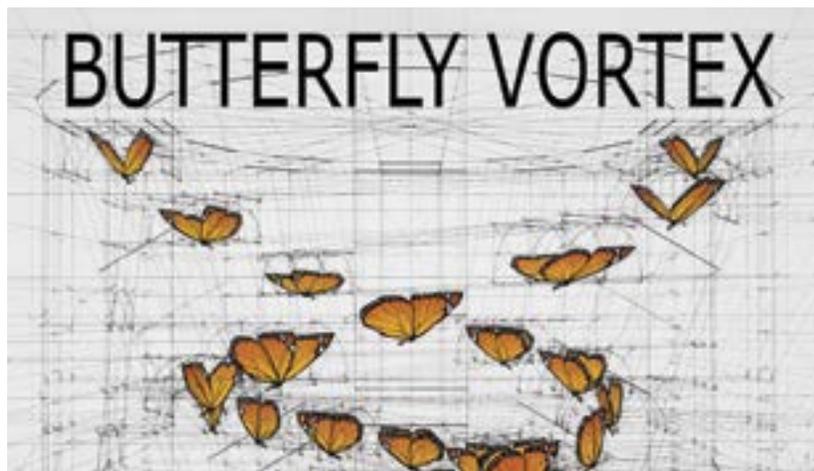


RAFAEL ARAUJO

Monarch Double Helix, 2015

Acrylic paint, ink on canvas, 56 x 45 inches

Created as part of his *Calculations* series, an ongoing examination of the complexity of life, Venezuelan artist Rafael Araujo deftly rendered the motion and subtle mathematical brilliance of butterflies in flight by hand with a pencil, ruler, and protractor. www.rafael-araujo.com



noticed. Moreover, the Dynamic Integrated Climate-Economy model, or Dice model, uses the standard assumption that countries constitute unitary agents. If we were facing a world of homogenous countries, this would hardly matter. But the international system is composed of a relatively small set of very big powers that have a disproportionate influence on the evolution of world politics. For them, domestic considerations are as important if not more than international ones, and internal coalitions are strongly constraining their policies.

Third, it appears that just as in the international trade regime, where domestic lobbies hurt by liberalization will try to oppose and defeat it politically, the same pertains to environmental agreements. The United States exited the Kyoto Protocol because of the influence of the fossil-fuel lobby and its stranglehold on the Republican Party, a situation that persists today. Similar but more hidden influences exist in other powers (the European Union and China). Is there a way out of this situation? The useful analogy is the Montreal Protocol to eliminate ozone-destroying gases, a successful agreement. The protocol was made possible because a relatively cheap substitution technology existed for refrigeration gases. This ensured that manufacturers had trouble coalescing to fight the treaty. If a cheap alternative to fossil fuels would be found, a similar outcome could be obtained because the substitution technology would spread and the financial back of the fuel lobby could be broken. Is there some hope for this? Yes: renewable energy technologies are

getting ever cheaper, and combined with more efficient energy storage facilities, the supremacy of fossil fuels could be threatened.

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Technology governance alternatives

In “Coordinating Technology Governance” (*Issues*, Summer 2015), Gary E. Marchant and Wendell Wallach present a compelling argument for the need for a Governance Coordination Council (GCC) to correct a key deficiency in oversight of emerging technologies in the United States. Specifically, the authors say that the GCC would “give particular attention to underscoring the gaps in the existing regulatory regime that pose serious risks. It would search, in concert with the various stakeholders, methods to address those gaps and risks.” In light of the incredible recent advances in technologies that are changing the physical and natural world and life itself, I fully agree with their call to better synchronize funding, regulation, and other policy actions to make more reflective and deliberate decisions about emerging technologies. To date, these decisions have been piecemeal and delayed. Current approaches have left interest groups, academics, practitioners, and product developers frustrated, at best.

Visions for changing governance are as varied as the scholars that have written about them. Coordinating mechanisms such as a GCC have been proposed by others, including me and my colleagues. In particular, in 2011, we reported on a four-year project, funded by the National Science Foundation, that analyzed five case studies of governance and resulted in our calling for “an overall coordinating entity to capture the dimensions of risk and societal issues...as well as provide oversight throughout the life-cycle of the technology or product.” As with Marchant and Wallach’s GCC, we suggested that a coordinating group use foresight to anticipate and prepare for future decision-making by funding risk- and policy-relevant research and elucidating authorities well before regulatory submission of products.

However, there are some key differences between the GCC model and ours: 1) the authority that the coordinating group would have, 2) the role of the public(s), and 3) the overarching institutional structure. In our model, we proposed that the Office of Science and Technology Policy should take a lead for convergent and emerging technological products, and we stressed that it should have the authority to mandate interagency interactions and to ensure that stakeholder and public deliberations are incorporated into agency decision-making. I fail to see how a coordinating group such as the GCC, without having access to government resources and legal mechanisms, could add more to what already exists in the form of think-tanks, academic centers,

and other advisory groups that convene diverse stakeholders and provide input into policies. A coordinating mechanism needs sharp political teeth, as well as independence from undue influence—hence the dilemma.

We also suggested having three groups working together with equal power: an interagency group, an advisory stakeholder committee, and a citizen group that would speak for the results of wide-scale public deliberation. Thus, our model rests on a central role for the public(s) that are often marginalized from discussion and decisions. The three groups would help to focus national resources toward technologies that are most desired by the taxpayers who fund them. The Marchant-Wallach GCC model takes on a more hierarchical structure, with staff of the GCC and the stakeholders they convene holding a significant amount of top-down power. In contrast, our model would be more networked and bottom-up in structure, with information and viewpoints from citizens feeding into a process that has legal authority. It is debatable which approach is best, and like Marchant and Wallach, I believe it is a crucial time to test some options.

Perhaps most important, the nation will be stuck with past models until we acknowledge and challenge the elephant in the room: the lack of political will to make a change. Currently, the vast majority of power lies in the hands of technology developers who can fund political campaigns. Until high-level policymakers are willing to consider alternatives to a largely neoliberal approach in which technological development and progress take precedent above all else, the rest of us will be resigned to watch the world change in ways that we do not necessarily want.

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Correction

In the Summer 2015 edition of Issues a letter from Carol Christ was incorrectly attributed to Arthur Johnson. Both letters with proper identification are printed below.

Whither universities?

In “A New Model for American Research Universities” (*Issues*, Spring 2015), Michael M. Crow and William B. Dabars argue passionately for the need for an institutional university model that combines pedagogy and research, broad student access, and commitment to societal impact. These ideals, in fact, define the land grant university, as it evolved from the 1862 Morrill Act, which provided federal land to states to establish universities to offer liberal and practical education to what the bill called “the industrial classes.” Many of the nation’s great public universities took their origins from this act. But their three goals—



ERIC DYER

Implant, 2015

Motorized rotating cylinder, with surrounding scalloped rings; plastic, wood, polyester fabric, nylon 3-D prints painted with acrylic, laser-cut mirrored acrylic, DC motor, power supply, and three programmable strobe flashlights, 56 x 105 x 59 inches

Implant is an imaginary medical device that plays with the paradoxical threat and promise of the latest anatomically invasive medical technologies. To watch a video of the piece in motion, visit Eric Dyer’s website at www.ericdyer.com.