinist propensities.²² Indeed, in a specific discussion of biological determinism Thayer points out that 'even a cursory understanding of evolutionary theory supports the opposite conclusion'.²³ This only leaves the sociological question of why Thayer, like many others in the field, is faulted for an argument he destroys?

Sacred Heart: Challenging Human Nature Assumptions at the Core of IR

Neumann's concern arises, I believe, because of the implications, not the theory. Thayer is taking on the big picture, placing evolutionary theory as the central explanation of human nature. To the social scientist's eyes, still red from the sociobiology debates of the 1970s, such a claim may seem a monolithic theory that downplays human variation and agency, and predicts unbending competition and aggression. But as Thayer and others have been at pains to explain, that is not the lesson of modern evolutionary biology at all – human nature is shaped by behavioural ecology, contingent strategies, epigenetics and ecology. It is far from deterministic and a story of cooperation as much as competition. So why does such a theory look deterministic when it is not, and when the author explicitly explains why that is not even possible?

As well as the baggage of history and social science training, it seems that this error occurs whenever evolution is used as a model of human nature in general, rather than of specific instances of human behaviour in this or that setting. Most major IR theories

21. K.N. Waltz, *Man, the State and War: A Theoretical Analysis* (New York: Columbia University Press, 1959).

22. B.A. Thayer, 'Bringing in Darwin: Evolutionary Theory, Realism, and International Politics', *International Security*, 25 (2000): 124–51; *idem.*, *Darwin and International Relations: On the Evolutionary Origins of War and Ethnic Conflict* (Lexington, KY: University Press of Kentucky, 2004).

23. Thayer, *Darwin and International Relations*, 50.

make explicit or implicit assumptions about human nature, and all of them necessarily generalise about universal tendencies, even if in reality they accept there are significant variations among individuals and contexts. Evolutionary theories of IR are no different. While numerous others have put forward their own theories of human nature, no one accuses Kant or Morgenthau or Neibuhr or Mearsheimer of determinism. It seems to be a taint reserved uniquely for biological theories. This smacks of the legacy of the old sociobiology debate, not any reasoned understanding of modern evolutionary theory. Neumann wants us to explore the ‘interplay between psychological and biological factors in order to understand the social’, and I would argue that this is, in fact, characteristic of all recent biological work on IR, including Thayer’s, wherever it is correctly drawing on modern evolutionary theory. Other, non-biological factors remain perfectly plausible and important influences as well and no one denies it.²⁴

As with all disciplines, there are alternative hypotheses one can derive from theory, and their predictions can be tested against empirical data rather than rejected out of hand. What we need to do is start the work. Thus far, most evolutionary approaches have pussyfooted around the discipline of IR, perhaps overly cautious precisely because of the violent reactions discussed above, offering a bolt-on explanation here, a bit of additional explanatory power there. The big game changer will come when evolutionary theory challenges core assumptions of the discipline – and that is most likely to be challenges to 18th- and 19th-century philosophical assumptions about human nature. These are not fit for the Age of Biology and the Enlightenment thinkers would surely urge us to examine the scientific evidence. Recently, Thayer and I take a step back to ask *which* of all theories of IR, given their implicit or explicit assumptions about human nature, is most closely aligned with evolutionary theory.²⁵ Our conclusion is that it is, in fact, not just realism but offensive realism. People are not expected to like the answer, but they are expected to express knee-jerk reactions against it. Still, at last we have a reason to debate if and how evolutionary theory affects ideas at the heart of the discipline. The next step is for evolutionary theory to generate its *own* theory of IR. There is no reason why it has to be levered into offensive realism or any other existing social science theory at all.

I think the big issue here is what we fear rather than what we want to know. As soon as biology starts to suggest dark aspects of human nature, we immediately see visions of social Darwinism and Spencer. There is an almost automatic link in the brains of social scientists between biology and social Darwinism. But social Darwinism was a product of bad social science, not bad science. Neumann suggests Thayer’s work is ‘politically dangerous’. But science is about understanding things as they are, not as we would like them to be. Biological adaptations are whatever traits increased Darwinian fitness, and this has led to the natural

24. For other examples see A. Gat, *War in Human Civilization* (Oxford: Oxford University Press, 2006); A.C. Lopez, R. McDermott and M.B. Petersen, ‘States in Mind: Evolution, Coalitional Psychology, and International Politics’, *International Security* 36, no. 2 (2011): 48–83; McDermott, *Presidential Leadership*; J. Mercer, ‘Emotional Beliefs’, *International Organization* 64, no. 1 (2010): 1–31; Rosen, *War and Human Nature*.

25. D.D.P. Johnson and B.A. Thayer, ‘Crucible of Anarchy: Human Nature and the Origins of Offensive Realism’, paper presented at the 2013 annual convention of the International Studies Association, San Francisco, CA.

selection of egoism, dominance, predation, aggression, violence, and various other ‘nasty’ behaviours (among numerous species as well as ourselves), as well as ‘nice’ behaviours such as caring, cooperation, and sociality. Natural selection picks winners, that’s all. If we are to bring in biology, as Neumann argues we must, we should be ready to deal with nasty behaviours as well as nice ones. Typically, nice behaviours are seized upon as chinks in the armour of Darwinian theory, while nasty behaviours are seized upon as examples of biological determinism. There is no logic in that.

The Nature of Nurture: Biological Roots of Social Facts

Having explained that biology is not deterministic, it is important to realise that the nature–nurture debate is erroneous for another reason: nurture itself depends on nature. Genetics and a host of physiological and psychological mechanisms influence how and what we *learn*, as well as what we think and do. This means that even socially produced meaning can have biological roots or influences (for example, we have ‘cognitive templates’ that shape even apparently purely cultural phenomena such as religious beliefs²⁶). Pioneers of evolutionary psychology John Tooby and Leda Cosmides suggest that the influence of biology on cultural outcomes is very powerful indeed: ‘Our developmental programs, as well as the physiological and psychological mechanisms that they reliably construct, are the natural product of this [our] evolutionary history. Human minds, human behaviour, human artifacts, and human culture are all biological phenomena – aspects of the phenotypes of humans and their relationships with one another’.²⁷ Even if one is not willing to go that far, anyone open to modern science can appreciate that social effects can have at least some biological influence. And to stick one more Darwinian poker into the fire, social meanings and culture themselves can have differential *consequences* for biological fitness. So whatever their roots, which social meanings and cultural traits survive and spread and which ones diminish and die out are themselves subject to the processes of Darwinian selection in the form of gene–culture co-evolution.²⁸ Neither nurture nor culture offer an escape from Darwin.

Unspoken Issues: Nation States and Nasty Selection

In this final section, I lay out two major issues that Neumann did not address, but for me represent the bigger challenges of contemporary work. If biology is to make an impact on international relations, then we need to nail these issues.

26. P. Boyer and C. Ramble, ‘Cognitive Templates for Religious Concepts: Cross-cultural Evidence for Recall of Counter-intuitive Representations’, *Cognitive Science* 25 (2001): 535–64.

27. L. Cosmides and J. Tooby, ‘Cognitive Adaptations for Social Exchange’, in *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*, eds J.H. Barkow, L. Cosmides and J. Tooby (New York: Oxford University Press, 1992), 19–136, 20–21.

28. A. Mesoudi, *Cultural Evolution: How Darwinian Theory Can Explain Human Culture and Synthesize the Social Sciences* (Chicago, IL: University of Chicago Press, 2011); P.J. Richerson and R. Boyd, *Not by Genes Alone: How Culture Transformed Human Evolution* (Chicago, IL: University of Chicago Press, 2004).

From Organism to State: The Levels of Analysis Problem

Here's what I see as a more genuine and more serious obstacle for biological explanations of international relations. Let's say we all agree that biology and psychology strongly influence human behaviour. How do we know these influences will ever be manifested at the level of the state? You or I may be biased or emotional or have surging testosterone levels, but would it ever affect the behaviour of a nation? The whole point of government is to ensure multiple voices and checks and balances so that rational decisions can, in theory, persist despite individual preferences and biases. Decisions take time, and are made by groups. What room is there, therefore, for biology to affect political outcomes? There are several good answers to this, such as that many psychological biases may be shared by multiple individuals at once, or that if individual leaders have special influence then so do their biases, or that these biases are built into the walls of the very institutions of government themselves. Still, it remains very hard to demonstrate psychological or physiological phenomena at work at the level of the state. There are many good works showing that they are *consistent* with observed political behaviour, but few that demonstrate, statistically, that they are more important than a range of alternative explanations. We are still at the beginnings of this challenge, and there is much basic science to be done.

Which Evolutionary Theory? Choosing Murder or Genocide

Another big issue is *which* evolutionary theory we should be advancing. At first glance, there might appear to be only one. There is only one Darwin and only one theory of adaptation by natural selection. However, there are different versions of evolutionary theory. Some are entirely discredited, while others remain debated within biology. As an example of the former, Neumann mentions an evolutionary theory advanced by the 19th-century Russian Prince Peter Kropotkin, which emphasised 'mutual aid' and cooperation rather than competition as the key to survival in nature. Political scientists have looked to Kropotkin to rescue us from the gloom of Darwinian competition, but unfortunately, it is not an alternative theory of evolution but a flawed scientific understanding of selection. No biologist takes it seriously, and Anthony Lopez has recently done a great job in puncturing this fantasy in this very journal.²⁹

There are other variants of evolutionary theory that remain in debate within biology. Like Kropotkin, they emphasise cooperation rather than conflict, but are not so resoundingly rejected. However, these alternative theories do not reverse or even weaken the predictions for *inter-group relations* – the key thing that we are interested in as students of international relations. In fact they paint a gloomier rather than a happier picture. Thayer and I focus on conventional mechanisms of selection acting at the level of the individual or gene, which remains dominant in evolutionary biology. But some people ask how things might be different if humans have been subject to selection at the level of whole groups of people – 'group selection'. If that occurred, altruism and self-sacrifice could have evolved

29. A.C. Lopez, 'The Hawkish Dove: Evolution and the Logic of Political Behavior', *Millennium* 43, no. 1 (2014): 66–91.

instead of selfishness and competition, because groups with more do-gooders would do better than groups with less.

Group selection used to be rejected outright as a misunderstanding of how evolution works. Individuals and traits that help the group – such as altruism – would quickly disappear because individuals that helped themselves would do better at their expense and spread.³⁰ Hence, this idea is now termed ‘naive’ (or biological) group selection. Biological group selection does not seem to occur among animals or humans, or if it does only rarely or weakly. Several special conditions must be in place to trump individual selection working in the other direction. However, in recent years some have come round to the idea that group selection can work in some special conditions, at least if it operates on *cultural* rather than biological traits.³¹ It is still Darwinian selection, but the ‘unit’ of selection is groups and the mechanism of transmission is information, not genes. Since ideas can be copied or imposed by human beings, groups with better ideas may spread at the expense of groups with worse ideas, over and above any selection going on at the level of individuals.

Cultural group selection can seem a much more promising ‘version’ of evolutionary theory, because like naive group selection it suggests that evolution may have favoured the development of other-regarding traits such as altruism and self-sacrifice. However, apart from the continuing obstacle of needing special conditions to trump individual selection, the larger problem is that these traits only benefit others *within* the group. The predictions for *between* group behaviour is worse than traditional selection, because if competition and selection is working at the level of groups, then any trait which favours the ingroup at the expense of outgroups will spread best of all. In short, group selection leads to, and feeds off, intense inter-group conflict. Cooperation and moral behaviour may therefore be a double-edged sword. As Matt Ridley puts it, ‘preferring the morality of group selection to the ruthlessness of individual struggle is to prefer genocide over murder’.³² Darwin himself, in a famed passage, noted that evolution could account for morality, but the logic of this morality would be to better dominate other groups that lacked it. This is the so-called dark side of group selection. The competition of natural selection may offer a bleak picture of human nature, but at the level of inter-group relations, the alternatives are worse.

The New Millennium: Challenges and Opportunities

Much contemporary work in international relations could be done with a pencil and paper by a 17th-century scholar with no knowledge of science or statistics. Such conceptual approaches are still, of course, important. But in the Age of Biology we should avail ourselves of new tools, and align ourselves with new interdisciplinary knowledge. We

30. G.C. Williams, *Adaptation and Natural Selection* (Princeton, NJ: Princeton University Press, 1966).

31. Richerson and Boyd, *Not by Genes Alone*; E. Sober and D.S. Wilson, *Unto Others: The Evolution and Psychology of Unselfish Behaviour* (Cambridge, MA: Harvard University Press, 1998); D.S. Wilson and E. Sober, ‘Reintroducing Group Selection to the Human Behavioural Sciences’, *Behavioral and Brain Sciences* 17 (1994): 585–654.

32. M. Ridley, *The Origins of Virtue: Human Instincts and the Origins of Cooperation* (London: Penguin, 1996), 193.

should ask ourselves, what can we do now that we could not have done 10, 50 or 100 years ago? The obvious answer is computationally intensive work, such as statistical analysis of large datasets, or simulations. But there are many other areas ripe for development, such as laboratory experiments on psychological and physiological causes of political behaviour, and case studies that test predictions derived from evolutionary theory in the archives of history. Neither of these requires advanced quantitative skills or methods, and yet can be scientifically cutting edge.

The revolution is already upon us. Other disciplines, including economics, political science, psychology and law are already reaping the insights of evolutionary theory.³³ International relations stands to gain from similar advances. Neumann already identifies core areas where biology may help IR. However, there are many others. Biological underpinnings of human judgment and decision-making is only one of several areas where evolution and biology offer new insights. There is also biomimicry (designs and innovations from nature), ecology (how populations change and interact over time), and the processes of adaptation (mechanisms of evolutionary change). Evolution is a vast, open-source laboratory in which many millions of organisms have been in competition for 3.5 billion years. Not only does this offer an enormous library of information on successful and unsuccessful strategies to deal with the problems of competition, cooperation and threats to survival, but it also provides a dataset that reveals a range of common behavioural, organisational and mathematical patterns that transcend species and contexts.³⁴ To set ourselves outside the history of life is to willfully miss out on broader understandings of human beings and human society.

As the sciences race ahead with technological innovation, increasing research funding, new discoveries, interdisciplinary synthesis, and top students, there is a temptation to reify what is different about IR, to retrench into safe areas that distance us from science – philosophy, humanities and history. But this will only tempt the premature death or dearth of the discipline, reduce its power to explain and predict events, and make us

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33. J.H. Barkow, *Missing the Revolution: Darwinism for Social Scientists* (Oxford: Oxford University Press, 2006); J.H. Fowler and D. Schreiber, 'Biology, Politics, and the Emerging Science of Human Nature', *Science* 322 (2008): 912–14; J.M. Gowdy, D. Dollimore, U. Witt and D.S. Wilson, 'Economic Cosmology and the Evolutionary Challenge', *Journal of Economic Behavior and Organization*, in press; D.D.P. Johnson, M.E. Price and M. Van Vugt, 'Darwin's Invisible Hand: Market Competition, Evolution and the Firm', *Journal of Economic Behavior and Organization* 90 (2013): S128–S140; R.M. May, S.A. Levin and G. Sugihara, 'Ecology for Bankers', *Nature* 451 (2008): 893–95; D.R. Oxley, K.B. Smith, J.R. Alford, M.V. Hibbing, J.L. Miller, M. Scalora, P.K. Hatemi and J.R. Hibbing, 'Political Attitudes Vary with Physiological Traits', *Science* 321 (2008): 1667–70; J.E. Stake, 'The Property "Instinct"', *Philosophical Transactions of the Royal Society of London*, Series B, 359 (2004): 1763–44.
34. D. D.P. Johnson, 'Natural Security: 3.5 Billion Years of Adapting to Novel Threats', *Political Insight* 3 (2012): 12–15; R. Sagarin, *Learning from the Octopus: How Secrets from Nature Can Help Us Fight Terrorist Attacks, Natural Disasters, and Disease* (New York: Basic Books, 2012); R. Sagarin, C. Alcorta, S. Atran, D. Blumstein, G. Dietl, M. Hochberg, D.D.P. Johnson, S. Levin, E. Madin, J. Madin, E. Prescott, R. Sosis, T. Taylor, J. Tooby and G. Vermeij, 'Decentralize, Adapt and Cooperate', *Nature* 465 (2010): 292–3; R.D. Sagarin and T. Taylor, eds, *Natural Security: A Darwinian Approach to a Dangerous World* (Berkeley, CA: University of California Press, 2008).

less relevant to policymakers, funding sources, students, and colleagues in other disciplines. Iver Neumann's gift to us all – whatever our disciplinary stripes and regardless of methods and interests – is to signal that change is afoot, and to alert us to the fact that we are likely to benefit from preemptive integration and innovation rather than delayed disintegration and distrust. The spread of science into traditional social science fields is inevitable. It is already happening. In IR, we need to orient ourselves in new directions and start paddling so we can ride the wave rather than sinking behind it.

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