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Review of Benjamin K. Sovacool and Michael H. Dworkin's *Global Energy Justice: Problems, Principles, and Practices*

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REVIEW OF BENJAMIN K. SOVACOOOL AND MICHAEL H. DWORKIN'S *GLOBAL ENERGY JUSTICE: PROBLEMS, PRINCIPLES, AND PRACTICES*

Michael B. Gerrard*

INTRODUCTION

Energy powers the world. Having enough energy is essential to maintaining even the most minimal quality of life. But extracting and using energy renders some places uninhabitable, and now threatens the ecological integrity of the planet.

Current energy systems involve profound injustices. These injustices can arise in the ways that energy is produced—including through local and global environmental degradation, human rights abuses, corruption, and social and military conflict. Injustice can also arise in the ways that energy is or is not available—with more than a billion people having far too little for a decent existence, while hundreds of millions consume lavishly.

In *Global Energy Justice: Problems, Principles, and Practices*, Benjamin K. Sovacool and Michael H. Dworkin undertake an ambitious project: understanding these injustices and proposing ways to address them. The two are professors at Vermont Law School and are both associated with its Institute for Energy and the Environment. Among their many other activities, Sovacool also holds an appointment at Aarhus University in Denmark, and Dworkin formerly chaired the Vermont Public Service Board. Their book is well-documented and ranges across a broad array of relevant disciplines.

Sovacool and Dworkin define *energy justice* as

a global energy system that fairly disseminates both the benefits and costs of energy services, and one that has representative and impartial energy decision-making. It involves the following key elements:

- Costs, or how the hazards and externalities of the energy system are imposed on communities unequally, often the poor and marginalized;
- Benefits, or how access to modern energy systems and services are highly uneven;

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- Procedures, or how many energy projects proceed with exclusionary forms of decision-making that lack due process and representation.¹

I. MODES OF INJUSTICE

By this definition, the world suffers from energy injustice at every turn. The eight chapters at the core of the book divide the modes of injustice into the following topics:

1. *Inefficiencies throughout the energy system*: The extraction of fuels from the ground, their conversion to useful form, the distribution of this energy to users, and its use in our vehicles, factories, homes, and everywhere else, all involve excessive waste.² The problem is worsened by the aging of our capital stock, and by declining energy payback ratios—i.e., as the most easily extracted fuels are exhausted, it becomes more energy-intensive to extract what is left.³ What people really want is not energy per se, but the services it provides—light, heat, mobility, Facebook. Gains in energy efficiency would yield far more of those services at a much lower economic and environmental cost than would, for example, a massive program of building new nuclear power plants.

2. *Negative externalities*: Every form of energy extraction and use imposes some burden on the environment. Oil spills into water; natural gas escapes into the air; corporations decapitate mountains to reach coal; burning fuel poisons the air; radiation leaks throughout the nuclear fuel cycle; dams flood valleys for hydroelectricity—these are just some of the impacts.⁴ Most of them are free to the perpetrators; methods to make the polluters pay, such as carbon taxes and emissions charges, are few and far between.⁵

1. BENJAMIN K. SOVACOO & MICHAEL H. DWORKIN, *GLOBAL ENERGY JUSTICE: PROBLEMS, PRINCIPLES, AND PRACTICES* 13 (2014). See also *id.* at 5, 22–23 (discussing the paucity of research resources on the relatively novel concept of energy justice, and finding only five articles with both terms included in their titles over the past four decades).

2. *Id.* at 90–95.

3. *Id.* at 95–99 (discussing a second broad area of energy inefficiency). The Alberta oil sands are a prominent example of fuel that is energy-intensive to extract. See Hao Cai et al., *Well-to-Wheels Greenhouse Gas Emissions of Canadian Oil Sands Products: Implications for U.S. Petroleum Fuels*, 49 ENVTL. & SCI. TECH. 8219 (2015) (analyzing the greenhouse gas emissions of Canadian Oil Sands extraction compared to conventional oil extraction); see also Jacob G. Englander et al., *Oil Sands Energy Intensity Assessment Using Facility-Level Data*, 29 ENERGY & FUELS 5204, 5207–09 (2015) (comparing energy intensities of surface mining to deeper extraction methods).

4. See SOVACOO & DWORKIN, *supra* note 1, at 127–39 (highlighting several environmental impacts—both well-known and lesser-known—resulting from energy extraction and use).

5. See *id.* at 145–56 (discussing their three favorite ways to make polluters pay, including putting a price on carbon, tax shifting, and environmental bonds).

3. *Human rights abuses, social instability, military conflict*: Some of the most dangerous occupations involve energy extraction, probably led by coal mining, where accidents, explosions, and blackened air and lungs take a huge annual toll.⁶ Workers at uranium mines and mills, and in the oil and gas fields, face their own hazards.⁷ It is not only the workers who suffer; in some places, residents have been forcibly—sometimes brutally—removed to make way for drilling, mining, and dams.⁸ These kinds of abuses have been especially well-documented in parts of Africa and Asia, but no continent has been immune. Some countries' militaries have been put to the service of the energy companies.⁹ The need for oil and other resources has profoundly affected the foreign and military policy of the United States, as well as other countries. Massive amounts of money have inevitably led to widespread corruption.¹⁰

4. *Exclusion of minorities and the disenfranchised from decision-making*: As the authors explain,

noxious energy facilities will invariably migrate to communities that lack the political, social, and economic strength to oppose them, especially indigenous peoples and tribes, often at the extreme social and geographical periphery of society. Consequently, people of color and minorities must bear a disproportionate share of the world's poisons and environmental hazards as the consequences of energy production move "from white, affluent suburbs to neighborhoods of those without clout."¹¹

The authors focus on an absence of procedural justice. Those affected are rarely able to learn about and influence the plans that will affect or destroy their communities.

5. *Lack of equitable or affordable access to energy*: The authors tell us that "approximately 1.4 billion people still live without electricity, and an additional 2.7 billion people depend entirely on wood, charcoal, and dung for

6. See *id.* at 160–61 tbl.5.1 (listing major coalmining accidents in the United States between 1940 and 2010).

7. *Id.* at 162–64 (explaining that 95% of miners working at Shiprock facility in New Mexico in the 1950s developed serious diseases and another 39 miners died of radioactive induced cancers).

8. *Id.* at 165–68.

9. See, e.g., John Vidal, *Shell Oil Paid Nigerian Military to Put Down Protests*, *Court Documents Show*, GUARDIAN (Oct. 2, 2011, 7:01 PM), <http://www.theguardian.com/world/2011/oct/03/shell-oil-paid-nigerian-military> (describing how Shell used the Nigerian military during the 1990s to suppress protests, raid villages, and even retrieve a truck).

10. See *id.* at 169–72 (discussing multiple instances of both governmental and nongovernmental organization corruption).

11. *Id.* at 204.

their domestic energy needs.”¹² In some places, people are right next to energy but cannot access it. In the Democratic Republic of the Congo, a long transmission line carries power past millions of households so that it can feed aluminum smelters and copper mines.¹³ One consequence of the lack of modern energy is dangerous levels of air pollution inside the dwellings of families that must burn wood, charcoal, and dung for heat and cooking.¹⁴ This indoor air pollution kills around four million people a year—more than the combined total deaths from malaria, tuberculosis, and HIV/AIDS.¹⁵ Women are especially hard-hit by the absence of modern energy; in many cultures they spend much of their time indoors cooking and tending to children, and they must also carry water in the absence of pipes and pumps.

6. *Subsidies that distort market systems*: Almost every form of energy has enjoyed subsidies. These subsidies take many forms—direct grants to producers or consumers, preferential tax treatment, trade restrictions, services provided by government at less than full cost, price and market controls, and liability limits.¹⁶ This is all not to mention the subsidy that is implicit in the ability to dump massive amounts of pollution into the air and the water for free. Some of these subsidies lower the costs of production, while some raise the prices of disfavored producers; a few lower prices for consumers. When these subsidies lower prices, they encourage more energy use. They also involuntarily transfer wealth from those who provide the subsidies to those who receive them. Sovacool and Dworkin cite studies that put the annual amount of subsidies to energy worldwide as high as \$1.9 trillion, and say that that sum could instead “provide enough money to eliminate worldwide hunger and malnutrition one *hundred* times over.”¹⁷ They particularly single out the nuclear industry as a prime beneficiary.¹⁸

7. *Depletion of energy resources at the expense of future generations*: We are using in a few decades the resources that took billions of years to form. This deprives future generations of what they may need; the authors quote David J.C. MacKay as saying that “given that fossil fuels are a valuable resource, useful for manufacture of plastics and all sorts of other creative

12. *Id.* at 225.

13. *Id.*

14. *Id.* at 228–29. See also *id.* at 139 (discussing the dangers of indoor air pollution from household cookstoves).

15. *Id.* at 228.

16. *Id.* at 259–60 tbl.8.1. Sovacool and Dworkin rely on the United Nations’ and International Energy Agency’s definition of a subsidy as “any measure that keeps prices for consumers below market levels, or for producers above market levels, or that reduces costs for consumers and producers.” *Id.* at 258–59.

17. *Id.* at 265.

18. *Id.* at 268.

stuff, perhaps we should save them for better uses than simply setting fire to them.”¹⁹ We also leave behind residues that may last for one or more centuries—like greenhouse gases—or even millennia—like nuclear waste.

8. *Global threats to the climate*: The book’s final core chapter takes us back to a central inequity: the wealthiest places consume most of the energy while the poorest places must bear the worst impacts. The authors argue that “[r]ich countries have exhausted the capacity of this sink, have denied other countries their shares, and are required to pay compensation for this overuse. Such inequalities must be ‘reversed’ by imposing extra burdens on those countries and peoples responsible for inflicting and producing those inequalities.”²⁰ They conclude that “the best strategy is one known as ‘contraction and convergence’ where rich, industrialized countries ‘contract’ their emissions while at the same time poor, developing countries ‘converge’ to emissions rates that guarantee a rise in living standards.”²¹

II. STRUCTURE

Each of the eight core chapters is organized in the same way and asks three questions:²²

1. *What is reality?* As the authors write,

The first part of each chapter critically presents the injustices of current energy patterns: growing insecurities in everyday life, national policy, and global geopolitics, widening economic disparities in terms of access, subsidies, and distribution, and accelerating environmental degradation across air, water, and land, including the specter of irreversible climate change.²³

2. *What is justice?* This section identifies some key philosophical traditions and sources by which similar dilemmas are assessed. It assesses the various justice claims that arise in energy patterns and decisions. It also looks at “what ethicist Brian Barry has called the ‘retail’ and ‘wholesale’ attributes of justice: wholesale attributes deal with whether institutions are fair and impartial, retail attributes deal with whether individual outcomes are equitable.”²⁴

19. *Id.* at 297 (quoting DAVID J.C. MACKAY, *SUSTAINABLE ENERGY—WITHOUT THE HOT AIR* 5 (2009)).

20. *Id.* at 331.

21. *Id.* at 332.

22. *Id.* at 19–21.

23. *Id.* at 19.

24. *Id.* at 20.

3. *What is to be done?* After contrasting the realities of the modern energy world with the idealized aspirations relevant to each chapter, the authors attempt to reconcile the two. They invoke both policy and behavioral solutions, and address whether various energy sources should be expanded, managed more responsibly, or eliminated in light of justice principles and local needs.

The authors draw from a range of philosophical traditions to illuminate modern dilemmas, from ancient philosophers like Plato and Aristotle through classical utilitarians like Jeremy Bentham and John Stuart Mill all the way to several who are still active today, including Martha Nussbaum, Edith Brown Weiss, Henry Shue, and (prematurely consigned to the grave by the book) Edward O. Wilson.

The occasionally lengthy summaries of various philosophers' views work better in some places than others. It was interesting to learn that the late Robert Nozick "would look at our subsidized energy landscape, and quickly conclude that it was an affront to individual liberty,"²⁵ and so, likely, would Milton Friedman. However, several pages are devoted to learning about the Aristotelian concept of "virtue" and how it boils down to efficiently fulfilling an object's or entity's purpose, leading to the conclusion that "a virtuous energy system would be one that does not waste energy."²⁶ Many prior commentators have reached this conclusion without such an excursion into philosophy. Nonetheless, this approach is original and often challenging.

III. RECOMMENDATIONS AND PROSPECTS

After the eight core chapters, the authors argue that most of the theorists they discussed would agree on the following:

- (1) energy injustices continue to be both pervasive and perverse;
- (2) solutions to energy injustice do exist, but they require comprehensive action;
- (3) values can play as meaningful a role as technology in causing (and resolving) injustices;
- (4) adopting a synthetic framework offers us a chance to realign our values in ways that enhance justice; ...
- (5) ethics must be more than simply abstract theories, for, in a functional sense, it has value only when put to use in actual decisions.²⁷

So, how are these conclusions to be put to use?

25. *Id.* at 258.

26. *Id.* at 90.

27. *Id.* at 356.

The core chapters each contain a number of specific recommendations. For example, the chapter about energy efficiency suggests demand-side management for both electricity use and transportation; reductions in energy intensity; energy-efficiency labeling and fuel economy standards; smarter grids and electricity pricing; and information and awareness campaigns.²⁸ The chapter on energy and due process recommends better information disclosure and auditing; broader public involvement and participatory energy decision-making; and free prior informed consent.²⁹ The chapter on energy poverty recommends investments in small-scale renewable energy systems; “pro-poor” public private partnerships; social pricing and assistance programs; affordability programs; consumer protections; education and counseling; low-income assistance; and weatherization programs.³⁰

Few of these recommendations are novel, though their presentation in the distinctive framework presented by Sovacool and Dworkin allows us to think about them more systematically. Most of them fit well within conventional schemes for addressing energy issues. There are repeated references to the idea of a carbon tax, long favored by many economists. It would probably be the most efficient method, but without some serious adjustments it does little to address—and may in fact worsen—equity problems.³¹

However, some of the suggestions are far outside the realm of what is usually heard in policy circles. One that will be new to many readers, though credited here to Paul Baer and colleagues, is “greenhouse gas development rights.”³² The basic idea is that a total global emissions budget is set; the allowable remaining emissions are divided among individuals based on their capacity. Everyone is entitled to necessities such as food and water and the energy it takes to provide them. The individuals’ income above what is needed to provide those necessities is “capacity,” and a portion of that should

28. *Id.* at 113–24.

29. *Id.* at 213–22.

30. *Id.* at 246–55.

31. See Terry Dinan, *Offsetting a Carbon Tax's Costs on Low-Income Households* 1–3 (Cong. Budget Office, Working Paper No. 2012-16), <https://www.cbo.gov/sites/default/files/cbofiles/attachments/11-13LowIncomeOptions.pdf> (noting that a carbon tax imposes larger burdens on low-income households than on higher-income households); see also ROBERTON C. WILLIAMS III ET AL., *THE INITIAL INCIDENCE OF A CARBON TAX ACROSS INCOME GROUPS* (2014), <http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-14-24.pdf> (noting that poor households typically spend a greater fraction of their income on carbon taxes than middle or upper class households); see also Corbett A. Grainger & Charles D. Kolstad, *Who Pays a Price on Carbon?* (Nat'l Bureau of Econ. Research, Working Paper No. 15239, 2009), <http://www.nber.org/papers/w15239> (noting that a carbon tax places a larger percentage financial burden on poorer households than other groups).

32. SOVACOO & DWORKIN, *supra* note 1, at 334–36.

go to help poor countries develop their own capacities. Under this scheme, the amount needed for the necessities of life is about \$7,500 per capita. People within the United States and the European Union would be responsible for 75% of the resources needed to address climate change, even though these regions hold less than 19% of the global population, and they should pay an average of \$447 per taxpayer to help other countries build their capacities. This framework “thus ensures that developing countries exercise their ‘right to development,’ while the higher costs and taxes for rich countries both fund that development but also create incentives to limit and lower their own energy consumption, and thus emissions.”³³

This proposal could go a long way toward achieving what Sovacool and Dworkin see as an energy just world. However, it is unclear how we reach that goal.

The authors call for “a different set of energy values.”³⁴ The two most important of these are availability and affordability.³⁵ The other important values are due process, information, sustainability, intergenerational equity, intragenerational equity, and responsibility.³⁶ The authors explain the nature of each of these values.

Sovacool and Dworkin tie it all together by saying that:

In sum, our framework has elements of Kantian ethics, which takes each person as an end, looking at the opportunities available to them. It has libertarian elements of freedom and choice, suggesting that good societies present people with a set of opportunities or substantial freedoms; people can choose to exercise these or not. It is pluralist about value, holding that capabilities for people are different and also that their own interests vary. It is concerned with justice as recognition and respect, noting that failures of procedural justice can result in discrimination and marginalization. It, also, has elements focused on utilitarianism and welfare, attempting to improve the quality of life for all people, as defined by their capabilities.³⁷

A world with these values would indeed be vastly superior in many ways. Major religious leaders are beginning to embrace viewpoints that acknowledge the importance of serious societal changes to forestall climate catastrophe. On May 24, 2015, Pope Francis released an encyclical letter,

33. *Id.* at 336.

34. *Id.* at 366.

35. *Id.* at 367.

36. *Id.* at 361–71.

37. *Id.* at 374–75.

Laudato Si: On Care for Our Common Home,³⁸ which strongly advocated a set of values and actions that are, for the most part, quite compatible with what Sovacool and Dworkin call for. In August 2015, Muslim experts from 20 nations agreed in Istanbul on a declaration that “[e]xcessive pollution from fossil fuels threatens to destroy the gifts bestowed on us by God, whom we know as Allah—gifts such as a functioning climate, healthy air to breathe, regular seasons, and living oceans.”³⁹ It called upon rich governments and oil-producing states to “[l]ead the way in phasing out their greenhouse gas emissions as early as possible and no later than the middle of the century,” and to “[r]ecognize the moral obligation to reduce consumption so that the poor may benefit from what is left of the earth’s non-renewable resources.”⁴⁰

Islam, of course, is a highly decentralized religion, and there is no telling how many of the world’s 1.6 billion Muslims⁴¹ will subscribe to this view. While Catholicism has one leader, we do not know how many of the world’s 1.1 billion Catholics⁴² will act on Pope Francis’s encyclical. But to the extent that religion plays a major role in shaping the values of its adherents, declarations such as these may play a significant role. Unfortunately, it can take a long time for declarations to change values, and for values to change actions.

The most important coming decisions determining the future of the global climate will come from two countries that are neither predominantly Catholic nor Muslim—China and India. China’s greenhouse gas emissions have been on a steep upward path since about 2002, and China surpassed the United States as the world’s largest emitter around 2006.⁴³ Its emissions are

38. POPE FRANCIS, ENCYCLICAL LETTER LAUDATO SI’ OF THE HOLY FATHER FRANCIS ON CARE FOR OUR COMMON HOME (2015), http://w2.vatican.va/content/dam/francesco/pdf/encyclicals/documents/papa-francesco_20150524_ enciclica-laudato-si_cn.pdf.

39. *Islamic Declaration on Global Climate Change*, INT’L ISLAMIC CLIMATE CHANGE SYMP. (2015), <http://islamicclimatedeclaration.org/islamic-declaration-on-global-climate-change/>; Arthur Nelson, *Islamic Leaders Issue Bold Call for Rapid Phase Out of Fossil Fuels*, GUARDIAN (Aug. 18, 2015), <http://www.theguardian.com/environment/2015/aug/18/islamic-leaders-issuc-bold-call-rapid-phase-out-fossil-fuels>.

40. *Islamic Declaration on Global Climate Change*, *supra* note 39.

41. Alister Doyle, *Islamic Experts Urge More Muslim Action on Climate Change*, REUTERS (Aug. 18, 2015), <http://www.reuters.com/article/2015/08/18/us-climatechange-muslims-idUSKCN0QN1HI20150818>.

42. THE PEW FORUM ON RELIGION & PUB. LIFE, PEW RESEARCH CTR., GLOBAL CHRISTIANITY 23 (2011), <http://www.pewforum.org/files/2011/12/Christianity-fullreport-web.pdf>.

43. JOS G.J. OLIVIER ET AL., TRENDS IN GLOBAL CO₂ EMISSIONS: 2014 REPORT 14 fig.2.2 (PBL Neth. Envtl. Assessment Agency & European Joint Comm’n Research Ctr. eds., 2014), http://cdgar.jrc.ec.europa.eu/news_docs/jrc-2014-trends-in-global-co2-emissions-2014-report-93171.pdf. Note that these statistics only reflect carbon dioxide, and not other greenhouse gases, but carbon dioxide dominates global greenhouse gas emissions, and statistics for the other gases are not as readily available or reliable.

now nearly twice those of the United States.⁴⁴ India is fast gaining.⁴⁵ China's per capita emissions have more than tripled since 1990 and are now about the same as those of the European Union, and less than half of those of the United States.⁴⁶ During that same period, India's per capita emissions have more than doubled, but from a much lower base, and as of 2013 were only about 10% of those of the United States.⁴⁷ India has a much higher birth rate than China, and in July 2015 the United Nations projected that India's population will exceed China's in 2022.⁴⁸

China has long claimed that its low per capita and historical emissions entitle it, as a matter of justice, to rapidly increase its emissions so that its people can climb out of poverty. With China's remarkable growth over the past two decades, and its cities choking in air pollution that is so terrible that it causes an estimated 1.6 million premature deaths a year,⁴⁹ China is taking serious steps to reduce the growth of its GHG emissions, but its announced goal for when they would peak is still distant—2030.⁵⁰ India also has severe air pollution in its major cities, but it is less developed and less organized than China, inhibiting its ability to control emissions, and its rapid population growth may well lead to a concomitant growth in GHG emissions. If current trends continue, India's GHG emissions will surpass the United States in a few years. It will be very difficult for the United States and the other developed countries to decry India's emissions growth as it follows the path of China in lifting hundreds of millions of people from poverty—out of the levels where, Sovacool and Dworkin tell us, they use too little energy to have decent lives.

Of course, there are ways that India can grow its economy while still restraining GHG growth: principally energy efficiency, renewable energy, and, possibly, nuclear power. These techniques tend to have high up-front costs that require years to pay for themselves through operating savings. India does not have the same capital reserves as China and will have more difficulty financing the emergence of a clean energy system. The proposals

44. *Id.* at 22–23 tbl.2.2.

45. *Id.*

46. *Id.* at 49 tbl.A1.2.

47. *Id.*

48. Dcpt. of Econ. & Soc. Affairs, *World Population Prospects The 2015 Revision Key Findings and Advanced Tables*, at 4, U.N. ESA/P/WP. 241 (2015), http://csa.un.org/unpd/wpp/publications/files/key_findings_wpp_2015.pdf.

49. Sarah Kaplan, *Air Pollution in China Is Killing 1.6 Million People a Year, Researchers Say*, WASH. POST (Aug. 14, 2015), <http://www.washingtonpost.com/news/morning-mix/wp/2015/08/14/air-pollution-in-china-is-killing-1-6-million-people-a-year-researchers-say/>.

50. Chris Buckley, *China Pledges to Halt Growth of Carbon Emissions in Climate Plan*, N.Y. TIMES (June 30, 2015), http://www.nytimes.com/2015/07/01/world/asia/china-carbon-emissions-climate-change.html?_r=0.

advanced by Sovacool and Dworkin would involve substantial financial assistance from the developed countries, but in the United States, at least, the political mood is quite hostile to sending aid abroad, especially to countries seen as our competitors—certainly China, and perhaps, before long, India.

CONCLUSION

The world's failure to control GHG emissions at nearly the level needed will have another important consequence for energy justice. As the seas rise and the deserts advance—two consequences of GHG emissions growth—more and more parts of the world will become uninhabitable. The poorest people—the lowest energy consumers—will tend to be the hardest hit. And extraordinary numbers of them—perhaps hundreds of millions—will need to flee their homes in search of new places to live by the latter part of this century. In the past year, the world has watched in horror as boats overcrowded with people fleeing conflict and oppression in Syria, Eritrea, and other places have attempted to make their way to Europe; many of the boats sank, with major loss of life, but the hoped-for destination countries have hardly welcomed these refugees with open arms. This tragic phenomenon is but a small omen of what may well happen as climate change intensifies. Thus these poorest of people, those least responsible for climate change, will once again be among climate change's primary victims.

Perhaps religious and secular leaders will lead movements to change values in the direction that Sovacool and Dworkin advocate. They close their book with Edmund Burke: "Society cannot exist unless a controlling power on will and appetite be placed somewhere."⁵¹ If such a controlling power is found, perhaps in the human spirit, the climate injustice that they have so well described may be moderated. If it does not happen, the results are terrible to contemplate.

51. SOVACOO & DWORKIN, *supra* note 1, at 377.