## Fertility Technique Regulation

In their Policy Forum about the assisted reproductive technologies (ARTs) industry (*Science*'s Compass, 31 July, p. 651), the Institute for Science, Law, and Technology (ISLAT) Working Group (*1*) incorrectly states that the New York State Task Force on Life and the Law "would impose few new responsibilities on physicians to change practices or curb abuses." In fact, the New York Task Force's report contains extensive recommendations for enhanced oversight of the clinical practice of ARTs (*2*).

For example, the report proposes legislation setting minimum standards for obtaining informed consent to ARTs, prohibiting the retrieval of gametes without informed consent, and making the theft of gametes and embryos a crime. It also recommends enhanced regulatory oversight of gamete and embryo donation, including standards for donor screening, record-keeping, and the disposition of frozen gametes and embryos.

The New York Task Force shares the ISLAT Working Group's concern about the tendency of ART practitioners to introduce new procedures without institutional review board (IRB) approval. Yet, the ISLAT Working Group's solution—legislation requiring IRB approval of all in vitro fertilization (IVF) research—would do little to change the current situation. Many IVF programs already are subject to human subject research regulations, whether because they operate in institutions that have multiple project assurances with the U.S. Department of Health and Human Services (DHHS) or because they are located in states, like New York, that require ethics review board approval of all human subject research not subject to federal law.

The larger problem is that ART practitioners, much like surgeons, tend to introduce new procedures as clinical practice innovations, rather than as part of clinical trials. Clinical practice innovations do not come before IRBs, even in institutions subject to DHHS oversight, because they do not fall within the technical definition of "research." Legislation expanding the jurisdiction of DHHS will serve little purpose unless ART practitioners fundamentally transform the way in which new procedures are introduced.

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**References and Notes**

1. ISLAT is at the Illinois Institute of Technology, Chicago, IL 60661–3691, USA.
2. New York State Task Force on Life and the Law, *Assisted Reproductive Technologies: Analysis and Recommendations for Public Policy (1998)* (New York State Department of Health, Albany, NY, 1998).

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### *Response*

The New York State Task Force on Life and the Law makes very few new recommendations for legislative action. Many of their proposals duplicate existing legal requirements that physicians are not following (such as getting informed consent before intervening). When it comes to taking a tough stance on clear problems, the Task Force punts by relying on voluntary compliance with professional norms—in other words, maintaining the unsatisfactory status quo. For example, the task force specifically eschews the idea of adopting laws limiting the number of embryos to be transferred to a woman's uterus, despite extensive discussion and analysis of the grave problems posed to women and children from multiple gestation.

The Task Force's report presents a com-

prehensive analysis of the issues raised by the practice of ART in New York and suggests solutions that would be appropriate for that state. What the ISLAT Working Group has suggested is a more general regulatory framework that would be applicable nationally to promote uniformity and spread protection to states without the proposed and existing regulations of New York. A national approach is particularly important given that patients travel to other states for fertility treatments and that particular corporations own clinics in several states.

The ISLAT Working Group is not intended to be contradictory to the New York Task Force; rather, the intent is to be complementary and broader in scope.

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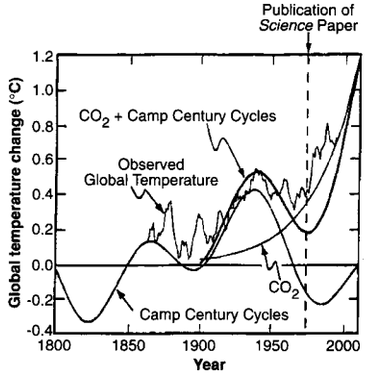
## Climate Change Prediction

In 1975, *Science* published my paper "Climate change: Are we on the brink of a pronounced global warming?" (*1*). This paper was prompted by the observation that despite an appreciable buildup of carbon dioxide in the atmosphere, between 1945 and 1975 there had been no perceptible global warming. Rather, a slight cooling occurred. I suspected that this response failure might be the result of a natural cooling that countered the expected greenhouse gas warming. As, at that time, few quantitative climatic records extending back beyond 100 years existed, I was struck by the analysis of the Camp Century Greenland ice core oxygen-18 record published by Dansgaard and his colleagues in 1973 (*2*). It showed prominent 80- and 180-year cycles. So, I made a large leap of faith and assumed these cycles to be global. I then proceeded to match the amplitudes of the expected exponential temperature rise resulting from the carbon dioxide buildup with that for Dansgaard's combined 80- and 180-year cycle in such a way that the sum of the two curves cooled slightly between 1945 and 1975. I then extended both curves into the future and made the prediction that, once the natural cooling had bottomed out, the two trends would join forces and we would experience a substantial warming. As the minimum in the Dansgaard curve came in 1975, a prominent warming was predicted for the 1980s and 1990s. At my request, a colleague, Arthur Greene, matched the updated Hansen-Lebedeff (*3*) global temperature record with the graph given in my 1975 paper. As can be seen in the figure below, my prediction was pretty much on target. Since 1976, the mean global temperature has undergone a steady climb.

Does this mean that Dansgaard's cycles are influencing global climate? As no convincing verification of the existence of climate cycles with these periods has appeared during the 23 years that have elapsed since my paper was published, the answer is likely "no." However, the documentation of a strong 200-year and a weak 88-year cycle in the atmosphere's carbon-14 content (*4*) suggests that the solar wind and its associated perturbation of Earth's magnetic shielding




**Superposition of the observed global temperature record on the prediction by Broecker (*1*). The observed curve is an update of the 5-year running mean originally compiled by Hansen and Lebedeff (*3*).**

has fluctuated on roughly these time scales. But the solar energy output fluctuations associated with sun spot activity are generally thought to be too small to cause temperature changes of the required amplitude. Further, the absence of evidence for comparable fluctuations in the elevation of snow lines in the European Alps or of the sea ice cover surrounding Iceland on these time scales during the period 1600 to 1850 suggests that the warming experienced during the last century was a one-shot event, rather than a continuation of a persistent cycle.

If nothing else, this historic piece of luck reminds us that a very important issue in the global warming debate remains unresolved. Until a satisfactory explanation has been established for the pronounced demise of the Little Ice Age during the period 1870 to 1940, adequate room for maneuvering will exist for those who doubt that the buildup of carbon dioxide and other greenhouse gases constitutes a substantial threat.

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