

# Towards an International Political Ergonomics

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**Jonathan Luke Austin**

Graduate Institute of International and Development Studies, Switzerland

## Abstract

This article introduces International Political Ergonomics. International Political Ergonomics is a novel research programme focused on achieving political change through the ergonomic (re)design of world politics. The approach is grounded on a shift across International Relations which recognizes that its epistemic (i.e. knowledge-producing) core is often inadequate to achieve change. Insights from the practice turn and behaviouralist International Relations, as well as from philosophy, sociology and neuroscience, demonstrate that much international behaviour is driven by the ‘unconscious’ or ‘non-reflexive’ re-articulation of repertoires of actions even where the pathologies of this process are known. This implies that knowledge production and dissemination (i.e. to policymakers, global publics) is often unable to effect influence over social practices. What is thus required is a non-epistemic means of producing world political change. International Political Ergonomics is a research programme that takes up this task. It does so by describing how small material interventions into world politics can radically shift individual behaviours by encouraging greater rationality, reflexivity and deliberation. After laying out the theoretical basis for this claim, the article demonstrates it by detailing the application of International Political Ergonomics to violence-prevention efforts. The article concludes by reflecting on the radical implications that International Political Ergonomics has for the vocation of International Relations.

## Keywords

Design theory, ergonomics, materiality, policy relevance, political violence, practice theory

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## Corresponding author:

Jonathan Luke Austin, Violence Prevention (VIPRE) Initiative, Graduate Institute of International and Development Studies, Geneva 1211, Switzerland.

Email: [jonathan.austin@graduateinstitute.ch](mailto:jonathan.austin@graduateinstitute.ch)

## Introduction

Die Philosophen haben die Welt nur verschieden interpretiert, es kömmt drauf an, sie zu verändern.<sup>1</sup>

What do we, as students of International Relations (IR), *do*? We read. We write. Some of us run numbers. Some of us go to archives; others head to the ‘field’ and observe this or that. Some of us develop models; others theories. Things like that. That is what we typically do. Now — instead — imagine a student of world politics standing in a factory at the end of a production line with little objects flowing towards her. Imagine her picking one of these up and examining it with care. Or, imagine her sitting in a studio before an architect’s desk, sketching; or sitting in a workshop surrounded by tools, metals and plastics, making things. Imagine a student of world politics doing all that. This is hard to imagine because, well, that is not what we do at the moment.

In this article, I suggest that we start doing things like that. I do so by advocating for the development of an International Political Ergonomics (iPER). iPER is an applied research programme founded on the idea that one promising means by which to effect world political change is the ergonomic redesign of the socio-materiality of the situations in which its events occur. In this, iPER seeks to reconfigure the vocation of IR such that beyond studying, analysing and writing, we also begin *designing, crafting, building* and *distributing* concrete things. Analogously, just as automobile engineers insert safety mechanisms into vehicles (beeping seatbelt indicators, lane-departure warning systems) that are ancillary to their main purpose, so I argue that it is possible for IR to not dissimilarly intervene in world politics in as-yet-unconsidered but positive political ways.

The need to develop an iPER stems from recent developments within practice-theoretical and behavioural IR (as well as work across neuroscience, philosophy of mind and psychology) that challenge conceptions of how science gains social influence. Whether expressed via theories of Type-1 thinking, *aliefs*, habit or practice, IR theory has come to identify factors that lead to the repetition of particular behaviours that are, at individual or collective levels, questioned in their desirability (i.e. are deemed potentially negative).<sup>2</sup> To simplify, the suggestion is that cognitively held knowledge that should at least give individuals ‘pause for thought’ before carrying out an action (e.g. ethical norms, bureaucratic ‘best practices’, etc.) is frequently not enacted by humans, not necessarily because this knowledge has been consciously socio-politically or individually rejected, but often due to a bias against self-reflective thought that is intrinsic to human action and being.

These ideas suggest that undesirable outcomes in world politics sometimes emerge less as the product of (more or less rational) choices/decisions framed by intersubjective horizons of meaning (which might be altered via logics of argumentation) or cost–benefit calculations founded on a logic of consequence meditated over by (more or less) rational agents, so much as the product of an ‘unconscious’ or ‘non-reflexive’ re-articulation of repertoires of actions that force repetition even if these processes are collectively recognized as pathological or, at the very least, are the source of great socio-political controversy (cf. Hopf, 2010; Pouliot, 2008; Ringmar, 2017). One central implication of these findings is that knowledge production (i.e. epistemics) is typically a necessary but rarely sufficient source of sustained world-political change.

iPER thus seeks to address the emerging necessity of IR coupling its knowledge-producing (i.e. epistemic) core with supplementary approaches that address the challenges that these theories pose for the practical aspects of its vocation. Indeed, many in IR have long believed that the field's ability to effect change rests on epistemically revealing the workings of the world and sharing its findings with policymakers or interested global publics (Jentleson and Ratner, 2011; Leggold, 1998; Walt, 2005). It is then hoped that these agents will alter their behaviours by integrating this knowledge — and, of course, this process sometimes works. New ideas can change the world, especially if pushed for via a logic of argumentation founded on the modern vision of politics as grounded in (ideational) contestation (Risse, 2000). However, sometimes, ideas are not enough, and the continuing gap between normatively held ideals and political practice strongly attests to this fact.

iPER provides an applied materialistic alternative to knowledge production. This approach is grounded on the attention that many of the theoretical schools of thought mentioned earlier give to exploring the material, environmental and situational factors underlying non-reflexive action.<sup>3</sup> Intuitively, if non-human factors drive certain (individual or collective) behaviours, then making material changes to socio-political settings may be critically important, and there are very old examples of this intuition. The 19th-century redesign of British parliamentary architecture, for instance, was dictated by an awareness that Parliament's capacity to be democratically transparent was not limited by a 'lack of desire among MPs to publicize their oratorical endeavours' (Rex, 2014: 457). On the contrary, the importance (and, indeed, potential advantages) of this publicity had long been recognized. However, Parliament's capacity to become publicly transparent in its activities was — *in spite of this belief/desire* — still very significantly 'constrained by the physical space it occupied' (Rex, 2014: 474). Hence, the eventual redesign of Parliament notably included a set of galleries — for the press and public — that significantly materially altered the capacity for the public to 'look back' at and perhaps even influence parliamentary behaviour.

iPER seeks to imagine similar interventions that might counteract negative world political phenomena, which occur due to non-cognitive factors, by working to augment the socio-technical systems of individuals and the collectivities that they comprise in ways that might increase reflexive decision-making capacities. The approach draws on ergonomics, design theory and cognate approaches due to the applied thinking styles of these fields, which ground their knowledge production in the desire for change. Likewise, the focus of design-centric approaches on the interaction between human and machine systems, and their efforts to design changes into these socio-technical networks that alter the likelihood of behaviours, is especially relevant to IR. Indeed, particularly useful is a sub-field of ergonomics focused on safety and the reduction of decision-making biases, as well as the design or redesign of materials in ways that increase human reflexivity (Dekker, 2014a, 2014b). Ergonomics and design-centric approaches are most useful, however, because the theoretical postulates that they operate under echo those now common across IR. The social and technical interventions made within ergonomics and/or design theory do not *presume* the presence of a rational, thinking or reflexive subject. Instead, they (through different means) change behaviour by altering the material,

technological or signficatory systems in which humans are embedded (Chung and Williamson, 2018; Hancock and Diaz, 2002).

Ultimately, then, drawing on ergonomics and/or design theory is one way to ensure that the theoretical and empirical knowledge developed across IR as its bread and butter can continue to be nurtured while also always having the potential to be materialized in objects and technologies (or in other ways) that would apply this knowledge concretely, and (potentially) independently from any particular social or political authority that might dilute its socio-political independence (cf. Jahn, 2017). iPER is thus presented as one means of expanding IR's vocation such that it becomes a field possessing an applied variant. Developing iPER means to create an *applied IR*, and although such an applied sub-field raises innumerable ethical questions, which I discuss at length in the conclusion that follows, the promise it offers to change worlds is not insignificant.

In order to reach this argument, I will now begin by discussing how IR has previously sought to change the world. As glossed earlier, this discussion dwells on how knowledge as a representational object has been central to these endeavours. The second section then theorizes how IR's change-making activities are limited by this epistemic focus and notes how the approach ignores the drag effects of habitual, practical and/or 'natural' sources of behaviour. The third section then theorizes an iPER able to address these challenges. This is achieved through a comparison with other social and natural scientific fields that already materially intervene in human behaviour, as well as by way of analogy to Thomas C. Schelling's deterrence theories. The final section concretizes my discussion by exploring examples of iPER 'in action', focused on violence prevention. The article concludes by discussing what exploring iPER seriously would mean for the vocation of IR. In doing so, I urge that IR takes the world in its own hands and goes beyond delegating praxis to politicians and civil society groups by instead becoming directly (if riskily) involved in redesigning the contours of international relations.

## IR and making change

Many IR scholars have long been concerned with changing the world. From its beginnings, the field has been preoccupied with sharing knowledge of the workings of politics with relevant practitioners and/or with critically challenging assumptions of how the world *should* be ordered (Cox, 1986). Falling in line with the still-standing Enlightenment tradition, the hope is that employing an ideational logic of argumentation supported by the weight of social-scientific procedures can produce evidence through which to debunk myths about the social world and, in doing so, provide the impetus to change the extant paths of policymakers or global publics. Of course, IR scholars know well that we are rarely implicated in the genesis of change. However, following Goldsmith and Krasner (2003: 43), the view is that 'ideals can be pursued effectively only if decision-makers are alert to ... the consequences of their policies'. The goal of many is thus to better inform practitioners of the consequences, alternatives to and so on of their actions. Not all agree, of course. A counter-argument exists critiquing the very idea that scholarly knowledge should be co-imbricated with the contingencies of politics (Jahn, 2017). Nonetheless, most believe that 'it is both in the discipline's self-interest and part of its societal responsibility to link its scholarly mission' to politics (Jentleson, 2002: 181). Specifically, two

trends orient this work. The first is policy-relevant scholarship focused on core policy questions through ‘case-oriented and actor-specific analyses, [and] “user-friendly” empirical analysis’ (Eriksson, 2014: 95). By contrast, others demonstrate the relevance of more abstract, critical, meta-theoretical or grand theoretical work within IR that lacks such ‘direct’ applicability (Mearsheimer and Walt, 2013).

Specific orientation aside, IR has long been distinctly unhappy about the extent of its ‘relevance’. As Walt (2005: 23) once put it, ‘policy makers pay relatively little attention’ to IR, adding that the common counter-argument that IR gains influence through ‘trickle-down’ effects (teaching, media engagement, etc.) has become ‘increasingly questionable’. Nye (2008) also claims that the gap between IR and policy has grown, and most agree. Indeed, some believe that IR’s position has weakened as think-tanks and others have colonized its privileged status (Jentleson, 2002: 181). Often, this problem is connected to the socializing effects of academic culture and its divergence from the ‘real’ world (George, 1994). The answer to the question posed by Lepgold two decades ago — *Is anyone listening (to IR)?* — therefore *mostly* continues to be answered quite simply: *not really*.

This article shares the concerns of Walt, Lepgold, Nye and others who think similarly. However, it explores this dilemma by beginning with a quite different orienting question: *does listening (always) matter?* The entire debate on the policy relevance of IR rests on epistemics. The belief is that IR can provoke change by developing and communicating ‘better’ knowledge about the world. However, the tenability of this approach is coming unstuck. It seems today that the ideals of democracy, human rights, economic interdependence and so on are losing traction. The entirety of the next section of this article dwells on this point, but let me first briefly demonstrate it now via a case in which scholars *have* been listened to: the constructivist literature on human rights in IR.

Generally, constructivist work on human rights norms has focused on the powers of a logic of appropriateness and the idea that developing stronger norms is central to improving world politics (Onuf, 2016). Indeed, in optimistic moments, norm theory suggests that once an international norm has reached widespread acceptance, conformance becomes ‘automatic’ (Finnemore and Sikkink, 1998). Here, the work of Kathryn Sikkink (2011) on torture is instructive. Throughout her work, Sikkink has collaborated with human rights activists and intervened through (domestic and international) legislatures in order to strengthen global anti-torture (and other) norms. Indeed, Sikkink’s work is exemplary of the impact that scholarly activism can have.

However, while Sikkink has aided in the growth of a post hoc ‘justice cascade’ in which the strengthening of human rights norms has seen a rise in criminal prosecution, the *practical* effects of norm diffusion are less encouraging. For example, the strengthening of anti-torture norms has occurred without continued drops in the state-led use of torture (Austin, 2016b, 2017; Austin and Bocco, 2017; Noack, 2014), and this fact should be unsurprising. It has long been known that the prosecution and punishment of crimes does not produce significant declines in rates of drug dealing, gang violence or the like. Similarly, criminalizing and punishing violations of international law appear to have limited consequences for reducing the frequency of their occurrence. In cases like this, then, scholars within IR *have been and are being* listened to. They testify before

legislatures, advocate expertly in courtrooms and help draft new policies. The problem is not a lack of an audience for scholarly knowledge but the lack of change occurring.<sup>4</sup>

## Desire lines and the deep psyche of world politics

If you take a walk through any town, city or natural habitat, you will come across seemingly random paths cut in the ground. Dirt tracks that twist and turn and — typically — provide shortcuts bypassing formal walkways. Within urban planning, these paths are termed desire lines: routes worn into the earth by people ‘naturally’ following the path of least resistance (Tiessen, 2007). Such desire lines are paradoxical. On the one hand, they indicate human purposefulness. Instead of doing what we are told, following paths blindly, we often do what we prefer. However, on the other hand, desire lines are cut into the earth by thousands of people following the same desire. People create these paths like ants marching with a striking lack of individuality, as if human desires were unconsciously shared via a certain ‘deep psychic’ force.

In this section, I show that desire lines are at the root of world-political problems based on social practices that are (1) *collective* in their emergence but also (2) (partially) *unthought* or *unplanned*, while (3) having — nonetheless — a patterned regularity. As an example, Autesserre (2014) has demonstrated how various personal and bureaucratic practices within peacekeeping operations that are organizationally recognized as negative vis-a-vis the efficacy of those missions persist nonetheless due to a set of individual and/or social preferences that push aside the possibility of reflexive behavioural change. In the following, I discuss many other examples in which international order is deranged by such patterned forms of collective non-reflexivity. First, however, I should note that the term ‘desire lines’ is unusual. I am employing it here solely to avoid affiliating with one or another school of theoretical thought in IR, each of which has its own terms to describe this issue. Indeed, typically, IR explores the problem in question in the terms of either (1) human nature, (2) intersubjectively held ideational structures or (3) the repetition of social practices.

Table 1 disaggregates these most common ‘paradigms’ through which the deep psyche of world politics being discussed is explored vis-a-vis the schools of thought employing them, the level of change identified as being possible (mutability), the methods for achieving change and the internal logics that each presupposes. Deliberately, a wide range of approaches are included, many of whose variants do not necessarily ally with deep psychic thinking. For example, Waltzian neorealism does not rely on assumptions about human nature, favouring instead a structuralist ontology. Likewise, the issue of how change occurs is deeply contested across the approaches. My intention of grouping these theoretical approaches together is thus not to imply homogeneity or agreement. Instead, it is to note that since its foundations, IR has proliferated theories that appreciate the relevance of desire lines for world politics. For the purposes of our discussion, however, let me dwell only on the third and most recently identified source of the deep psyche of world politics identified: *habits*. Most closely, this term refers to the recent practice turn in IR (Adler and Pouliot, 2011). As Pouliot (2008: 258) summarizes, practice theory:

**Table 1.** Explanatory paradigms for the deep psyche of world politics.

	Source(s)	Schools	Mutability	Logic(s)	Change via
<b>Human nature</b>	Biology; (clashes of) interests; (bounded) rationality; evolution	Classical realism; neorealism; liberalism; functionalism	Low	Consequences; realpolitik; incrementalism	Exogenous shock; balancing; negotiation; rational deliberation; (religious) salvation; technology; war
<b>Ideology</b>	Culture; history; economic forms; institutional forms; materiality	Constructivism; historical institutionalism; Marxism; critical theory	Medium–low	Argumentation; appropriateness; Enlightenment; social-material relationality; historical legacies	Exogenous shock; knowledge production; technology; communicative action; radical action
<b>Habit</b>	Practices; repetition; training; problem-solving; social fields (& capital); materiality.	Practice turn; pragmatist sociology; critical theory	Medium–low	Practicality; structure of socio-technical networks; material-semiotics	Exogenous shock; incremental contestation; technology; citationality of practice; reflexivity

*Note:* This table is illustrative of the multiplicity of approaches incorporating some understanding of the desire lines of world politics but is not intended to be comprehensive or fully representative of specific theoretical nuances.

Starts from the premise that most of what people do ... does not derive from conscious deliberation or thoughtful reflection.... Instead, practices are the result of inarticulate, practical knowledge that makes what is to be done appear ‘self-evident’ or commonsensical. This is the logic of practicality.

Following these principles, practice theorists have shown how bureaucratic pathologies (Neumann, 2007), political violence (Austin, 2016a, 2016b, 2017, forthcoming), terrorist recruitment (Crone, 2014), legal adaptations to technology (Leander, 2013), inefficiencies in humanitarian policy (Autesserre, 2014) and beyond are less the product of particular (more or less rational) choices or decisions framed by intersubjective horizons of meaning (which might be altered via logics of argumentation (Risse, 2000)) or cost–benefit calculations founded on a logic of consequences meditated over by (more or less) rational agents, so much as the product of a somewhat ‘unconscious’ or ‘non-reflexive’ re-articulation of repertoires of actions that force repetition even where these practices are either consensually recognized as pathological or, at a more minimal level, subject to a great deal of social controversy. Put simply, these are practices that occur



repeatedly despite their not existing a consensus for their desirability. One central implication of these findings is that a mere cognitive awareness of the problematic status of any practice is rarely enough to actualize change.

Other strands of IR draw from multiple elements of Table 1. Take behaviouralism. Over time, the approach has embraced a nuanced understanding of cognition, bearing a striking resemblance to practice theory. As Hafner-Burton et al. (2017: S2–S3) write, recent behaviouralist work:

Has spawned important theoretical advances, such as a growing consensus around a ‘two-level’ model of cognition in which some choices are intuitive and immediate — what Kahneman calls ‘System 1’ or ‘fast’ cognition — while others are slow, deliberative, and more ‘rational’ — referred to as ‘System 2’ or ‘slow’ thinking.

The distinction between System 1 and System 2 levels of cognition is key. System 1 or ‘fast’ cognitive models are similar to the pre-reflexive modes of action described by practice theory, the lineages of which can be traced to Freud or Heidegger (Freud, 2011; Harman, 2002). Ultimately, the claim made is that slow, rational or reflexive thought (System 2 thinking) is most often *not* employed when decisions are made or actions undertaken, and such a view, indeed, finds supporting echoes in contemporary philosophy of mind. Take the distinction between *belief* and *alief* made by Gendler. An *alief* is, ‘to a reasonable approximation, an innate or habitual propensity to respond to ... a stimulus in a particular way’ *regardless of cognitively held beliefs* (Gendler, 2008: 552). This language of *alief* is especially useful in allowing us to study ‘norm-discordant’ events in which an individual’s behaviour contradicts their ideas/beliefs. A basic example is ‘an avowed anti-racist’ who ‘exhibits differential startle responses when Caucasian and African faces are flashed before her eyes’ (Gendler, 2008: 553). A complex example is a Syrian soldier who tortures prisoners despite his personal belief that torture is immoral (Austin and Bocco, 2017).

Importantly, and finally, the previous claims are also now supported by neuroscientific evidence. Most controversially, studies of decision-making in the brain suggest that humans lack reflexive free will (Damasio, 2012). This has been demonstrated experimentally through neuroscientific imaging, which shows that ‘choices’ are made *before individuals are cognitively aware of (having made) them* (Adina, 2013; Haggard, 2008). What is argued is that when an event or situation emerges before a person and demands an action/choice, an array of possible actions ‘come to mind’ without thought, reflection or deliberation. Options simply appear in our heads. It is thus that when realizing a fire has broken out, we look unthinkingly for the exit (Ringmar, 2017). Of course, in more complex situations, a wider array of possible courses of action come to mind. Nonetheless, for reasons about which neuroscience is agonistic, these options are already ranked in preference when they come to mind. Nonetheless neuroscience does also confirm that free will is not exactly absent. Instead, it operates *negatively*. As opposed to thinking of our being-in-the-world as directed with ontological primacy through conscious choice, it is instead suggested that we think in terms of *free won’ts* (Damasio, 2012). These are decisions to ‘countermand’ what comes to mind in the immediacy of a situation. In short, depending on circumstances, exogenous pressures and so on, there always exists a window of opportunity *after* a choice has been pre-consciously formulated to say ‘no’ and act differently. And the history of



human progress attests to importance of this process. For example, Rosa Parks's decision *not* to step to the back of the bus was an active negative decision that likely countermanded an urge to comply with social norms. The spread of human freedom continues, to this day, to follow this pattern of heroically forcing the Self to say 'no'.

Ultimately, all the sources of the deep psyche of world politics discussed earlier suggest reasons why particular world-political practices that are deemed controversial (i.e. are not consensually accepted) persist nonetheless. As individuals most often follow the path of least resistance when acting, so even personal unease over the ethical or political status of their actions is often unable to effect change. Of course, by way of caveat, it should also be noted that this human use of 'automatic' modes of cognition is not necessarily negative and, in fact, is very often positive. As human beings move about the world, they are inevitably 'bombarded by environmental stimulation' despite having only a 'limited capacity for processing information' (Desimone and Duncan, 1995: 193). In consequence, human practice is dictated by the 'ability to filter out unwanted information' (Desimone and Duncan, 1995: 193). This capacity is crucially important not only to ensure human safety (i.e. to selectively adjudicate what is dangerous and navigate it, e.g. crossing roads), but also to allow for the development of skilled performances (Garfinkel, 1967). These latter behaviours are typically learned over time and are vital for the smooth running of society. More than this, it is clear that much of what it means to be human rests on non-cognitive processes: our ability to appreciate art, aesthetics and culture, by way of example, cannot and should never be reduced to deliberative thinking, but always also as relating to affect, emotion, corporeality and beyond.

In spite of this, it seems clear that non-reflexively enacted practices can also have negative effects, especially where they enable outcomes that are not consensually accepted (i.e. are considered socially controversial). For our purposes, what is thus surprising about the turn to appreciating the non-reflexivity of much of world politics is that little consideration has thereafter been given to the challenge that these insights pose to IR's vocation. While there undoubtedly exists 'a connection between politics and knowledge at the epistemic level', it seems self-evident that the insights developed by constructivists, behaviouralists and practice theorists suggest a substantial void in trying to improve our collective world-political lot (Jahn, 2017: 4). Indeed, the rise of these approaches reaffirms a long-standing fact: ideas are quite often the weakest vehicles for change. They are necessary but manifestly insufficient to change the world. Much like only *telling* a long-term smoker that their habit will kill them is typically futile, so current efforts to change the world-political situation through disseminating ideas (i.e. '*Torture ≠ good intelligence!*', '*Respecting human rights = political stability!*', etc.) are often equally ineffective. Knowledge *alone* cannot always change things.

## Designing against desire: Towards an iPER

The previous section showed that IR has sophisticated tools for understanding the 'stickiness' of world-political practice and that these tools challenge contemporary conceptualizations of how the field seeks to influence practitioners and produce change. The goal today must thus be to 'reform the academic world' by altering its 'prevailing norms' quite radically (Walt, 2005: 41) and expanding notions of policy relevance 'beyond the direct

and action-oriented application of ideas' (Eriksson, 2014: 94). Getting to such an expanded vision of 'making change' might be achieved in different ways. Underlying iPER at this stage is, however, the basic principle that we can advance disciplinary perspectives *today* by comparing the status of IR with (seemingly) distinct fields whose approaches to changing social life go radically beyond a focus on epistemics.

To begin, it is important to note that what might be considered the more 'influential' (i.e. socially powerful) sciences, such as engineering, mathematics, economics, medicine and so on, do not gain that influence (solely) by communicating their knowledge in 'policy-friendly' or 'accessible' ways. Indeed, Jahn (2017: 69) has persuasively argued that it is precisely the abstract language of science — 'embodied in numbers, formulae, models, scientific languages' and so on — that gifts it political power. Quite obviously, the medical sciences, technological disciplines, engineering fields and beyond all possess significant societal influence while retaining intensely abstract and socially distant languages of expression. Crucially, such languages also ensure that scientific knowledge is produced autonomously, lessening the influence of contingent socio-political pressures (Jahn, 2017).

How, then, do other scientific fields gain the power to make social change, in spite of the persistent non-reflexivity of human behaviour, and if not by speaking in the everyday languages of the world? In my view, most discussions of IR's political influence make one key omission vis-a-vis understanding the greater autonomous influence that other natural and social-scientific approaches possess: the stronger *materiality* of scientific practice that can be seen across other disciplines. It is clear that many other scientific fields are concerned not only with knowledge production (epistemics), but also with the material 'actualization' of knowledge. Many disciplines not only theorize and inquire epistemically, but also *design, craft, and build* objects that 'prove' the validity or utility of what is otherwise often deeply abstract knowledge. Absolutely crucially, this materialistic goal of science is *not* related to any distinction between natural and social-scientific practice. Yes, scientific fields like physics, chemistry, biology and mathematics all have 'applied' variants consistent with this materialistic goal, but so too do fundamentally social sciences like architecture, organization studies, military science, economics and far beyond.

Indeed, let us stay with economics. 'Economics is often seen as enjoying a common conception of a rich subject matter and highly developed and mature tools of investigation' (Jahn, 2017: 71) that translates into the 'real' world. Indeed, economics is a fundamentally *performative* discipline that 'does things, rather than simply describing ... an external reality that is not affected by economics' (Callon, 1999: 98). This performative quality of economics gains authority largely due to the ways in which it has been intimately involved in the creation of material tools that perform outside the ivory tower. Take the example of the Black-Scholes-Merton (BSM) pricing model. The development of the mathematical equation underlying the BSM model was intended to correctly estimate the prices of stock options. Prior to the development of this model:

Traders of options had no reliable scientific method for deciding whether an option was overvalued or undervalued ... *they had to guess the volatility of the underlying stock price*, meaning how the price would change over time, and therefore how much the option was worth. (Muellerleile, 2013: 1632)

Guesswork of the kind used before the BSM model emerged can be intrinsic to (practical) deep psychic modes of cognition. Previously, acting on ‘gut’ feeling was deemed a virtue among those working in finance. Indeed, those who first began using BSM sheets were sometimes told ‘You’re not a man if you’re using those theoretical value sheets.... Be a man. Trade like a man’ (Muellerleile, 2013: 162). Ultimately, however, this instinctive approach to trading resulted in cognitive biases, biases that often had catastrophic effects. Indeed, financial traders are known to be more profitable in their work where they employ fewer (cognitive) biases and, recently, evidence shows that traders are becoming less susceptible to these biases (Evans, 2003). Devices like the BSM were central to removing these cognitive, emotional and group biases by providing an authoritative material foundation for action. Indeed, the BSM was eventually distributed via a set of ‘computer-generated sheets of theoretical prices for all the options traded on U.S. options exchanges’ (MacKenzie, 2006: 162). Notably, the price sheets produced in this way were designed with the ergonomics of their cognition in mind, including ‘what options traders using the Black-Scholes-Merton model needed to know, but no more than they needed to know.... There was virtually no redundant information on ... [the] sheets — hence the sheets’ easy portability’ (MacKenzie, 2006: 162). It was a combination of the technical qualities of the model (its base epistemics) and the design of their dissemination (its material-ergonomics) that slowly transformed financial market behaviour. Now, whether this transformation was positive or not is irrelevant to the fact that it was the material-ergonomics of the model created by economists that gifted it power or ‘assembled’ its social and political ‘credibility’ (Aradau and Huysmans, 2019).

iPER is founded on the principle that those within IR concerned with changing world politics must develop an understanding of how the field can similarly materialize its knowledge. This understanding is philosophically supported by the idea that ‘aliefs’, ‘habits’ or ‘System 1’ thinking are/is most likely to emerge ‘when a subject’s environment is unstable, atypical, or undesirable ... or when a subject is reality-inattentive in certain ways’ (Gendler, 2008: 554). Indeed, a growing literature suggests that the materiality of the situations in which people find themselves can very often drive unintentional, non-reflexive and/or unconscious behaviours (Austin, 2016b, 2017; Clegg et al., 2013; Cunha et al., 2014; Latour, 1999). Improving the ‘stability’ of the material world thus has the potential to increase norm-concordant behaviour, based on the idea that material ‘objects help us make our minds, reaching out to us to form active partnerships’ (Turkle, 2007: 308).<sup>5</sup> These principles lie at the root of certain variants of practice theory, post-humanist philosophy and even the work of Heidegger on the ways that material objects that are ‘ready-to-hand’ (*Zuhandenheit*) radically impact human behaviour by gifting authority (e.g. to science), shaping action (e.g. like trading screens in stock brokerages) and in many other ways (Harman, 2002). Material objects can achieve this by standing as the materialization of (scientific or not) knowledge that exists at least somewhat independently from human being-in-the-world.

However, one need not delve into philosophy to understand this point. In fact, political science already evidences it. Take the work of Thomas Schelling, which contains one of IR’s few non-epistemic examples of change-making. Schelling’s theoretical and empirical inquiries were distinctly problem-solving in form, concerned with the effective

design of deterrence policy. Theoretically, therefore, Schelling had little interest in notions of deep psyches, desire lines, or materialist philosophies. However, his efforts to make deterrence more effective share a great deal with the postulates of iPER. Take Schelling's (1960: 45) concept of the 'tripwire' and view that 'deterrence often depends on relinquishing the initiative to the other side'. An example here is the global positioning of North Atlantic Treaty Organization (NATO) bases coupled with the principle of collective defence. Such socio-material configurations demand that it is the other side who must 'decide' that a war will begin, without the opposition losing its capacity to defend or offend in response. As Schelling (1960: 47, emphasis added) expands:

How do we maneuver into a position so it is the other side that has to make ... [a] decision? *Words rarely do it.* To have told the Soviets in the late 1940s that, if they attacked, we were obliged to defend Europe might not have been wholly convincing. When the administration asked Congress for authority to station Army divisions in Europe in peacetime, the argument was explicitly made that these troops were there not to defend against a superior Soviet army but to leave the Soviet Union in no doubt that the US would be automatically involved in the event of any attack.

In this example, the flesh and blood of soldiers garrisoned in Berlin become material objects that change the status quo more effectively than verbal commitments: 'words', indeed, 'rarely do it'. As Schelling (1960) bluntly described, those soldiers themselves could do nothing except 'die'. However, as active materializations of deterrence theory, they served as the most credible of commitments. Perhaps the more literal actualization of our claims, however, is found in Stanley Kubrick's *Dr. Strangelove*, where the Soviet Union's 'Doomsday Device' materializes deterrence *in extremis* by excluding humans from decision-making entirely. Deterrence is described here, then, as being actively *designed* into socio-technical systems, quite literally materializing its military strategies.

Indeed, it is that word, 'design', which that we must now reflect on. One way to read the work of Schelling on the formulation of credible commitments is through ergonomics and/or design theory. In practice, deterrence policy was implemented to a great degree by focusing on improving 'the ergonomics of man-machine systems' used in military settings, as the Russian government itself once put it (Dick, 1994: 493). Or, as another deterrence theorist wrote, 'history demonstrates convincingly that the reliability of deterrence is vulnerable to *human factors*<sup>6</sup> ranging from desperation to gross misperceptions and faulty information' (Payne, 1995: 214, emphasis added). Much of the work of figures like Schelling was thus related to considering how more effective systems of deterrence could be designed that helped fully take into account the interactions between human operators, technological systems and wider society. The goal of deterrence theory, to some degree, was to ergonomically *design* international affairs more 'safely' or 'rationally' than before.

Now, Schelling's work was forced by circumstance and the novelty of nuclear weaponry. Nonetheless, its importance rests on how it stresses the value of *small, material, and micro-level changes* for producing vast 'macro'-level effects on world politics: just 10,000 troops stationed in Berlin defended against annihilation. Moreover, each of

Schelling's examples is premised on disrupting automatic behaviours by leveraging counteracting forms of automaticity. The notion of the tripwire, for example, works to disrupt the risk of an unthought stumbling into conflict (for whatever reason) by making the inevitability of mutually assured destruction so plainly obvious that it need not be thought through in and of itself. In essence, the risk of one System 1 behaviour (military posturing, miscalculation, etc.) is here being cancelled out by another equally practically and rapidly evoked System 1 behaviour (i.e. our social-somatic aversion to nuclear holocaust). To understand this point, it is worth introducing the further neuroscientific concept of the somatic marker. As Damasio (1994: 173–174, emphasis added) puts it, somatic markers are triggers that (emotionally, affectively or cognitively) focus our:

Attention on the negative outcome to which a given situation may lead, and ... [so function] as an automated alarm signal which says: *Beware of danger ahead if you choose the option which leads to this outcome*. The signal may lead you to reject, immediately, the negative course of action.... [But] there is still room [here] for using a cost/benefit analysis and proper deductive competences.

Somatic markers are essentially 'prompts' that counteract the automaticity of practical action by introducing those 'automated alarm signals' that connect a particular situation and its mood, affective orientation or material constitution to previously learned information. Indeed, somatic markers are, it is crucial to note, based on prior knowledge production (whether scientific or not) even when they are materially and automatically actualized. In Schelling's case, his tripwire might be interpreted as a somatic marker working to evoke the physical, chemical, biological, social, political and historical knowledge of the consequences of nuclear war that crystallized into a social taboo post-Hiroshima, for example (Tannenwald, 2005). Alternatively, at the strategic-rational level, it might appeal to the widespread acceptance of the impossibility of winning a nuclear conflict (c.f., however, Cohn, 1987). It is thus, indeed — to reiterate — that iPER is in no way about claiming knowledge production to be irrelevant. On the contrary, it is the only basis on which the interventions that it describes become possible. To repeat, however, the necessity of materializing ideational constructions rests on the fact that ideas alone are often not sufficient to create behavioural (self-)compliance: any particular idea, norm, belief and so on typically has to be consistently and repeatedly environmentally evoked and be ethically, normatively or affectively 'felt' in order to push back against factors that might otherwise lead to it being forgotten in the heat of the moment or the listless flow of everyday life. To summarize (see Figure 1), the chain of events described here can now be formulated simply: if the conditions of possibility for undesired event Y emerge, then the purpose of (designed or natural<sup>7</sup>) somatic marker X is to disrupt those conditions of possibility by (1) creating 'automated' material-semiotic prompts that cannot be ignored and so (2) force a 'stoppage' in human behaviour that nullifies the automaticity of undesired event Y and — thereafter — possibly, (3) encourage post hoc deliberation (see the discussion to follow).

The process of disrupting non-reflexive human actions through material means just described is at the core of ergonomics and design theory. These fields are both focused on reordering the 'interactions among humans and other elements of a system' in order

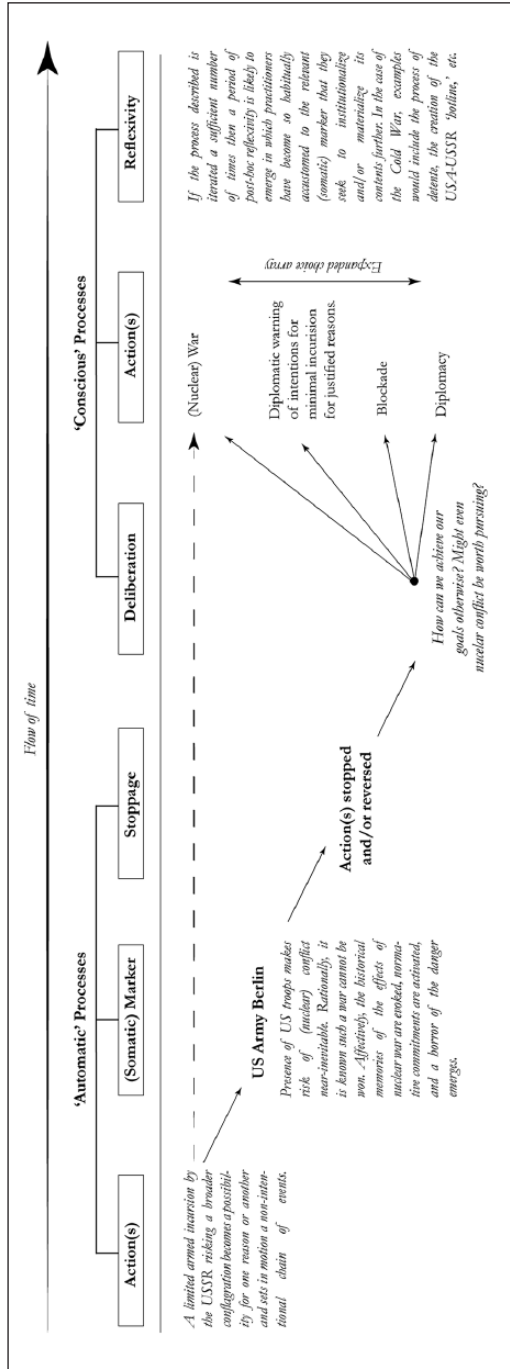


Figure 1. An iPER interpretation of deterrence theory.



to shift its conditions of possibility (Chung and Williamson, 2018: 41). Indeed, a particular focus on ‘disrupting’ what are deemed potentially negative non-reflexive behaviours can be found within the subset of ergonomists who explore the conditions for behavioural safety by redesigning material aspects of our interaction with the world in order to decrease risks caused by miscalculation, bounded rationality and System 1-type thinking in settings like road traffic or aviation safety (Dekker, 2014a, 2014b). Likewise, extensive work within design theory describes how many technologies can be seen as ‘inherently moral entities’, implying therein that ‘designers are doing “ethics by other means”’ or — more simply — are ‘materializing morality’ (Verbeek, 2006: 369; see also Hancock, 2012). Much of this work has now come to focus on the relationship between material design and human rights, democracy and/or political transformation more broadly (cf., among others, Buchanan, 2001).

By way of an important caveat, this focus of iPER on ‘disruption’ through ergonomic design must now also be distinguished from the work on ‘nudges’ within behavioural economics (Thaler and Sunstein, 2008). The ‘nudges’ approach finds itself on the idea of developing a ‘liberal paternalism’ that specifically encourages choice X over choice Y. Crucially, however, the approach anchors itself around a view of humans as autonomous economic (utility-maximizing) individuals for whom rationality (however bounded) is core to their being and in which individual ‘choice’ is thus the object to be manipulated (cf. Hausman and Welch, 2010). Such a view is diametrically opposed to the practice-theoretical, philosophy of mind and neuroscientific literature cited earlier, which displaces ‘choice’ or ‘decision’ as core to human being-in-the-world and that thus (either explicitly or implicitly) embraces a post-human ontology of the social. From this latter perspective, the goals of material (or other) interventions are not about ‘recommending’ choice X over Y (though this might be implied (see the discussion below) but about *making choice possible* in the first place.

Indeed, if we return to Figure 1, it becomes clear that the ‘markers’ described work — yes — to *stop* action X but only in the sense of stopping its *automatic* occurrence. Thereafter, deliberation and a return to action X is possible and, perhaps most importantly, *no alternatives are (necessarily) prescribed*. Indeed, it is worth stressing Damasio’s (1994: 174) words that somatic markers do not preclude the post hoc possibility of employing ‘a cost/benefit analysis and proper deductive competences’, of whatever kind, and in doing so deciding to ‘ignore’ the marker that has been activated and returning to the original or, more likely, a different or modified version of the original set of actions that might cause a certain event (war, a car crash, etc.) to emerge. Of course, in the case of Schelling, the risk of mutually assured destruction means choosing war is highly unlikely (consider, however, the nuclear policy of Israel<sup>8</sup>), but in other cases such a decision is quite possible. By contrast, nudge theory is preoccupied with presenting alternatives (saving for retirement, eating certain types of food, etc.) in ways that are, indeed, distinctly paternalistic in form or even, when extended into notions such as neuro-marketing, intentionally manipulative-cum-coercive (Lee et al., 2007). ‘Nudges’ (as the name suggests) imply creating a preconscious desire for a proposed (‘better’) alternative to the current behaviour of individuals. Most<sup>9</sup> proposed nudges thus lack the point of ‘stoppage’ (in a chain of actions) that is central to the process seen in Figure 1. Put simply, iPER demands human beings make an active and deliberated choice, yes, but it need not prescribe it.

To conclude, it is clear that one strong objection to introducing ergonomics and design theory to IR rests on questions of scale. Is it possible to ‘internationalize’ schools of thought that focus on individuals? The same question, naturally, troubles practice-theorizing and behaviouralism in their explanatory discussions: ‘the actors in most IR models are not individuals — they are aggregates like states, ministries, interest groups, political parties, rebel groups, etc.’ (Powell, 2017: S265). Within behaviouralist IR, indeed, work connecting individual behaviours to international outcomes ‘has barely begun’ (Hafner-Burton et al., 2017: S21). Nonetheless, useful work in this regard has long been pioneered within practice theory, feminist theory and beyond.<sup>10</sup> However, to stay specifically within ergonomics, we can note that the field possesses well-developed approaches focused on the interface between individual humans and the collectivities they comprise, producing a ‘macro-ergonomics’ that works towards ‘achieving large-scale organizational improvement’ and ‘culture change’ (Hendrick and Kleiner, 2002: 273–279).

Take the example of air-traffic safety. In the early days of commercial air travel, accidents were frequent and, it became apparent, often due to pilot error. However, the organizational culture of airlines gifted pilots a great deal of autonomy based on their cultural status: many early airmen had been fighters during the Second World War and thus keenly guarded their expert status, often acting on instinct more than technical knowledge. Ergonomic interventions against these biases, which have rendered air travel the safest form of transport, focused on training new pilots in a ‘Cockpit Resource Management’ system that nurtured ‘a less authoritarian cockpit culture ... [which] encouraged a collaborative approach to flying’ (Langewiesche, 2014). Key to achieving this was reforming mandatory working practices through the inclusion of extensive checklists and cross-check procedures (e.g. between pilot and co-pilot), and designing ‘deeply considered minimalistic cockpits that encourage teamwork by their very nature, offer excellent ergonomics’ and beyond (Langewiesche, 2014). With the eventual retirement of the older generation of pilots who tended to act on gut instinct, these procedures slowly came to transform the culture of pilots at large.

Now, air-traffic safety seems distant to politics. So, let me offer a different macro-ergonomic example. The drafting of global (i.e. United Nations (UN)) sanctions policy is typically dominated by an elite group of powerful states, even where these sanctions are more likely to impact the regional politics of less powerful states. As Biersteker (2018) shows, these difficulties are largely about inequalities in the relative effects of transaction (mainly search and information) costs in policymaking, with less wealthy states unable to hire a staff with the resources to adequately examine past precedent or case-relevant data in detail. The result is often a habitual reliance on precedent (however irrelevant) and/or a meek acceptance of the policy preferences of powerful states. To change this cultural-pragmatic situation, Biersteker and his colleagues have developed the online *SanctionsApp* programme, accessible via smartphone devices, which provides an authoritative source of data on the use of sanctions, filterable by way of analogy to cases being considered and materially embodied within the decision-making rooms of the UN. This object is now used, particularly by less powerful states, to augment their decision-making capacity, disrupting their past marginalization. In doing so, this means of materializing knowledge has (macro-ergonomically) altered the decision-making and

collective bargaining culture of one body core to world politics by encouraging a cascade in behavioural change that transcends the scale of any one individual.

## iPER in action

What might we actually do differently by embracing iPER? To answer this question in depth, I now outline the application of iPER to the challenge of reducing political violence, war crimes and state repression at length. To begin, it is notable that there is a long history of resistance movements and other emancipatory political groups perceiving a ‘liberatory’ potential within the material and technological (cf. Diamond, 2010). These efforts have their roots, to some degree, in the Marxist view that harnessing the technological is central to human emancipation. However, their more recent manifestations have focused on how non-violent forms of resistance do or do not succeed, and the focus of these approaches on the global diffusion of communication technologies is, indeed, especially interesting for our purposes (Chenoweth and Stephan, 2011).

The value that non-violent resistance groups find in (novel) communication technologies is commonly related to the ways in which they facilitate ‘the creation and maintenance of independent sources of media ... that allow nonviolent actors to communicate internally and with the outside world’ (Chenoweth and Stephan, 2011: 537). Efforts like this fit within the contours of iPER, broadly conceived, given that they work to reduce information problems and/or transaction costs, potentially allowing an improved quality of collective action or decision-making among (oppressed/protesting) groups. However, the role of the material and/or technological described in these studies is typically exogenous, with the goal being the promotion of the diffusion of pre-existing technologies into particular settings, rather than actively working towards an (ergonomic or not) (re) design of socio-technical relations. Additionally, the focus of these interventions is oppositional, dividing the world between ‘rulers’ and ‘subjects’ based on a general assumption that violence, conflict and state repression occurs primarily through rational planning. Hence, technologies are conceived as forming part of a broader form of ‘social defense’ that would enable ‘nonviolent community resistance to [state] aggression’ (Martin, 1997: 440).

From the perspective of iPER, as conceived herein, the potential of these interventions is limited by two omissions. The first omission is an understanding of the reality that political repression or any other problematic phenomenon cannot be solved solely by the emergence of any new technology. Novel communication technologies, for example, are regularly and rapidly co-opted by states across the world in ways that neuter their radical potential, while — for a further example — technologies that would mitigate climate change are readily available but, simply, go widely unused. Second, the counter-political framing of technology as a ‘liberating’ force sets aside the growing understanding that state repression, violence and related phenomena do *not* emerge solely through rational planning, but also through the automatic forms of behaviour described earlier. Indeed, phenomena like torture or the targeting of civilians — however extreme they might seem — do frequently emerge non-purposefully.<sup>11</sup> By way of example, take the words of one US commander who admitted to *almost* torturing a detainee in US-occupied Afghanistan:

I felt the bile of hatred rising ... inside of me. I slowly realized what I had wanted to do all along. I was tired of playing by the rules. He was in my grasp.... My interpreter and I could find a way into the home with the suspect, and he could either tell me everything ... or he could bleed.... The bold words that I had long ago spoken to my soldiers about the importance of morality in combat were forgotten.... I scrambled for the right reason to make a decision. Torture. Don't torture.... It would be wrong to say that I made a choice. (Bell, 2011: 43)

In this case, the possibility of torture emerged without choice. The operation saw 'everything happen so quickly' that the commander in question was relying on 'quick' types of thinking, rather than deliberative reflection. Innumerable other examples stress that many — perhaps *most* — instances of torture and related political violences occur in this non-reflexive manner due to a combination of group dynamics, emotions, affect, material deprivation and other factors constitutive of practical or Systems-1 behaviour.<sup>12</sup> In fact, this view is increasingly influencing the strategic content of studies of non-violent resistance. For example, Bramsen (2017) has studied how state or police violence against protestors often emerges not solely due to 'perpetrator domination', but rather due to a 'rhythmic' back and forth between protestors and security forces that creates a situational form of entrainment fed by mutual fear and emotional disquiet. As she continues:

This perspective is useful in violence prevention, as it implies going beyond normative condemnation of violence (as is common in nonviolent resistance), and emphasizes the importance of training people how to react when attacked and to resist the tendency to mirror the attack of the other. (Bramsen, 2017: 10)

Effectively, Bramsen advocates that the pursuit of non-violent resistance must move away from an oppositional (subject–ruler) dichotomy by recognizing the frequent non-reflexivity of violence and crafting tactics that avoid unintentionally triggering an escalation in repression. This suggestion fits closely with the principles of iPER described earlier: altering the socio-technical constitution of a particular situation has the potential to *avoid* the emergence of automatic behaviours in the first place, rather than simply strategically/tactically attempting to circumvent them. To cement and extend this point, let me go back to the example of that US commander in Afghanistan. The problem of police and/or military abuse is an age-old one. However, it is also one that has been ameliorated significantly in Euro-American states through the introduction of surveillance equipment (i.e. cameras) into domestic policing systems (National Defense Intelligence College, 2006). Indeed, strong evidence confirms that being observed (directly by other humans or through electronic means) promotes socially desirable and/or norm-concordant behaviour.<sup>14</sup>

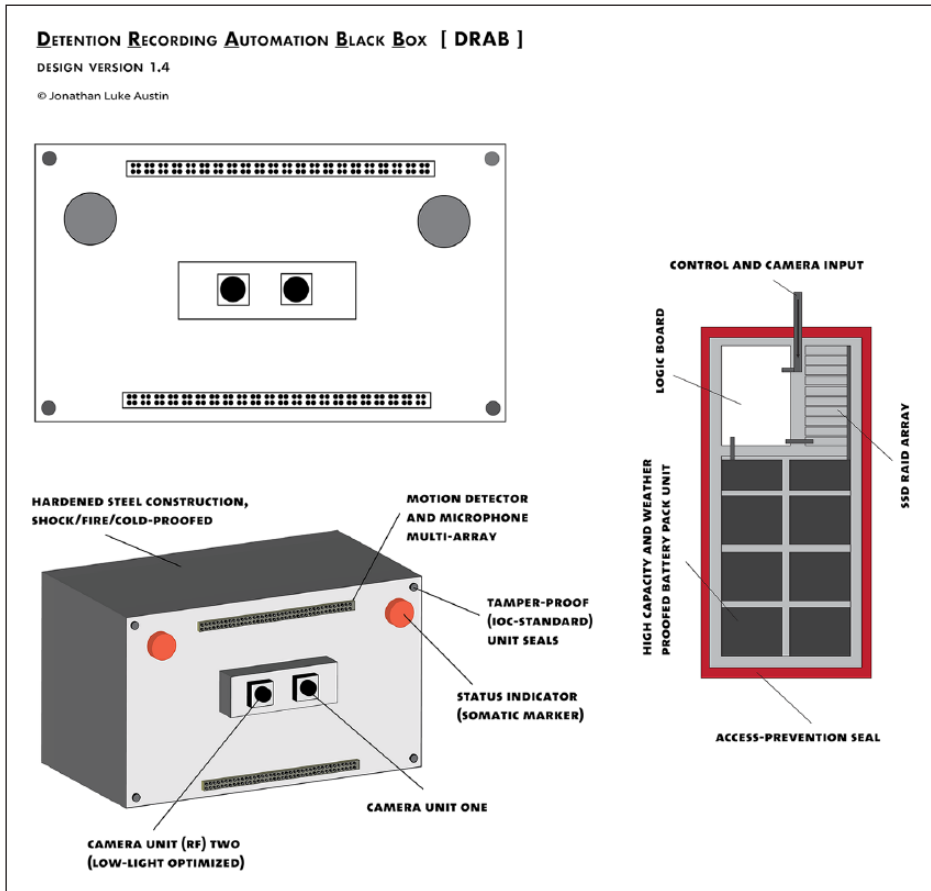
The effects of behavioural surveillance are, crucially, not only related to an awareness that deviant behaviour might be captured and thereafter punished. Individuals are known, for example, to follow ethical, legal and other rules more closely even when only 'subtle eye-like stimuli' (e.g. images containing eyes and/or faces) are present in a situation (Nettle, 2013). This effect is linked to the ways in which the perception of being observed increases our 'objective self-awareness' (i.e. a greater consciousness of our effects on the world) (Wicklund, 1975). In this regard, surveillance cameras can thus also be seen to

operate as somatic markers that disrupt automatic sequences of action and compel greater deliberation among our minds based on our learned experiences of what these devices signify: the possibility of being caught doing wrong; the importance of societal norms; the dangers to the ontological security of the self in engaging in certain acts; and so on.

Several practical difficulties, however, have prevented the introduction of surveillance devices to the police forces of less-wealthy nation states, as well as the military operations of all states, rich and poor alike. First, detainees are most at risk of abuse at or quite soon after their point of capture during military operations. Typically, this occurs in situations of extreme material deprivation: in remote areas or temporary detention facilities established near forward operating bases and so on. This often means that adequate electricity, construction equipment and/or personnel to operate surveillance equipment are unavailable. Second, the strict security requirements underlying military operations mean that the use of surveillance equipment is more complicated than in policing operations: surveillance undertaken in military facilities must not risk gifting adversaries an unwanted advantage to exploit, for example. Third, the use of detention surveillance technology in less-wealthy nation states is typically problematical. For example, the implementation of Security Sector Reform (SSR) programmes in Lebanon has involved the provision of similar surveillance systems to those found in Euro-American states to the Beirut police forces. In conversations I once had with those implementing these programmes, however, it became clear that these devices were rarely used because of a lack of stable electricity supplies and personnel to man them; their use was simply not practical.<sup>14</sup> In all these contexts, the risk of abuse emerging in an ‘unthought’ (i.e. automatic) manner is therefore heavily augmented.

How might iPER help here? Faced with this question, myself and a team of researchers made up of IR scholars and colleagues based at an engineering institution have begun ergonomically redesigning surveillance apparatuses in ways that overcome the practical challenges that their use faces (see [www.vipre.ch](http://www.vipre.ch)). This work has drawn principally on adapting emerging battery, storage and image recognition technologies (originally developed to meet the needs of consumer or industrial electronics) to the task at hand. Figure 2 depicts the first object designed: the Detention Recording Automation Black Box (DRAB). The inspiration here derives from the ‘black boxes’ used for recording the activities of aircraft and other critical infrastructures; it is a ‘monitoring’ device. The DRAB has been designed with a series of parameters in mind, fully described in the supplementary materials to this article. The goal of the device is to provide a fully autonomous monitoring system (it draws on storage and battery technologies enabling its continuous operation without human intervention for about two years) that can be rapidly and economically deployed to the front lines of combat zones where detainees are likely to be captured, and/or installed in detention centres in less-wealthy nation states. It has been designed to be bolted or concreted into detention facilities with minimal effort. The device also incorporates an advanced form of image action-recognition technology that has been developed in order to automatically recognize the morphologies of abuse (without a human operator) and flag these for later review.

In short, the technological elements of the DRAB overcome the normal limitations on using detention monitoring technologies, while maintaining their capacity to act as somatic markers. Notably, the DRAB is not designed to stop *all* abuse. As discussed



**Figure 2.** The DRAB.

earlier vis-a-vis the example of Schelling's tripwire, interventions based on the ergonomic redesign of world-political situations are not about preventing choice per se; they are simply about disrupting the automaticity of action. Even with the DRAB present, interrogators might choose to leave the room with detainees and carry out abuse elsewhere (Clarke and Weisburd, 1994; Tilley, 2005). The DRAB simply demands that a choice (rather than accidental slippage) be made, based on the previously consciously deliberated ethical, pragmatic and social desires of the particular subject in question.

Now, of course, interventions like the DRAB might immediately seem 'problem-solving' in form — and they are. Torture or other violences are problems that require solutions. However, the solution proposed here is *critically* problem-solving (cf. Brown, 2013). Indeed, the design of the DRAB echoes critical proposals for the development of a 'sousveillance' society in which representatives of political power (the military, political and economic classes, etc.) come to be publicly observed more closely than ever



before (Mann, 2003). Moreover, if we are forced to accept for the foreseeable future living in societies where the state retains a monopoly on violence, then the critical question, from the perspective of iPER, becomes how we can supplement any long-term ‘goal of systemic transformation’ by imagining “‘interim possibilities” of contestation that may, eventually, “pry open” those seams and cracks in what seemed to us be a more robust structure of power’ (Solomon and Steele, 2016: 18; see also Austin, Bellanova and Kaufmann, 2019). iPER achieves this by working to ensure that any controversial social or political decision is fully thought through in its emergence, preventing negative phenomena occurring as inevitable but somehow superfluous products of our social systems in ways that may, if we are optimistic, eventually challenge the validity of that system and so open the possibility of broader transformations (cf. Ophir, 2005).

Of course, there remains a final question: why should students of IR take up this task? Why not leave it to ergonomists, technologists or engineers? Well, first, the very possibility of constructing objects like the DRAB rests on the prior inquiries of political scientists into the actions of agents specifically linked to international affairs. The DRAB, in particular, only became imaginable due to the work of political scientists in studying the non-purposeful enactment of political violence by military and policing actors closely. Indeed, I must stress here that the goal of iPER is in no way to undermine the epistemic core of IR: it is only because of the knowledge created in the field that the interventions proposed become imaginable. For example, the specific design of the DRAB is intimately bound up with an understanding of the requirements of military organizations (secrecy, security, etc.) that are then reconciled with its core purpose in a way that interventions by other bodies interested in promoting these principles (i.e. international organization (IOs), non-governmental organizations (NGOs), etc.) are often unable to achieve alone. The very possibility of objects like this thus rests on the participation of political scientists and social science more broadly. Indeed, as Martin (1997: 450) has written, ‘the bulk of science and engineering has little to offer nonviolent struggle’ or, indeed, any other form of socio-political liberation a priori. The limitations of these fields relate to their (for the most part) apolitical orientations. Thus, despite the fact that iPER will necessarily involve deep collaboration with these fields, political scientists are ‘in an excellent position to provide a link between technical specialists and the social dimensions’ of political change (Martin, 1997: 450). Put simply, the participation of scholars across IR in the kind of work described earlier is not only possible, but may actually be actively required for it to ever succeed.

## The vocation(s) of IR

iPER has the potential to radically transform the vocation of IR. However, this process is not without risks. Indeed, iPER increases the kinds of ethical dilemmas faced by students of world politics. It does so by radically expanding the range of social interventions that become thinkable as a shift from considering not only the ethics of knowledge production, but also the ethics of *direct* (i.e. non-delegated) socio-technical intervention is demanded. iPER gifts IR an *applied* sub-field, and, of course, a Pandora’s box of ethical dilemmas emerges for any such applied scientific field. Most applied fields (medicine, architecture, etc.) thus maintain distance between themselves and socio-political

contingencies. Any turn towards direct forms of intervention within IR would require a similar maintenance of distance and the discipline-wide development of a ‘do-no-harm’ precautionary principle, akin to that found in the Hippocratic Oath. Naturally, this is not enough. As has been said, iPER is focused on intervening in deep psychic behaviours that are deemed, at one level or another, undesirable. The fundamentally political question that thus emerges is who makes judgements about desirability that might prompt any intervention. Cancer is bad, we all agree, but war, dominant economic models and nuclear weapons? Not so much. The example of torture is informative here. Its appearance at any particular time is never universally condemned, but rather the subject of extreme controversy, of one form or another (cf. Gadinger, 2016).

However, it can be argued that it is precisely this ‘controversial’ status that warrants the kinds of intervention proposed within iPER. As Bruno Latour (2005: 25) has written, ‘controversies are not simply a nuisance to be kept at bay, but what allows the social to be established and the various social sciences to contribute in its building’. Indeed, it is arguably the epistemic role of social science to keep open, rather than prematurely foreclose, controversial questions. However, as we have seen, deep psychic modes of thinking often militate against this possibility, even vis-a-vis intensely controversial behaviours. What is especially notable, therefore, is that all the examples of iPER in action described earlier are *not* about resolving a controversy in any deterministic way, based on the arbitrary designation of a particular ethical or moral system adjudicating what must be defined as pathological and hence shut down. Schelling’s deterrence strategies never eliminated the possibility of nuclear war, which always remained a choice available to practitioners, and devices like the DRAB would never eliminate the possibility of torture. Instead, both these examples involve working to avoid the *unthought* emergence of these phenomena by introducing (material) elements that disrupt the automaticity of human behaviour.

Therefore, the ultimate ethical intuition underlying iPER, as I have articulated it herein, is that it is always troubling when behaviours that are socially controversial emerge non-reflexively. Such practices, if they are to occur, must — in some sense — be ‘thought through’ in their controversial status rather than emerge as deep psychic products of human nature, social construction, ossified social practices or any other similar factor. The goal of iPER-esque interventions is simple: to make choice possible. In this respect, the interventions that we have described are about enabling or opening up the everyday ‘critical capacity’ to problematize (with Foucault) the ways in which one is acting in/on the world vis-a-vis particular social, political or ethical controversies (Boltanski, 2011). As Foucault (1984: 117) continues, in this sense, iPER is about recognizing that:

Thought is not what inhabits a certain conduct and gives it its meaning; rather, it is what allows one to step back from this way of acting or reacting, to present it to oneself as an object of thought and to question it as to its meaning, its conditions, and its goals. Thought is freedom in relation to what one does, the motion by which one detaches from it, establishes it as an object, and reflects on it as a problem.

The goal of opening up reflexivity through socio-technical redesign is thus related, in one way, to returning freedom to the acting human subject in situations of controversy

where deep psychic factors seem to quite typically prevent the possibility of a fully reflexive (free) decision being taken. Here, the goal of iPER becomes ‘not to tell others what they *have* to do’ and so to attempt to ‘shape others’ political will’, but rather to find ways ‘to question over and over again what is postulated as self-evident’ by ‘disturb[ing] people’s mental habits, the way they do and think things’ and so to ‘participate in the formation of a political will’ that is fully conscious (and so, one might continue, fully socially responsible) for its actions (Foucault, 1988: 265, emphasis added).

It is here that the *political* in iPER must be stressed. It is perfectly possible to imagine more deterministic design theory-inspired interventions into world politics, following the liberal paternalism of nudge theory or otherwise. Just as ergonomists design chairs that make it *impossible* to sit in one way or another (typically for health and safety reasons), so might not this focus on the materialistic see political scientists working towards inventing objects that reduce human capacity to act in/on the world? Almost certainly. However, it is notable that these processes are already ongoing. For example, technoutopian arguments are currently being made that the rise of artificial intelligence will augment (or even supplant) human decision-making processes in many areas (from driving vehicles to firing weapons systems) in ways that will improve society. Militaries, for their part, are employing design theorizing to augment their capacity to kill and control (Öberg, 2018). Likewise, some within IR are imagining neurobiological toolkits as able to (more or less) deterministically identify which individuals will exhibit ‘good’ or ‘bad’ leadership and/or commit forms of political violence (McDermott and Hatemi, 2014). What is most notable about these interventions is that they rest on the displacement of the *social* human being and, hence, human (or animal, or ecological) political deliberation from debate. Of course, the critique of this process is very old; it harks back most obviously to Heidegger’s concern over the ‘en-framing’ of human subjectivity via the technological (Harman, 2002). Indeed, it is increasingly being noted that many of the automatic or practical behaviours discussed earlier are sometimes intensified through our reliance on particular technological infrastructures (Hansen, 2000).

iPER — as articulated here — cannot be about such an effacement of the human. Instead, its ethical and political core is about retaining politics, reflexivity and deliberation. With Hansen (2000: 263), my own view is that the ‘crucial task’ of the day is ‘(re)claiming a distinctly human perspective in the face of material and technological forces that for so many portend the inevitable dawn of a new, radically posthuman epoch’. As I have perhaps paradoxically argued, however, reclaiming the human figure as a reflexive subject will rely on engaging with the material-technological more thoroughly than ever before. In this respect, iPER is a fundamentally political proposition, the ethical dilemmas of which are thus, indeed, many. However, it also holds new potentials, not least because it lays out a form of intervention relevant to IR that does not rely on delegating ethical or political choices to outsiders (which most often results in the privileging of a type of methodological nationalism (cf. Adamson, 2016)) and hence allows for the maintenance of the social autonomy described by Jahn (2017) as crucial to the relevance of science as a whole.

Beyond ethics, embracing iPER is no easy task. It means that IR departments must build both formal and informal linkages with scholars working in fields that today seem unrelated to our own: to ergonomists, engineers, computer scientists and architects, among just a few. It would also likely mean hiring specialists in these fields within IR

departments. Moreover, it would require the development of new skills among political scientists themselves: different kinds of coding, artistic skills, computer-aided design knowledge, prototyping skills, controlled trials, manufacturing and so on. All that will be a difficult and very long-term feat. Cultivating an iPER, as a whole, is no easy task: its propositions are fundamentally about imagining the radical transformation of the vocation(s) of IR. It is about creating an *applied* IR. Is that task worth the effort? I shall let others decide. However, for those who doubt the very worth of such an endeavour, for whatever reason, the adapted question will always remain (whether or not one agrees with the philosophy of its author): is the point of IR solely to interpret the world in various ways, or to change it?

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### Supplemental material

Supplemental material for this article is available online. Further up-to-date supplemental material can be found at [www.vipre.ch/sup](http://www.vipre.ch/sup)

### Notes

1. Marx (1978). Translation: 'Philosophers have hitherto only interpreted the world in various ways; the point is to change it.'
2. See Gendler (2008), Hopf (2010), Hafner-Burton et al. (2017), Pouliot (2008), Adler and Pouliot (2011) and Damasio (2012).
3. See Latour (1999), Clegg et al. (2013), Cunha, Clegg and Rego (2014) and Austin (2016b).
4. There is, of course, an evolutionary counter-argument (see Hopf, 2018).
5. Compare with Mol (2002), Hayles (1999) and Latour (1999).
6. The terms 'ergonomics' and 'human factors' are used interchangeably.
7. Somatic markers can be 'natural' in the sense of being individually or socially learned 'alarm signals' embedded within individual minds (without material prompts). An example would be learned aversions to fire and so on.
8. Israeli nuclear policy is ambiguous but is generally agreed to include the principle that nuclear weapons will be used (even against nuclear-armed adversaries) if the continued (political) existence of the state is considered to be under threat.
9. There are exceptions. The most obvious would be the designation of anti-smoking warning labels on cigarette packets as constituting a 'nudge' that, indeed, seeks a 'stoppage' whenever a smoker reaches for a cigarette.

10. See, for instance, Latour (2005) and/or Haraway (1988).
11. See Austin (2016b, 2017), Austin and Bocco (2017) and Collins (2007).
12. See Austin (2016b, 2017, 2019), Collins (2007), and National Defense Intelligence College (2006).
13. See Jones and Nisbet (1971), Sproul et al. (1996), Wicklund (1975) and Ariel, Farrar and Sutherland (2015: 517).
14. Interviews conducted by the author in Beirut, Lebanon, 2014–2016.

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### Author biography

Jonathan Luke Austin is Lead Researcher at the Violence Prevention (VIPRE) Initiative ([www.vipre.ch](http://www.vipre.ch)) of the Graduate Institute of International and Development Studies, Geneva. His work has been published and/or is forthcoming in *European Journal of International Relations*, *International Political Sociology*, *Security Dialogue*, *European Journal of International Security*, *Review of International Studies* and beyond.