What's at Risk in Scientific Risk?

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The value-free ideal (VFI) of science has come under criticism over the last 70 years from what I call risk arguments. These take the following form: core scientific reasoning requires risk management; risk management requires values; so, core scientific reasoning requires values. An early formulation of the risk argument was restricted to a particular kind of risk (inductive risk) that occurs at a particular stage of scientific practice (setting certainty thresholds for hypothesis acceptance) (Rudner 1953). Defenders of the VFI countered that the setting of certainty thresholds doesn't involv--e 'core' scientific reasoning: the VFI is safe (Jeffrey 1956). In response, advocates of risk arguments have adopted what I call the risk proliferation strategy: many kinds of risk occur (Biddle & Kukla 2017) at many stages of scientific practice—including the generation of evidence itself (Douglas 2000, Kukla 2017).

According to the risk proliferation strategy, risks reach the core of science.Expanding on arguments by Brown (2013), Brigandt (2015) and de Melo-Martín & Intemann (2016), I show that the risk proliferation strategy is doomed to failure. Common to all risk arguments is the notion that the risk incurred when making scientific choices is the risk of "getting it wrong": when we choose a significance level or define a disease, we risk making a choice that gets it wrong, e.g. accepting a false hypothesis, or providing unnecessary medical treatment (Biddle 2016, 202). Values play a role only in determining how to manage risks of error, but not in determining what counts as an error in the first place, or when one has occurred. As such, the risk argument leaves a core part of scientific reasoning insulated from values. Risk arguments implicitly endorse a value-free core of science in aiming to show that, even in its core, science isn't value-free. This risk proliferation strategy is thus the wrong strategy: no matter how many kinds of risk we postulate, or how deep these risks run, risk arguments can never defeat the VFI.

I illustrate my argument by way of a case study: a recent risk argument (from Kukla 2017) concerning evidence generation via the measurement of infertility. I unearth a contradiction in Kukla's argument. Like other risk theorists, Kukla explicitly rejects the VFI, arguing that values are necessary, even for measurement. Kukla uses her risk argument to argue that infertility measures are problematic and should be rejected, but, crucially, she does so by arguing that the values in infertility metrics are "buried too deep" such that infertility cannot be conceptualized independently of "value-laden social factors" (2017, pp. 4426, 4419). In

other words, Kukla simultaneously accepts that measurement is value-laden while rejecting infertility metrics because they are too value-laden! I demonstrate how this contradiction arises from Kukla's use of risk: she rejects the VFI while using an argument that implicitly endorses it.

I end by drawing on lessons from this case study to suggest more promising approaches for conceptualizing the role of values in science, approaches that leave risk behind and successfully go beyond the VFI.