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Chapter 1 : Seeing Like a State | The Anarchist Library

A variety of interdisciplinary perspectives on the modern state as it is encountered in everyday life Covers South Asia, Europe, including the former Soviet Union, the US and the Far East Contributors are well-known scholars and writers.

So important is this book, in fact, and so wide-ranging its implications for the study of modern history, that it has generated not just the usual range of reviews, but symposia in major journals. This provides us with an excellent opportunity to see how historians debate. Some obvious thoughts and questions: Note how often we encounter themes familiar to us from other classes, especially the process of mapping and classifying, ie how bureaucracy defines communities, and changes them in the process of doing so. Why do bureaucrats so often want to change the structure of cities? What goals do they have? Do cities really need organizing? Do they lend support to a particular ideology or political approach? Who might use this book for ideological or rhetorical ends? Do you think that Scott shows a North American and specifically US bias in his approach and his choice of examples? What do we learn from this book about the importance of changing means of transportation in shaping societies, and especially cities? What does his study suggest about the strengths and weaknesses of modernism? How do his findings relate to studies of literary modernism? How might another historian have approached the case-studies offered by Scott? Could we use a gender perspective on these projects? On what grounds would people object to high modernist schemes? Scott is mainly studying failures. Can you think of comparable schemes that have succeeded? Also do note the role of war and military needs throughout as driving forces in social change. Must the two necessarily conflict? Looking at more recent events, do any other relevant examples or case-studies come to mind? Has new technology fundamentally changed the character and aspirations of government and bureaucracy? In other words, has information technology and the internet weaned bureaucrats away from their assumptions about the need for centralization, straight lines, control, etc? What do you think of their various criticisms? How do they mesh with your own impressions of the book? Focus on the issue of why he dropped the TVA Tennessee Valley Authority from his discussion – why does that become such an issue for the critics? How do you react to this comment? Can state intervention be liberating rather than oppressive? Can you think of some historical examples? Finally – for some biographical material on Professor Scott and his background, check out [http:](http://)

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Chapter 2 : Project MUSE - Fighting for the Farm

Introduction: Framing the inquiry: historicizing the modern state / Lloyd I. Rudolph and John Kurt Jacobsen --High modernist social engineering: the case of the Tennessee Valley Authority / James C. Scott --The cost of living: the Narmada Dam and the Indian state / Arundhati Roy --Understanding the collapse of the Soviet Union / Hyung-Min.

He is the author of *Drowned and Dammed*: Oxford University Press, For several decades following , the modern large dam in India presented itself as a political conundrum, often voiced in strange, contradictory tones. The post-Second World War denouement was unprecedented in several ways. It was a period that left unquestioned the idea of progress, insisted upon the supreme belief in development, inculcated faith in modern technology, and advocated an unwavering confidence in positivist science. How else could one explain the unexpected surprise that greeted civil engineer Dr. Rao later minister of irrigation and power, ⁷³ when scouting around for a dam site for the Nagarjunasagar project in the early s in Andhra Pradesh in south India? He was troubled by the fact that a police escort was required since the survey zone was then experiencing a communist-led guerilla insurgency, primarily against landlordism. However, as events unfolded, Dr. Rao noted in his autobiography: Later, I got a letter from the leader of the Communist Party who was underground, that there was no necessity for me to have a police escort and that they would not have harmed me and the other engineers unless we were engaged in building roads to their hide-outs. Engineers dealing with dams and irrigation projects were most welcome. This was similar to what the Communists told Dr. Savage when he went to the river Yangtze in China to see a storage dam site. The Communists sent word to him that he could freely move about without escort as they would not harm engineers engaged in the development of rivers. Such was its apolitical allure that Henry C. Turning dammed rivers into synonyms for nation building, however, did not spring unadulterated from the breasts of technology enthusiasts. Rather, the enthusiasm for the modern large dam had been derived from many of the troubled forces that had overwhelmed capitalism in the early decades of the twentieth century—the Great Depression in the United States, the crisis of capitalist overproduction, and the brutal failings of the free market. It was in the vortex of near desperate interventions to save capitalism through the New Deal, Keynesian-style economic pump priming, and the crafting of capitalist planning that the comprehensive control of the Tennessee River through a series of multipurpose large dams was assembled. Under the aegis of the Tennessee Valley Authority TVA , dams placed across the Tennessee River were expected to transform the region into an economically dynamic and modern productive landscape. In other words, the large dam under the rubric of multipurpose river valley development was declared a technology exorcised of politics: Historically, technologies for hydraulic manipulation in the Indian subcontinent have moved through three distinct, though overlapping, phases. From the earliest times, tanks, inundation canals, temporary structures to trap drainage, wells, and waterwheels made up the ensemble of water harvesting structures. These techniques were essentially directed toward either impounding precipitation, tapping river inundations, or retrieving groundwater recharge. In the early nineteenth century, however, British colonialism initiated a radical break in both technique and hydraulic principle by introducing perennial canal irrigation in several parts of the South Asian subcontinent. For the first time, permanent headworks in the form of barrages and weirs were thrown across riverbeds, and their waters were diverted through intricate and extensive canal systems. This phase, often referred to as the advent of the era of modern irrigation, witnessed the construction of several large canal irrigation schemes with permanent headworks such as the Ganges Canal , the Godavery system , and the Krishna system These big-engineering efforts, in several ways, had profound transformative impacts. The case in point being that of the eastern deltas contemporary Bengal, Bihar, and Orissa , which were transformed from being flood dependent agrarian regimes into flood vulnerable landscapes. Though driven chiefly by the need to secure private property in land, these flood control measures soon disrupted natural flow regimes and ended up aggravating flood lines and thereby opening up the deltas to enhanced flood vulnerability. In addition, they also constructed a network of roads,

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railway lines, and bridges, which by running in the east-west direction ended up interrupting natural drainage lines that mostly dropped from north to south. These structures, in time, not unexpectedly, began to unsettle a complex and fragile arrangement for drainage. Colonial hydraulic interventions, as it is now widely recognized, oversaw the dismantling and destruction of several unique water traditions in India. Rather, the emphasis here is to point out that the contemporary model for harnessing water in India amplifies its colonial legacy by continuing to expropriate or eliminate traditional water management skills and technologies. And having thereby relentlessly extinguished other ways, techniques, arrangements, traditions, and cultures for managing and conserving water in India, the large dam is always pursued as the TINA there is no alternative option. The river has been put on tap. Yet, a dammed river—as I will argue below—profoundly plays out the irreconcilable tensions and intense contradictions between capitalism and nature. Modern large dams, given the experiences in the last sixty years in particular, have been deeply implicated in various processes integral to capitalism such as enclosure, the transferring of hydraulic endowments to powerful constituencies, the intensification of industrial agriculture, the shifting of ecological costs onto marginal communities, and the expropriation and elimination of indigenous water management traditions. When Dams Ate People In India, disquiet regarding large dams was first expressed over the issue of displacement. On the one hand, all their possible means of livelihood were comprehensively destroyed through submergence, while, on the other, they were systematically denied any meaningful resettlement or rehabilitation. Initially, under the pretence of compensation, the oustees were simply paid paltry cash settlements. In , however, partly following the intense resistance that was building up against the infamous Sardar Sarovar Project over the Narmada River, the official policy on resettlement and rehabilitation was finally compelled to concede the right for a land compensatory package. Despite this seemingly radical gain, the resettlement and rehabilitation strategy in India continues to act as a new type of enclosure. With their livelihoods thus lost, the oustees are then further compromised. The implementation of resettlement and rehabilitation programs have invariably tended to address compensation claims by breaking whole communities that previously existed as culturally dense intertwined arrangements into now oversimplified family units. In effect, the deep associations that sustained and secured the viability of various kinds of social groupings especially that of tribal or adivasis communities are disoriented and rendered instead, by design, into collections of atomized individuals. In other words, the bureaucratic and formal categories deployed to facilitate the economic calculations for resettlement and rehabilitation have led to the forced snapping of deep historical ties, bonds, and cultural linkages that were critical to survival strategies and livelihood means. Finally, by concentrating all its efforts on estimating economic equivalences to land loss, the resettlement and rehabilitation strategy has ended up ignoring and devaluing an entire range of other subsistence institutions and means such as commonly shared forests, grasslands, streams, tanks, fishing rights, and village commons—a web of natural endowments upon which the landless, the marginal, and the impoverished were heavily reliant. Clearly, dam-displacement in terms of both the legality of its direct seizure of means of livelihood and in the details of enforced atomization and increasing individual vulnerability amounts to a contemporary version of enclosure. One conservative estimate of the number of people displaced by large dams in India since is placed at 40 million; with possibly a mere tiny fraction of this huge number of oustees having managed anywhere near meaningful resettlement. Nevertheless, the astounding number of oustees has not in any way deterred large dam enthusiasts from pursuing the Polavaram project in south India, which is expected, by a very conservative count, to displace up to , people. Not surprisingly, the vast majority of the displaced, once again, will be predominantly tribal or adivasis populations. Typically, therefore, quantification is pursued; which, in the main, boils down to the search for an acceptable cost-benefit ratio for the project. Ideally, the benefits are expected to outnumber the costs. However, the cost-benefit ratio is rarely, if ever, arrived at neatly. In great measure, much of the confusion springs from the contested and political nature of how values and prices are determined. For India, Satyajit Singh helpfully summed up some of the earliest questioning of the cost-benefit format. In an insightful review of several dam projects, he pointed out that the cost-benefit ratio was invariably a

manipulated figure, in which the costs were made to move downwards while the benefits always tended to be overstated. With the subjection of the cost-benefit format to critical scrutiny, therefore, a new definition of the large dam is called for. The large dam is seen as the technical means to realize political outcomes. That is, the river is put to work by being altered into irrigation cusecs, kilowatts for hydroelectricity, and dead storage for flood control. This project, made operational in , comprises several dams, reservoirs, inter-basin transfer linkages, powerhouses, and a massive canal network intended to harness the waters of the Sutlej and Beas Rivers tributaries to the grand Indus River system. For Dharmadhikary, the impacts of the Bhakra-Nangal Project cannot be evaluated by a standard cost-benefit examination. The project points to win-lose rather than, as widely claimed, win-win outcomes. For instance, from the very beginning, the water availability for the Bhakra-Nangal Project to irrigate 2. The Green Revolution package was essentially aimed at providing a steroid effect in agriculture. Controlled and abundant irrigation became the means for stimulating a constellation of techniques and technologies that were intended to boost crop yields. This profoundly reworked ownership and land tenure patterns through consolidation , introduced new input packages chemical fertilizers, high yielding varieties, and mechanization , and encouraged crop monocultures. However, the gains from the increased yields, mostly in cereal production, have been clouded by environmental costs. Dharmadhikary notes that waterlogging, salinization, and the deleterious effects on the soil from intensive monocropping have plagued many parts of the canal irrigated tracts. Furthermore, the scissor effect of mounting input costs and the tapering off in yields has squeezed the profits of many farmers. Clearly, a simple cost-benefit approach is unable to capture long-term ecological and economic trends. And as for the hydraulic transfer effected by the Bakra-Nangal dams, Dharmadhikary argues that the project actually ended up amplifying earlier British colonial land and water management initiatives in the region. That is, colonialism attempted to transform the once variegated social and ecological flood plains watered by the Indus system into an administratively simplified, settled agrarian tract. The Indus Delta was then a sprawling interstitial zone between land and sea and made up of mangroves, inlets, creeks, and an inestimable number of ecological relationships between flora and fauna. The full effects of this massive siphoning off of fresh water from the delta has only now begun to be acknowledged. Besides debilitating livelihood possibilities for approximately 1. Increasingly, large dams or multipurpose river valley development projects are now redirecting river water for urban and industrial consumption. The brewing conflict over the apportionment of the waters of the Narmada River is one such clear instance. Upon surrounding the reservoir they demanded that the government ensure that the waters be committed for irrigation rather than being directed toward industry. Despite the subsequent police action of arrests and beatings the farmers remained firm in their resolve. In fact, ten days after the protest, they reassembled to erect a sixteen-foot-long wall above an underground pipe that had been laid by Vedanta Aluminum to move water from the reservoir to its smelter. In short, since , governments in India, building on a destructive colonial legacy and twentieth-century modernist ideology, have aggressively sought to ascertain and meet water demands through either big-engineering projects or intensive extraction technologies rather than concentrating on localized conservation efforts or on strengthening indigenous water knowledge traditions. Supply-side hydrology has meant that initiatives to ameliorate perceived shortages have been met either by the construction of dams and diversions or by encouraging groundwater mining through electric and diesel pumps. Put differently, these expert-led institutions and organizations, possessing immense financial and political powers, have systematically moved to either expropriate indigenous water techniques or caused the destruction of water management traditions. Conclusion The large dam in India is today less of a political conundrum. It is now widely accepted that it is part of a contested political, economic, and ecological terrain. As the above discussion indicates, large dams, though announced as neutral technological artifacts, have been deeply implicated in several processes integral to capitalist expansion, and in the manner in which it casts its imprint upon the natural world. Hence, dogging the very assembling and functioning of the multipurpose reservoir from the beginning have been the political effects of enclosure, hydraulic transfer, the expropriation and elimination of other water management skills and traditions, and inevitably the

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externalization of the costs onto the most marginal and impoverished communities. The modern large dam must also be understood as crucial to sustaining supply-side hydrology. In recent years, however, the pursuit of supply-side hydrology, the world over, has begun to flounder especially over the question of its environmental impacts. The triptych of strategies involving groundwater mining, perennial canal irrigation, and large dams, in other words, have proved to be unsustainable as a water management model. There is a growing realization that civil-engineering and bureaucratic framings of river systems, as merely moving masses of water crying out to be regulated and dammed, is flawed. In sharp contrast to such highly simplified views, ecologists have convincingly demonstrated that fluvial regimes are complex geomorphologic, chemical, and biological processes in motion. Rivers are made up of habitat mosaics that support a wide variety of aquatic and riparian species. It is now understood that natural variable flows create and maintain particular dynamics between the channel, floodplain, wetland, and the estuary. While wetlands provide important nursery grounds for fish and export organic matter and organisms into the main channels, the scouring of floodplain soils by floods rejuvenates habitat for plant species within the basin. A large body of evidence now reveals that the natural-flow regime is inherently variable, and that this is critical to ecosystem function and native biodiversity. Not surprisingly, therefore, by alienating the river from its natural-flow regime and pushing for extreme water extraction, supply-side hydrology has fatally collided with nature itself.

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Chapter 3 : Science and Technology | Tennessee Encyclopedia

Scott, "High Modernist Social Engineering: The Case of the Tennessee Valley Authority," in *Experiencing the State*, ed. Lloyd I. Rudolph and John Kurt Jacobsen (New Delhi: Oxford,), 3-

Additional Information In lieu of an abstract, here is a brief excerpt of the content: A democratic society is one in which all members are able to develop and express their capacities to the full in the running of that society. One of the tasks of a democratic state is to create the conditions for this. Scott explains "how certain schemes to improve the human condition have failed" the subtitle. He defines high-modernist ideology as a supreme self-confidence about continued linear progress, the development of scientific and technical knowledge, the expansion of production, the rational design of social order, the growing satisfaction of human needs, and, not least, an increasing control over nature including human nature commensurate with the scientific understanding of natural laws. High modernism is thus a particularly sweeping vision of how the benefits of technical and scientific progress might be applied-usually through the state-in every field of human activity. Scott argues that this ideology, when joined with an administrative, authoritarian state and a weak Jess Gilbert civil society, led to the large-scale development failures of the twentieth century. He notes that the liberal democracies have tended to resist authoritarian high modernism. Yet he names three U. He criticizes high modernism also for its "radical authority" based on scientific rationality and its disallowance of other bases for judgment. For instance, it denigrates folk knowledge and local cultures. It breaks with history and tradition; the "past is an impediment" to be overcome Myth, religion, and other irrational superstitions are to be transcended. Authoritarianism follows from this stance, Scott asserts: Only the knowledgeable elite-scientific experts separated from the people-ought to rule society, and the ignorant or recalcitrant re-educated. Thus, high modernists usually devalue or banish politics, and they like to create new public authorities for giant development projects e. It is not surprising that the ideology appeals especially to bureaucratic intelligentsia, technicians, and planners The agrarian New Deal would seem to be a classic case in point: It engaged in typically modernist state actions such as long-range planning of economy and society, the. Planned and led, in significant part, by expert social scientists particularly economists steeped in a Progressive state-building tradition, the New Deal assumed that a larger, administrative state was necessary to manage the modern economy. It used a massive public bureaucracy to plan, implement, and enforce the reduction of farm output in the hope of raising commodity prices; millions of farmers thereby received "benefit payments" if they signed legal contracts with the federal government the Agricultural Adjustment Administration. The New Deal placed technical experts in every rural county to advise and assist farmers in preventing soil erosion the Soil Conservation Service. Moreover, the government acquired millions of acres of settled but "submarginal land" scientifically determined , then uprooted and resettled thousands of the poor farm families elsewhere, usually into new houses of a strikingly modernist design, and occasionally into entirely new rural communities the Resettlement Administration. Late in the New Deal, political and technical elites at the federal and state levels established land-use planning as a priority. Local farmer committees , together with scientists and administrators, were to coordinate these and other new federal programs. Such considerations lead Scott to conclude that the intellectual leaders of USDA were high modernists. You are not currently authenticated. View freely available titles:

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Chapter 4 : Erkundungen: Themen der ethnologischen Forschung | Andre Gingrich - www.nxgvision.com

My only criticism is that the author left out an already-written chapter on the Tennessee Valley Authority -- America's great foray into large-scale social engineering -- for reasons of space.

Is there something sinister in that? Are the people confused? Something is being eroded. It would be nice to be able to claim that it just took that long to think it through. Nice, but not truthful. A nearly fatal combination of malingering and administrative chores accounts for part of the delay. The scope of the book together with the time it took to complete it explain the long list of intellectual debts I have accumulated along the way. A full accounting of them would be interminable except for the fact that I realize some of my creditors would just as soon not be associated with the final product. Though I shall not implicate them here, I owe them nonetheless. Instead of turning my argument in the direction they urged, I took their criticisms to heart by fortifying my case so that it would better answer their objections. My other intellectual creditors, having failed to disavow the final product in advance, will be named here and, it is to be hoped, implicated. Some of my debts are to institutions. I spent the '91 academic year at the Wissenschaftskolleg zu Berlin as a recipient of their hospitality and largesse. The temptation of living for a time in Berlin, just a year after the Wall came down, proved irresistible. My research hardly advanced in any formal sense, but I realize that many fruitful lines of inquiry opened up then. Only the great efforts and unfailing friendship of Heinz Lechleiter and Ursula Hess brought my German to a barely tolerable level. At various stages in the laborious preparation of this book, I had the privilege of making extended visits to institutions filled with largespirited but skeptical colleagues. My good luck was that they so often made a project of straightening me out. At the Humanities Research Centre at the Australian National University in Canberra, I had the benefit of an unmatched crowd of humanists and Asian specialists looking over my shoulder. This book would definitely have been much longer in the making were it not for the fact that Dick Ohmann and Betsy Traube invited me to spend the academic year of '95 as a fellow of the Center for Humanities at Wesleyan University. I am enormously grateful to Pat Camden and Jackie Rich for their inexhaustible fund of kindnesses. The astute insights of Betsy Traube and Khachig Tololyan mark this work in many ways. Finally, I want to thank my colleagues in the Netherlands and at the Amsterdam School for Social Science Research for the opportunity of visiting there in order to give the Sixth Annual W. Having Wim Wertheim there to offer advice and criticism was a great privilege for me, for I have admired his many contributions to social science theory and Southeast Asian studies. I learned at least as much from the thesis-writing graduate students in my seminar there as they learned from me; Talja Potters and Peer Smets were kind enough to read my chapter on urban planning and provide searching critiques. There are a good many scholars whose writings opened up new perspectives for me or provided outstanding analyses of issues that I could not have hoped to study so comprehensively on my own. Some of them have not seen this work, some of them I have never met, and some of them would probably want to disown what I have written. Nevertheless, I will venture to acknowledge my heavy intellectual debts to them all: The chapter on Soviet collectivization and its connection with industrial agriculture in the United States leans heavily on the work of Sheila Fitzpatrick and Deborah Fitzgerald. I thank Sheila Fitzpatrick for her searching comments, only a few of which are adequately reflected in the finished chapter. Although our terminology differs, Stephen Marglin and I had, unbeknownst to one another, been taking separate trains to roughly the same destination. I am an amateur as an Africanist, and the chapter on ujamaa villages in Tanzania owes a great deal to Joel Gao Hiza, who wrote a brilliant senior honors thesis on the subject while at Yale University and who generously shared his voluminous research materials. He is now finishing a thesis in anthropology at the University of California at Berkeley. Larry Lohmann and James Ferguson read an early draft of the manuscript and made comments that clarified my thinking enormously and prevented some serious missteps. A few other good friends offered to read all or part of the manuscript, in spite of its forbidding length. Those who rolled their eyes when offering or whose body language suggested mixed feelings, I avoided burdening. The few who genuinely

wanted to read it, or whose feigned interest was completely convincing, in every case provided a set of comments that shaped the book in important ways. A great many thoughtful colleagues made useful criticisms or brought to my attention work that contributed to improvements in the argument and evidence. For the past five years the Program in Agrarian Studies at Yale has been for me the site of a broad, interdisciplinary education in rural life and a major source of intellectual companionship. The program has given me more than I can imagine ever giving back. Virtually every page of this book can be traced to one or another of the wide-ranging encounters fostered by the program. I will forgo mentioning fifty or so postdoctoral fellows who have visited for a year, but all of them have contributed in large and small ways to this enterprise. We invited them to join us because we admired their work, and they have never disappointed us. The chief of the Program in Agrarian Studies, Marvel Kay Mansfield, has been the heart and soul of the success of Agrarian Studies and every other enterprise with which I have been associated at Yale. This is not the first occasion I have acknowledged my debt to her; it has only grown with time. Nor could Agrarian Studies have thrived as it has without the initiative of K. My intellectual debts to colleagues at Yale defy accounting. I have been blessed with research assistants who turned what began as wild goose chases into serious quests. Without their imagination and work I would have learned little about the invention of permanent last names, the physical layout of new villages, and language planning. I owe Cassandra Moseley not only thanks but an apology, because all her fine work on the Tennessee Valley Authority resulted in a chapter that I reluctantly cut in order to keep the book within reasonable bounds. It will find another home, I trust. Yale University Press has been good to me in more ways than one. New York University Press, If there were a detox unit or an analog to the nicotine patch for serial offenders, I think I would sign up for treatment. My habit has already cost me more precious time than I care to admit. The problem with book writing and other addictions is that the resolve to quit is greatest during withdrawal, but as the painful symptoms recede, the craving is apt to return.

Introduction This book grew out of an intellectual detour that became so gripping that I decided to abandon my original itinerary altogether. After I had made what appeared to be an ill-considered turn, the surprising new scenery and the sense that I was headed for a more satisfying destination persuaded me to change my plans. The new itinerary, I think, has a logic of its own. It might even have been a more elegant trip had I possessed the wit to conceive of it at the outset. What does seem clear to me is that the detour, although along roads that were bumpier and more circuitous than I had foreseen, has led to a more substantial place. A word about the road not taken. In the context of Southeast Asia, this promised to be a fruitful way of addressing the perennial tensions between mobile, slash-and-burn hill peoples on one hand and wet-rice, valley kingdoms on the other. The question, however, transcended regional geography. Nomads and pastoralists such as Berbers and Bedouins, hunter-gatherers, Gypsies, vagrants, homeless people, itinerants, runaway slaves, and serfs have always been a thorn in the side of states. Efforts to permanently settle these mobile peoples sedentarization seemed to be a perennial state project—perennial, in part, because it so seldom succeeded. Having begun to think in these terms, I began to see legibility as a central problem in statecraft. The premodern state was, in many crucial respects, partially blind; it knew precious little about its subjects, their wealth, their landholdings and yields, their location, their very identity. As a result, its interventions were often crude and self-defeating. It is at this point that the detour began. How did the state gradually get a handle on its subjects and their environment? Suddenly, processes as disparate as the creation of permanent last names, the standardization of weights and measures, the establishment of cadastral surveys and population registers, the invention of freehold tenure, the standardization of language and legal discourse, the design of cities, and the organization of transportation seemed comprehensible as attempts at legibility and simplification. In each case, officials took exceptionally complex, illegible, and local social practices, such as land tenure customs or naming customs, and created a standard grid whereby it could be centrally recorded and monitored. The organization of the natural world was no exception. Whatever their other purposes, the designs of scientific forestry and agriculture and the layouts of plantations, collective farms, ujamaa villages, and strategic hamlets all seemed calculated to make the terrain, its products, and its workforce more

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legible” and hence manipulable” from above and from the center. A homely analogy from beekeeping may be helpful here. In premodern times the gathering of honey was a difficult affair. Even if bees were housed in straw hives, harvesting the honey usually meant driving off the bees and often destroying the colony. The arrangement of brood chambers and honey cells followed complex patterns that varied from hive to hive—patterns that did not allow for neat extractions. Furthermore, the wax cells are arranged neatly in vertical frames, nine or ten to a box, which enable the easy extraction of honey, wax, and propolis. I do not wish to push the analogy further than it will go, but much of early modern European statecraft seemed similarly devoted to rationalizing and standardizing what was a social hieroglyph into a legible and administratively more convenient format. The social simplifications thus introduced not only permitted a more finely tuned system of taxation and conscription but also greatly enhanced state capacity. They made possible quite discriminating interventions of every kind, such as public-health measures, political surveillance, and relief for the poor. These state simplifications, the basic givens of modern statecraft, were, I began to realize, rather like abridged maps. They did not successfully represent the actual activity of the society they depicted, nor were they intended to; they represented only that slice of it that interested the official observer. They were, moreover, not just maps. Rather, they were maps that, when allied with state power, would enable much of the reality they depicted to be remade. Thus a state cadastral map created to designate taxable property-holders does not merely describe a system of land tenure; it creates such a system through its ability to give its categories the force of law. Much of the first chapter is intended to convey how thoroughly society and the environment have been refashioned by state maps of legibility. This view of early modern statecraft is not particularly original. Suitably modified, however, it can provide a distinctive optic through which a number of huge development fiascoes in poorer Third World nations and Eastern Europe can be usefully viewed. The Great Leap Forward in China, collectivization in Russia, and compulsory villagization in Tanzania, Mozambique, and Ethiopia are among the great human tragedies of the twentieth century, in terms of both lives lost and lives irretrievably disrupted. It is not so difficult, alas, to understand why so many human lives have been destroyed by mobilized violence between ethnic groups, religious sects, or linguistic communities. But it is harder to grasp why so many well-intended schemes to improve the human condition have gone so tragically awry. I aim, in what follows, to provide a convincing account of the logic behind the failure of some of the great utopian social engineering schemes of the twentieth century. I shall argue that the most tragic episodes of state-initiated social engineering originate in a pernicious combination of four elements. All four are necessary for a full-fledged disaster. The first element is the administrative ordering of nature and society—the transformative state simplifications described above. By themselves, they are the unremarkable tools of modern statecraft; they are as vital to the maintenance of our welfare and freedom as they are to the designs of a would-be modern despot.

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Chapter 5 : Adkisson v. Jacobs Eng'g Grp, Inc, No. (6th Cir.) :: Justia

In addition, the ideology of high modernism regarded surface order as an aesthetic value in its own right, leading planners to bulldoze older tenement neighborhoods that contained dense social networks for sterile high-rise developments that atomized their inhabitants.

In , a KIF coal-ash containment dike failed, spilling 5. TVA engaged Jacobs as the prime contractor for planning and oversight of remediation. The Plaintiffs worked on the KIF remediation and, in , sued, alleging that Jacobs improperly monitored fly ash; inadequately trained workers about hazards of inhaling toxic fly ash; inadequately monitored their medical conditions; denied requests for respirators and dust masks; exposed them to high concentrations of flyash toxic constituents; and fraudulently concealed that exposure. The district court dismissed for lack of subject-matter jurisdiction, concluding that Jacobs was entitled to government-contractor immunity as a corollary of the discretionary-function exception to the Tort Claims Act, 28 U.S.C. § 2672. The Sixth Circuit reversed, finding that such immunity is not jurisdictional and that the court should have considered a motion to dismiss for failure to state a claim. Varlan, Chief District Judge. April 29, 2015. Decided and Filed: June 2, 2015. Before: This case arises out of the cleanup and remediation work that Jacobs Engineering Group, Inc. Jacobs performed at the Kingston Fossil 1 No. A byproduct of burning coal for the generation of electricity is coal ash. On December 22, 2010, a coal-ash containment dike at the KIF plant failed, spilling approximately 5. TVA has been the lead No. Page 3 agency authority for all further coal-ash cleanup, removal, and remediation since the EPA terminated the initial emergency-response phase on January 11, 2011. The SWSHP also sets forth the minimum personal protective equipment PPE required for workers, as well as a protocol for site controls, work zones, and personal hygiene. Additional protection, such as a respirator, is mentioned in the SWSHP as a possibility that might be required at times, depending on the type of work being performed e. Three lawsuits The Plaintiffs are individuals who worked on the remediation of the coal-ash spill at the KIF Plant, plus some of their spouses. See Adkisson et al. The Plaintiffs allege that Jacobs improperly monitored the fly ash; inadequately trained the workers about the hazards associated with inhaling toxic fly ash; inadequately monitored their medical conditions; denied their requests for respirators, dust masks, and PPE; exposed them to high concentrations of flyash toxic constituents; and fraudulently concealed and denied that they had been so exposed. See Thompson et al. See Cunningham et al. Jacobs moved to dismiss all three actions for lack of subject-matter jurisdiction pursuant to Rule 12 b 1 of the Federal Rules of Civil Procedure, the first motion being filed in November and the latter two in February In July , the magistrate judge who was assigned to the case granted a motion by the Thompson plaintiffs to consolidate the three cases, with Adkisson, as the first to be filed, serving as the lead case. This timely appeal followed. Tennessee Valley Authority, F. The court in Chesney ruled that engineering contractors working for TVA on the same coal-ash spill were entitled to derivative immunity as set forth in Yearsley v. It dismissed the complaint on jurisdictional grounds based on its conclusion that Yearsley entitles government contractors to sovereign immunity. Government-contractor immunity under Yearsley If Jacobs is eligible for any sort of immunity, it is derivative of the immunity that the federal government would be entitled to in the same situation. The United States, as a sovereign entity, is immune from suit unless it consents to be sued. On the other hand, the FTCA explicitly excludes independent contractors from its scope. But Jacobs arguesâ€”and the district court heldâ€”that Jacobs is nevertheless entitled to derivative sovereign immunity for discretionary functions based on Yearsley. In Yearsley, the Supreme Court held that a contractor who built river dikes pursuant to a contract with the U.S. Government was entitled to derivative sovereign immunity. Unfortunately, the Court never explained the basis of that protection. Over the years, other circuits have recognized the concept of immunity for government contractors based on Yearsley. United States, F. One circuit that previously endorsed the doctrine now questions whether it sweeps as far as its language purports to reach. If Yearsley really does stretch as broadly as its language suggests, the Supreme Court in Boyle would presumably not have invented a new test to govern the liability of military procurement contractors; it could

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have simply cited *Yearsley* and called it a day. But we need not resolve the thorny questions these developments present. The Fourth Circuit has held, albeit without elaboration, that the bar is indeed jurisdictional. In *re KBR, F.* The Fifth Circuit, however, has explicitly reached the opposite conclusion. *Yearsley* immunity is, in our opinion, closer in nature to qualified immunity for private individuals under government contract, which is an issue to be reviewed on the merits rather than for jurisdiction. Is Jacobs entitled to *Yearsley* immunity? We thus do not know if the court looked outside the pleadings in concluding that the allegations were insufficient on this issue. For example, the complaint in *Adkisson* contends that Jacobs, despite its duties under its contract with TVA, misrepresented the harmfulness of fly ash. But because the differences between the standards No. Because the court made numerous references to documents outside of the pleadings in discussing the application of the discretionary-function exception, the Rule 12 b 1 standard almost certainly affected its analysis here. A two-part test governs whether conduct is protected by the discretionary-function exception. *United States, U.* In addition to being discretionary, the conduct must also be of the type that the discretionary-function exception was designed to shield. The district court, in holding that the discretionary-function exception applied, found that various regulations, contractual provisions, and the SWSHP all failed to prescribe a specific course of action that Jacobs had to follow. But just because certain conduct fails to be specifically mandated does not necessarily mean that the government contractor is protected from liability. Page 10 of a discretionary function merely because carrying out the general policy provided the opportunity for the negligent act. Even clearly discretionary conduct is thus not necessarily protected by the discretionaryfunction exception. Assume, for example, that a Jacobs employee negligently injured a third party while driving toward the KIF plant with a truckload full of safety equipment. Or that the employee, while removing coal ash from the spill site, negligently caused that coal ash to fall from the truck. The distinction between these two examples and, say, deciding what PPE on-site workers should wear, stems from the second part of the test for the discretionary-function exception, in that the exception was arguably designed to protect decisions regarding the health and safety of those working on post-spill cleanup at the KIF plant. In sum, we leave it to the district court on remand to decide in the first instance whether the Plaintiffs have failed to state a claim under Rule 12 b 6.

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Chapter 6 : GEORGE F. SOWERS | Memorial Tributes: Volume 13 | The National Academies Press

In his introduction, Scott indicates that he also wanted to include an analysis of the shortcomings of the Roosevelt-era Tennessee Valley Authority, but felt constrained by space limitations. In essence, Seeing Like A State is a book about the complexity of organic systems, be they human or environmental, and the hubris of those who intervene.

Page Share Cite Suggested Citation: The National Academies Press. Final Tribute Vol Sowers at the age of 75 after a rather short bout with bone cancer. This special presentation, called the Terzaghi Lecture, was awarded to just one individual in the profession of civil engineering each year. The year George was chosen to give this talk, the auditorium was packed to capacity. Most of us in the geotechnical profession were dumbfounded, because we had been taught that Professor Karl Terzaghi had founded our Final Tribute Vol. Now we were presented with proof that our engineering discipline had a much, much longer history. Throughout a long and distinguished career of more than 60 years of participation in civil engineering projects, George had simultaneously worn a number of hats, with equal excellence, humility, dignity, and enthusiasm. However, if one were forced to describe him in one word, it would have to be educator. The infectious enthusiasm with which he did this ensured that his listeners always left with a better understanding and a feeling of accomplishment. Sowers and Marie Tyler Sowers. He obtained a B. Navy from to as an instructor in electronic servicing. More important, in April , he married a mathematician and hydrologist from the Tennessee Valley Authority named Frances Lott. Over the next 52 years, they become one of the best known and most admired couples on the national and international geotechnical circuit. He also studied under Professor Arthur Casagrande. Sowers received an M. Between and , George and Frances produced four children: Carol, Janet, Nancy, and George Jr. On the professional side, George held a succession of increasingly senior appointments with both Law Engineering and Georgia Tech. At Law, he was named a vice president in , senior vice president in , and chairman of the board in . After serving in the latter capacity for a number of years, however, he was anxious to return to more technical matters, so he resumed his appointment as senior vice president in . Later, he was named senior consultant for Law Engineering Testing Company. At Georgia Tech, George was appointed professor of civil engineering in charge of instruction in soil and rock mechanics and geotechnical engineering. In , he was appointed Regents Professor of Civil Engineering. National Society for Soil Mechanics, U. In addition to the English version, it has been translated into Spanish and Chinese. During the last year of his life, in failing health, he worked diligently to complete his final book, Building on Sinkholes: George was also the author of more than technical papers, many of which received prestigious awards. The excellence of his professional endeavors was recognized with numerous accolades: He was elected a member of NAE in . Notwithstanding his hectic dual careers, intensive travel schedule, professional involvement, community and church activities, and active family life, George Sowers clearly was a giant among his peers. He left a far-reaching legacy through his teachings, writings, and the physical structures he helped design and build, which will ensure that many more will come to know the giant, who, for a few years, many of us had the privilege knowing. He is survived by his four children: Carol, Janet, Nancy, and George, Jr. His wife, Frances Sowers, died in

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Chapter 7 : Ashwander v. Tennessee Valley Authority | US Law | LII / Legal Information Institute

One of author political theorist James C. Scott's four common elements of high modernist state failure, a prostrate civil society treated as objects of state, unable to oppose state will often results in the state's complete and utter demise.

Andre Gingrich american ethnologist considers nationalism and Muslim identity in called philosophically bankrupt, but it was India before Independence. When I think of Friedrich Holder- focus, it falls on the Netherlands. Frans Groot takes up the role of contributors addressed a problematic that gen- Catholics in a larger Protestant context, show- erously but insistently brought together his- ing how Catholics used national festivals to tory, theology, and other forms of theory not to identify with the nation. As instructive as these papers are individu- ally, the volume suffers from the problem that marks most conferencesâ€”the dysfunctionality Erkundungen: Themen der Ethnologischen of the encounter group. It is not that the papers Forschung. Bohlau, do not get along; they scarcely know what has Gingrich is Professor and Dutchâ€”there are none. Instead, Harry Haroo- Director of Studies at the Institute for Social tunian offers an article on the Yasukuni Shrine and Cultural Anthropology in Vienna, Austria, as a site that reunites state and religion in post- and his institutional and geographic location is war Japan, and Talal Asad and Benedict An- not irrelevant for understanding the motiva- derson provide two general reflections. He calls for a genealogy of overcoming the remnants of such legacies and secularization that gets beyond thinking of re- to explore an ethnology unbound. As much as readers will methods among educators in general. Even want to see both articles, they will also won- two decades ago, ethnology was at institu- der whether the conference was given con- tional peripheries. This sudden rise in inter- ceptual motivation before being held or for estâ€”coupled, according to Gingrich, with a the sake of the edited volume. A few may won- decline in former social science giants, such der why the Christian religious imagination is as sociology and political scienceâ€”deserves I imited to three themes and why the editors as- exploration. Surely there are effectsâ€”some sub- tional. This is a versatility that social theorists tle and others obviousâ€”that go beyond these preoccupied with state-based systems lack. Nationalist ideology has been In an era of global capitalism, differently book reviews occasioned diasporas, and transnational for- serves as a collective term for the artistic and mations, Gingrich observes that "[ethnology] political perceptions and stereotypes of the is indeed far better He arrives among the Munebbih. Recalling his status at this through five chapters of historiography change from lowly, unarmed scholar to and three chapters examining new concepts bearded, honored guest, he uses journey as a within anthropological theory formation. To- characterization of what distinguishes ethno- gether, these chapters are meant to assess logical fieldwork and explains why other which concepts and theoretical strategies can fields now lay claim to this methodology. For non-European anthropologists, nological work. Ethnology, to Gingrich, is a the historiographic chapters are particularly good-natured, even cheerful field, for its prac- useful, as Gingrich is well-versed in British, tioners trust that a mental journey will result Anglo-American, and French scholarship: The prover- is able to offer a view from the outside in as bial magic of fieldwork arises from the oppo- much as from the inside out. A chapter on Aus- site of this cheerfulness. Several senses of reckoning time render the researcher chapters cover stages of the increased margi- uncertain, doubting his observations, his grasp nal ization of German-language scholarship of language, his trust in perception: Out of this mixture of and institutional myopia. Ethnology can also grasp a transna- ture of debate, clarify emphases of research; tional phenomenon with a multifaceted his- and, most importantly, further the under- tory, such as the concept of the seraglio and all standing of socio-cultural circumstances and it has stood for in European-Arab relations ch. Gingrich usefully differentiates "frontier ori- balization" p. He is particularly committed to the Hungary, and Russia. Frontier orientalism third, as is evident from the poignancy of american ethnologist examples he weaves into his text. His belief in they, the planners, desire. Scott implies that the the salience of ethnologyâ€”its culture of de- same process underlies attempts by state plan- bate as well as its explanatory powerâ€”is illus- ners to manage and transform society. The trated both in the open stand he takes regarding

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complexity of lived practices and social forms various ongoing disciplinary arguments and in is obliterated in the attempt to construct an ob- his decision to put together a book that allows a ject that state planners can manipulate and broader public to transcend the veneer of the transform. Third, Scott observes that Seeing like a State: Yale Univer- and able to use the full weight of its coercive sity Press, Like previous "the legibility of a society provides the capacity Scott constructions, this newest outing is a sty- for large-scale social engineering, high-mod- listic edifice that easi ly draws the reader i n with ernist ideology provides the desire, the lucid prose and detailed examples. His goal is authoritarian state provides the determination to understand how and why state-posed Uto- to acton that desire, and an incapacitated civil pian projects of changeâ€”including collectivi- society provides the leveled social terrain on zation of farms in the former Soviet Union, vil- which to build" p. Scott boldly states" p. Nevertheless, the book is well-researched and First, the state creates administrative order- a captivating read, likely to be read widely and ings that grossly simplify nature and society to used in courses of all sorts. For that reason, it is make more wieldy objects on which the state important to consider what this particular and can act. Scott beautifully illustrates this with an perhaps overly legible map of planned social opening discussion of scientific forestry. While transformation leaves out.

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Chapter 8 : Monthly Review | Framing India's Hydraulic Crisis: The Politics of the Modern Large Dam

a high school teacher who was prosecuted in for violating a law in Tennessee outlawing the teaching of evolution in public schools and colleges; he was ultimately convicted but his \$ fine was overturned by the state Supreme Court on a legal technicality.

Seeing Like a State How Certain Schemes to Improve the Human Condition Have Failed Why is it that the Twentieth Century has witnessed an abundance of large-scale utopian plans for social and economic development that have accomplished, contrary to their lofty objectives, immense human suffering and massive environmental degradation? In his book, *Seeing Like A State*: Scott examines in depth several monumental utopian plans that have yielded tragic results: In his introduction, Scott indicates that he also wanted to include an analysis of the shortcomings of the Roosevelt-era Tennessee Valley Authority, but felt constrained by space limitations. In essence, *Seeing Like A State* is a book about the complexity of organic systems, be they human or environmental, and the hubris of those who intervene in them in immense and simplistic ways. A fundamental tenet of systems thinking is that all natural systems are highly complex and resistant to precise prediction. The administrative ordering of nature and society: In Tanzania, for example, the complexity and fragmentation of traditional patterns of tribal life and agriculture made it difficult for government to assert political control, appropriate resources, and achieve production goals. In the mid s, the nation forcibly resettled more than five million people into planned villages and attempted to impose industrial modes of agriculture. Perfectly manicured forests in Germany and the sterile, regimented design of planned cities in India and Brazil are cited as examples. Only an authoritarian government can impose these radical utopian programs. A prostrate civil society that lacks the capacity to resist: In most instances, utopian plans have been imposed on societies that have been drained by civil war, colonial oppression, or economic collapse. In the early twentieth century and up to the present, attempts have been made by social scientists e. Frederick Taylor and political theorists e. Karl Marx to reduce human behavior to simple abstract principles, which authoritarian regimes have then used to plan their utopian programs. At the conclusion of his book, Scott offers a few rules of thumb for those who would presume to plan on behalf of society or nature: We cannot know the consequences of our interventions in advance. Irreversible interventions have irreversible consequences. Choose plans that allow the largest accommodation to the unforeseen. Plan on human inventiveness: Always plan under the assumption that those who become involved in the project later will have or will develop the experience and insight metis to improve on the design. In comparison to the titanic utopian plans described by Scott, the arts in the U. One might wonder, then, whether *Seeing Like a State* would be of use to the average arts grantmaker. While authoritarian government and a prostrate civil society are not characteristic of this country, it is arguable that some funding strategies in the arts have been driven by high-modernist ideology and the need of grantmakers to achieve administrative simplification. John Kreidler, San Francisco Foundation.

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Chapter 9 : SEEING LIKE A STATE

The Tennessee Valley Authority (TVA) came out of the Hundred Days. Identify the statements that describe the TVA and its mission. The TVA would provide cheap and easy access to electricity for homes and industry in seven southern states.

Science and Technology Randal Rust T Lester 9 minutes to read The history of science and technology in Tennessee dates to the early settlement era when explorers recognized the geological and botanical diversity of the state. Soon after the initial tasks associated with homesteading were completed, a survey of the mapping and geological resources of the state began. Troost, who arrived in Tennessee from New Harmony, Indiana, in , played the most important role in this work. In he became the first Tennessee state geologist, adding the duties of completing a geological survey to his teaching responsibilities at the University of Nashville. Tennessee became the fourth state to undertake a geological survey, but whereas other states abandoned the effort, Troost continued this work until his death in His reports were published in several languages, and his students mapped ten other states. Interest in geology and mineralogy continued in the post-Civil War era under the influence of James M. Safford and Joseph B. Several other Tennesseans later achieved prominence in exploration and mapping as well. In the mid-nineteenth century, Matthew Fontaine Maury, who grew up in Tennessee, mapped the seas, discovered the Gulf Stream, and laid the foundations for the National Weather Bureau. He discovered one of the moons of Saturn and a ninth magnitude star in the constellation of Ophiuchus, which is named in his honor. In the twentieth century P. Toward the end of his life, he taught a pilot class in space navigation at the U. Anderson, another naval officer, commanded the nuclear submarine Nautilus in its pathbreaking voyage under the polar icecap, and Rhea Seddon became one of the first American women to travel into space and conduct experiments. Troost maintained a collection of fossils, minerals, artifacts, and botanical specimens at his Museum of Natural History in Nashville. His research and the collection excited the curiosity of other educated Tennesseans, who emulated his collections and developed impressive skills as nonprofessional collectors and observers. In both the antebellum period and the post-Civil War era, faculty members at Tennessee academies, colleges, and universities prided themselves on their collections of artifacts and fossils. Interest in natural science acquired such public support that both men and women studied geology in many colleges and academies. Tennesseans quickly recognized the archaeological wealth that lay below the surface, and early historical societies determined to collect, document, and preserve these artifacts. During the course of the meeting, much attention was given to geology and Indian culture, and some participants opened nearby Indian gravesites at Fort Zollicoffer or joined post-meeting excursions to explore the botanical and geological characteristics of southeast Tennessee. Nevertheless, the state led the South in antebellum iron manufacturing, an area where local ironmasters proved technologically innovative. Soon after Montgomery Bell purchased the Cumberland Furnace from James Robertson, he gained a reputation as a profit-minded iron manufacturer. In Bell purchased land at the Narrows of the Harpeth River, an area in Cheatham County where the Harpeth River loops back in a four-to-five-mile reverse that drops some seventeen feet. Bell offered the area as a site for a federal armory, and after the government passed on the offer, he established Patterson Forge on the site. Local boosters championed railroad construction, promoted the establishment of textile mills and iron manufacturing, and encouraged the expansion of telephone and electrical services. Polk to the nearby home of Adam G. Though the two houses were within shouting distance, neighbors talked and played piano pieces over the wire, to their great amusement. At that same meeting, urban leaders looked to science to provide cost-effective measures to supply cities with clean water and improve public health while educators promoted mechanical and agricultural studies in elementary and secondary schools to create a more scientifically oriented class of farmers and workers. Like other forms of boosterism, the Centennial Exposition promised a future made easier and more productive through technology. By the turn of the century, many Tennesseans could take advantage

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of several technological innovations. Farmers consulted the columns of urban newspapers for weather information, crop prices, and agricultural advice—all made more readily available through advances in communications, information gathering, and lowered costs in printing. Residents of the county seats built generating plants to provide electricity, installed telephones, and piped water to homes. Many of the conveniences associated with town living were made accessible to mill workers as industrial leaders looked to the state for supplies of raw materials and low-wage workers. Refining the latest technology to allow undereducated workers to perform what would otherwise be complex operations, companies ranging from Bemis Brothers Bag Company in West Tennessee to rayon mills in Elizabethton and Tennessee Eastman in Kingsport employed thousands, housing them in company towns that, while not lavish, offered many modern conveniences. Cottonseed and cotton linters, earlier discarded, became valuable products as the cottonseed oil business emerged with the new industrial focus on chemical production. Likewise, World War I put new emphasis on cotton linters in the production of smokeless powder, while the development of rayon fiber added to the value of the cotton by-product. At the same time that Tennessee mill workers entered new industrial areas and began living in company towns, farmers experienced the not always welcomed intrusion of railroads and mining and timber companies. Farm families who had always maintained a self-sufficient lifestyle now found themselves drawn into a cash-based market economy. The market economy offered non-agrarian opportunities to young men and women, challenged traditional folk knowledge, and, many believed, undermined religious training. Although newspapers printed jokes about evolution, and progressive-minded reformers proclaimed no conflict between science and faith, the problem occasionally surfaced in academic circles. Yale paleontologist Othniel Charles Marsh, the featured speaker of the meeting of AAAS, shocked conservative Nashvillians when he declared that evolution was scientific truth. The following spring Vanderbilt University trustees abolished the position of Professor Alexander Winchell for his defense of the theory of evolution. The degree to which Tennesseans of all intellectual talents remained skeptical of evolution or remained silent in the face of public opinion can be seen in the enactment of the Butler Bill. Spurred by dreams of economic revival, entrepreneurs in Dayton inveighed upon John Thomas Scopes, a young high school biology instructor, to allow himself to be charged with breaking the new law and test its constitutionality. The ensuing trial brought notoriety to the town and state but hardly enhanced the reputation of either. Arguably the most important outcome of the trial and the scathing publicity surrounding it was the articulation of the defense of southern tradition prepared by the Vanderbilt writers and historians known as the Agrarians. These intellectual agrarians argued that industrialization, the product of technology, devalued labor, rendered employment insecure, created consumer-driven societies, undermined religion and the arts, and destroyed the amenities of life. Unfortunately for the proponents of a more traditional lifestyle, the state had arrived at the moment of monumental economic and social transformation, as first the Tennessee Valley Authority TVA and then Oak Ridge and related wartime industries brought a massive shift in population from the countryside into the towns and cities, and the ready availability of cheap electricity altered the way Tennesseans lived, worked, and played. In the Tennessee River Valley became the living laboratory for one of the largest technological and social experiments in history. Roosevelt made the transformation of the Tennessee Valley the centerpiece of his New Deal legislation. Charged with providing flood control, fertilizers, and electricity to the area, the TVA uprooted farmers, provided jobs, created parklands, reforested depleted woodlands, broke the power of private utility companies, attracted outside investment, and built model communities. Suddenly, technology and science in the form of a federal agency provided answers to poverty, poor education, and limited opportunities. Though not all Tennesseans welcomed the changes, many rallied to the support of the new agency—though not always for the same reasons—in anticipation of a more technologically oriented future. In the wake of this federally inspired and federally financed change, Tennessee became the backdrop for the transformation of scientific research when Anderson County was named as a site for the ultrasecret Manhattan Project. Providing isolation, an abundance of cheap electricity, and a patriotic workforce, Oak Ridge became, in the words of Wilma Dykeman, the twentieth-century frontier.

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In the development of Oak Ridge, both as a wartime research installation and in its continuing role as a national laboratory, Tennesseans participated in the transformation of science. Until the wartime institutionalization of science on behalf of national interests, American scientific research had been conducted largely by individual scientists. Working in academic, industrial, or private laboratories, they usually addressed technological problems; the development of scientific theory remained the specialty of Europeans. Often poorly funded, scientific research depended in large measure on the generosity of individual benefactors. The demands for technical support and specialized equipment also surpassed the financial abilities of business or educational institutions. Tennessee and Tennesseans moved to center stage as the pioneers in the nuclear age and the advent of modern scientific research. Professors of chemistry, physics, mathematics, engineering, and biology quickly recognized Oak Ridge as an academic and research bonanza. At UT, department heads in physics and chemistry quickly moved to provide Oak Ridge scientists with joint appointments at the university and to acquire consulting appointments at Oak Ridge for themselves and their faculty. In the immediate postwar years, UT developed its first Ph. Graduate students and university faculty were not the only beneficiaries of the technological and scientific changes instituted by the TVA and Oak Ridge and later by the Arnold Engineering Development Center at Tullahoma. The presence of three high-profile facilities attracted other industries and technological support services. By the midstate educators recognized the need for an expansion of higher education facilities to accommodate the rising numbers of potential college students as baby boomers came of age and to provide technical education to prepare Tennesseans for the modern job market. By the time the state implemented the recommendations advanced in the 1950s, emphasis had shifted from the establishment of a single four-year institution to the construction of several two-year community colleges and additional technology centers which now are within easy driving distance for most Tennesseans. A glance at local economies shows Tennesseans producing automobiles and auto parts, staffing hospitals and ancillary laboratories, and manufacturing synthetic fibers, paints, and plastics. Nobel Prize-winning scientists now conduct their research in Tennessee laboratories. Tennesseans are engaged in space exploration, genetic mapping, the development of designer drugs, transplant surgery, computer programming, environmental and ecological research, and the development of new energy sources. Tennessee courts have made new case law as they determined the fate of frozen human embryos. Local school boards grapple with the competing demands of parents who want the latest scientific knowledge for their children and those who want to insert creationism into the science curriculum. Having rescued the land from the ecological disasters of the early twentieth century, Tennesseans face renewed environmental problems, some of which have been generated within the state and others that arrive on the air currents and streams that enter from other areas. As in previous generations, Tennesseans remain more comfortable with science that provides answers than with science that theorizes. In the Tennessee General Assembly debated evolution again, this time without acting on their words. In this area, as in its newfound identification with modern science, Tennessee continues to act as a microcosm for the development of national issues. Suggested Reading Joe P. Dunn and Howard L.