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Perspective

Clarifying anti-reflexivity: conservative opposition to impact science and scientific evidence

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Abstract

The recent study reported by McCright *et al* (2013 *Environ. Res. Lett.* 8 044029) extends current research on conservatives' distrust of science by distinguishing between public trust in production versus impact scientists (i.e. those whose work yields new technologies and marketable products versus those assessing the health and environmental impacts of such technologies and products). As expected, they find that conservatives are significantly less trustful of impact scientists but somewhat more trustful of production scientists. In the process they provide support for the Anti-Reflexivity Thesis, a perspective that attributes conservatives' (and Republicans') denial of anthropogenic climate change (ACC) and other environmental problems and attacks on climate/environmental science to their staunch commitment to protecting the current system of economic production. McCright *et al*'s innovative study deserves replication, and their approach should prove useful in accounting for divergent views of ACC. It is also important to keep in mind that anti-reflexivity is an institutional and structural issue, becoming more consequential when it is employed by political elites such as the George W Bush Administration in the US. Institutional anti-reflexivity is further illustrated by the widespread denial of ACC and a range of other problems among current Republican members of the US Congress.

The effort of McCright *et al* (2013) to measure public trust in production versus impact science is a noteworthy extension of existing research on the American public's views of science. It also solidifies a crucial element of McCright's and my Anti-Reflexivity Thesis (McCright and Dunlap 2010, 2011, Dunlap and McCright 2011), a perspective that challenges the widely accepted (in Europe) view known as Reflexive (or Ecological) Modernization which assumes that employment of scientific information—along with technological innovation and the market—allows modern societies to solve environmental problems without major modifications of their economic systems and growth trajectories (Mol and Spaargaren 2000, Mol *et al* 2009, but see York 2010, York *et al* 2010). In contrast, McCright and I argue that an 'anti-reflexive' coalition of corporate interests and political conservatives tends to undermine the development and employment of scientific evidence documenting environmental problems in order to defend the current economic system of production and its pursuit of endless growth from critics (McCright and Dunlap 2010).

In particular, we argue that the denial of the seriousness of anthropogenic climate change (ACC) and campaign against climate science led early on by the fossil fuels industry and currently by the conservative movement (Brulle 2013, McCright and Dunlap 2010, Dunlap and McCright 2011) stems from these interests' aversion to acknowledging and documenting the negative impacts of economic growth and business as usual—i.e. impact science (see Young and Coutinho 2013 and Stuart and Worosz 2012 for additional applications of



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anti-reflexivity). In fact, what has been called the Conservative/Republican ‘war on science’ is largely an effort to deny, defund, and eliminate scientific research that documents the negative environmental and human health impacts of industrial production (e.g., Mooney 2006, 2012). By showing that conservatives are in fact significantly less likely to trust scientists engaged in impact research, but slightly more likely to trust those engaged in production research (i.e., research that leads to new technologies and marketable products that yield profits and economic growth), McCright *et al*’s (2013) results validate a key component of our Anti-Reflexivity Thesis.

It is nonetheless important to keep in mind that (McCright *et al* 2013) have reported a preliminary study, and that they find political ideology to have modest—albeit statistically significant—effects on their two primary outcome variables: trust in impact scientists and trust in production scientists. Future replications employing more representative samples and additional operationalizations of attitudes toward impact and production science (e.g., support for *funding* impact versus production science and not simply trust in scientists engaged in the two forms of research) are warranted.

In addition, an essential additional step will be to determine if views of impact science are strongly related to belief in the reality and seriousness of ACC—as posited by our Anti-Reflexivity Thesis as an explanation of conservative denial of ACC and attacks on climate science (McCright and Dunlap 2010, Dunlap and McCright 2011). I predict that the relationship will be found, and that anti-impact science beliefs will prove a vital empirical link between political ideology (and party identification) and views of ACC. Such beliefs should provide a more useful, and theoretically justifiable, link than variables such as scientific literacy and numeracy (Kahan *et al* 2012), which shed little light on the *reasons for* the well-established ideological (and partisan) divide in public views of ACC (McCright and Dunlap 2011, Hamilton 2011). Furthermore, not all conservatives or Republicans deny ACC (Rolfe-Redding *et al* 2011), and views of impact science will likely be useful in predicting variation in ACC denial among these segments of the public.

It is also essential to keep in mind that anti-reflexivity is not just an individual-level phenomena, but even more importantly an institutional and structural one (McCright and Dunlap 2010, Dunlap and McCright 2011). Thus, the US conservative movement (backed by much of corporate America) seeks to delegitimize and defund impact science, continually pushing for cuts in the budgets of the Environmental Protection Agency and other agencies and challenging their regulatory authority. It has had considerable success, keeping agencies like EPA on the defensive—especially since the Reagan Administration (Layzer 2012, Maxmen 2012). The movement has done this by supplementing corporate lobbying with frequent congressional testimony and media appearances by its own representatives, as well as by putting out a flood of books and other printed material, all aimed at portraying environmental (and other impact) science as ‘junk science’ and promoting ‘environmental skepticism’ that challenges the seriousness of environmental problems (Jacques *et al* 2008, Dunlap and Jacques 2013, McCright and Dunlap 2000, 2003). When these efforts are successful with elected officials such as members of Congress and Presidential administrations they have consequences well beyond increasing skepticism about environmental problems and science (including ACC and climate science) among the public, especially when these officials weaken or fail to implement environmental regulations (McCright and Dunlap 2010, Minority Staff, Committee on Energy and Commerce 2011). These political elites in turn help promote further distrust in climate science and other environmental sciences, and environmental skepticism in general, among lay conservatives who take their cues from trusted political leaders (Brulle *et al* 2012, McCright and Dunlap 2011).

Further, it is important to note that McCright *et al* (2013) do find conservatives to have less trust in scientists in general and to be less supportive of scientific involvement in policy, thus replicating prior studies that have not distinguished between production and impact science. Consequently, the results of Gauchat (2012), showing increasing distrust of science among conservatives in the American public, remain relevant. This broad conservative distrust of science mirrors what we currently see in the US Congress, with rejection of evolution and basic physical science sometimes going hand in hand with denial of ACC among conservative Republican members (Plait 2012).

More troubling still, anti-reflexivity extends beyond repudiating impact science (and at times fundamental biological and physical science) to denying any evidence that does not conform to one's ideological worldview. This can lead to the construction of 'alternate realities'—i.e., the substitution of imaginary for empirical evidence when the latter conflicts with personal ideology, values, and/or worldviews. A prime example is the recent emergence of 'default denial', the refusal by many prominent conservatives and Republican members of Congress to believe warnings that failure to raise the US national debt limit would have negative economic consequences (Bade 2013, Milbank 2011), a view that has spread to a slight majority of Republicans in the general public (Blake 2013).

When such refusals to accept empirical evidence become institutionalized within the highest levels of government, as in the case of the George W. Bush Administration (McCright and Dunlap 2010) and the current Republican-controlled House of Representatives (Philips 2013) in the US, anti-reflexivity becomes a potent political force. Unfortunately, it is spreading to other nations, as the actions of the Harper government in Canada and the Abbott government in Australia to dismantle environmental and climate science illustrate (Owens 2014, Metcalfe 2013). Yet, societies that fail to utilize science as a way of assessing reality—social, economic or biophysical—lose a crucial means of obtaining accurate feedback on their current and proposed actions. Failure to make appropriate course corrections when such feedback demonstrates negative impacts does not augur well for long-term resilience.

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