

The ANWR Game: Shaping Public Opinion Through Subjective Mapping in Arctic Alaska

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The North Slope of Alaska is a remote, lonely landscape best known for its whale-hunting Inupiat inhabitants and the source of Alaska's petroleum wealth. Development of the oil reserves of Prudhoe Bay was virtually assured as their extent became known in 1968, yet since then efforts to open more lands for development leasing have met with considerable opposition from groups outside of Alaska. The most protracted debate involves the Arctic National Wildlife Refuge, a nineteen million acre public land area managed by the U.S. Fish and Wildlife Service. The oil industry would like to explore a section of the refuge's coastal plain, considering it to be Alaska's most promising site for remaining oil reserves, yet environmental groups think it best left as a natural area. Congressional action will decide this question, which makes this an issue of public debate rather than the decision of bureaucrats. Few people in the United States can make an opinion based on personal knowledge of the place; consequently, groups representing the differing factions are engaged in an ideological and informational crossfire to represent the area's value in terms of their desired outcomes. The petroleum lobby—here referred to as the industry—claims oil exploration and production will have minimal effects on the lands and waters, while the environmental groups are, for the most part, consistent in their desire for legislated wilderness protection for the coastal plain, thereby excluding oil development.

This study examines maps of Alaska and the wildlife refuge, maps created for public consumption by the opposing lobbies as part of the national debate over the status of the coastal plain. Regardless of the informational medium—television, magazine, newspaper, or pamphlet—maps are almost always included for geographic context. These are not the maps produced by serious cartographers using arcane methods to accurately reproduce an area on paper, but rather maps produced by private sources or news media for mass distribution. Opinions held both by members of Congress and the public

are influenced by the maps they see, maps which serve to “visualize the meaning of remote facts,” making the maps a source of biased information no less than pictures or prose.¹ Contemporary deconstructionist theory holds that maps cannot be value-free, that all “state an argument about the world” revelatory of political struggle.² Maps published by the industry and by environmental groups were gathered to compare the differences in how opposing lobbies have chosen to portray the Arctic National Wildlife Refuge (ANWR). Removed from their accompanying diatribes about oil and national security or the despoilation of a supposed Eden, viewed critically with an eye toward their intent rather than their representation,³ the maps demonstrate differences significant for their abilities to provoke differing mental images of the arctic refuge, as well as revealing the values and ideologies of the two groups.

Few people anticipate manipulation by the maps they encounter. After all, we faced maps daily in our schoolrooms and assumed inerrancy, and as adults, the veracity of maps is proven repeatedly as they answer geographic questions or enable us to arrive at destinations. We typically accept maps as they are, giving little thought to the intent of the map’s creators. Each map has an author, a person or agency making the decisions on what will be included or excluded depending on the desired message, and these authors can willfully use the fact that we seldom question the map’s essential truthfulness to shape our image of places, when there may be an emotive reason behind the map’s appearance.⁴ Wright notes “The trim, precise, and clean-cut appearance that a well drawn map presents lends it an air of scientific authenticity that may or may not be deserved,” a sort of implied credibility valued by any agency.⁵ This credibility is usually deserved when dealing with maps produced by cartographers, yet can be abused by graphic illustrators with agendas not obvious to a non-critical audience.

Maps function, simply, as communication devices, either as ways to share geographic information about a place without being physically present, or as ways to illustrate changing variables and concepts with respect to geographic position—thematic maps. Two basic elements are contained in maps: representation and space.⁶ Maps are a substitute for empirical knowledge, “conceptual models containing the essence of some generalization about reality,”⁷ creating the need for symbols to represent the real world and define relationships with respect to position. A map can impart information that would otherwise require many scores of words, yet none is ever definitive, as any area can have an infinite number of maps created about it, and the

need for symbolization introduces elements of ambiguity and misunderstanding.⁸ While scientific cartographers place great value on the accuracy of their work, maps we encounter in our vernacular lives have not been made by cartographers, but rather by illustrators or graphic designers. Since these maps usually accompany other information—a magazine article, or evening news story—their intent is often quite limited; indeed, to effectively communicate, they may be highly simplified for clarity's sake.⁹

The use of maps for persuasive ends is closely linked to advances in printing technology, and innovations through history have increased the number, variety, and availability of maps. During the Middle Ages maps had been little more than vehicles for religious dogma, and the invention of movable type and printing in the 1450s had as profound an impact on map distribution as it had on Bibles, permitting rapid distribution of an entirely new world view.¹⁰ Wood engravings were used as simple illustrative maps in schoolbooks and early newspapers, succeeded by copperplate engraving, yet the development of lithographic techniques at the beginning of the nineteenth century enabled cartographers to develop sophisticated thematic maps showing not just geography but qualitative and quantitative data. The ability to produce great numbers of maps cheaply with colors and fine detail—an “explosive expansion in the production of maps”—has been likened to the effect of photocopying in our lifetimes.¹¹ The current revolution in mapmaking technique involves computer technology, with significant effects not only on the ability to synthesize huge databases for scientific purposes, but also on persuasive mapmaking. Anyone can purchase a fully integrated software world atlas for under \$100, and with a personal computer and printer produce maps of undeniable visual appeal. Maps produced for media consumption are certainly not the products of people who could be called cartographers, yet the maps produced by computers are as convincingly professional as those of the “cartographic priesthood.”¹² Suddenly, with a keystroke, those same computers can alter a map in milliseconds at a creator's whim to change the messages conveyed by the map; differences so easily available become intangible and relative in the virtual world of a computer screen.

Maps as political propaganda is a well-known area of social geography, especially common during wars yet useful anytime for emphasizing political points. Speier defined propaganda as “effective symbol manipulation,” and Board notes that “The human element obtrudes further in the case of maps drawn for propaganda purposes. The aims of such persuasion may be commercial or political.”¹³ When

the purposes are commercial, we might well conclude that subjective maps can be considered a form of advertising, since selective dissemination of information is the basis of both advertising and propaganda. Advertising is used less to inform than to influence, with the hope of creating powerful images in the public mind, seeking maximum image production with a minimum of easily-remembered symbols. Advertising images reflect societal changes and concerns: the petroleum industry during the 1970s began promoting their image as social benefactors rather than extolling their latest cleaning additives,¹⁴ and in the 1990s we see newspaper advertisements about environmental awards presented by oil companies to other oil industry affiliates. Environmental groups have maintained a populist, low-budget approach through newspaper ads and boycotts, emphasizing the David versus Goliath aspect of their campaign. Both groups are adept at publishing maps of Alaska consistent with their beliefs, maps which borrow techniques long used for more overtly political purposes.

Maps are only a part of the informational barrage of publications about the wildlife refuge; images and opinions are easily susceptible to words and pictures as well. We form our opinion of ANWR based on what we think is there, usually rather fuzzily based on what we have heard or seen, and the images presented for our consumption differ markedly. In photographs and film, the refuge is typically portrayed by the opposing groups as either a lush, green plain teeming with caribou against a mountain backdrop or a stark, snow-covered monochrome devoid of interest. One industry source calls ANWR "a remote windswept and treeless strip of land near the northernmost point of Alaska, [which] has become the focus of an intense national debate,"¹⁵ while a book devoted to the area's natural wonders describes "a place delicately ornamented with plant life: multicolored lichens are splashed on the rock outcroppings like paint from a careless workman . . . and other tiny wildflowers spring into bright punctuations of life during the weeks of sun. This is the Coastal Plain of Arctic Refuge, and it provides habitat for at least 142 species of birds. . . ." ¹⁶ Even the visual and audible impact of the name contains meaning: while the industry favors the impersonal, vaguely militaristic acronym ANWR and its harsh pronunciation—"ANwarr"—environmental groups in Alaska have urged their members to use other, gentler terms, particularly the evocative "Arctic Refuge."¹⁷ Visual impact and imagery is present in maps also, a medium taken for granted by audiences unaccustomed to questioning why, in the midst of all two-dimensional possibilities, the maps in

front of them came into their final form.

The Arctic National Wildlife Refuge is but one component of Alaska's public lands. Sixty percent of Alaska is controlled by the federal government in designations ranging from naval petroleum reserves and bombing ranges to national parks. The idea for a refuge in the eastern Brooks Range dates to 1952 but it wasn't until 1960 that the Arctic National Wildlife Range, comprising almost nine million acres, was established to protect an intact Arctic ecosystem, including the Porcupine caribou herd.¹⁸ On his way out of office in 1981, President Carter signed the Alaska National Interest Land Conservation Act, the "greatest conservation act ever passed by any government."¹⁹ Rather than adding lands to the federal trust, the act defined 104.3 million acres of public lands as various national parks, wildlife refuges, recreation areas, national forests, and wild and scenic rivers. As part of this lands package, the Arctic National Wildlife Range was expanded to 19 million acres and renamed the Arctic National Wildlife Refuge, with wilderness status accorded about half the area, thus protecting it from industrial development. A key compromise obtained by Alaska's congressmen during the writing of this legislation was found in Section 1002 of the act, which put the designation of a strip of ANWR's coastal plain in limbo pending further research into its potential for petroleum development. The Secretary of the Interior in 1987 recommended it be opened to oil drilling, and national environmental groups organized in opposition. This coastal plain is considered by many biologists to be a critical breeding area for numerous fauna, particularly caribou,²⁰ and was quickly tagged as another in a series of America's last great wilderness areas. The dispensation of the 1.5 million acre area, known simply as the 1002 area or the coastal plain, continues to provoke fierce debate between the forces of development and those of preservation, a battle invoked across North America involving Canadian interests with American.

Twenty-five maps were collected for this project in the autumn of 1991 and categorized as originating from the oil industry or from environmentalists, with eleven of the former and fourteen of the latter. Those particular maps were selected because they were easily identified as coming from either end of the public opinion spectrum; maps from neutral sources, such as *Newsweek* magazine, were less likely to contain biases. Also lacking interest for this project were maps produced by the United States Geological Survey (USGS), those topographic, geologic, and biologic maps that are assembled for scientific purposes and hold little interest in terms of subjectivity.²¹ What was sought were maps that didn't merely show geographic

context but also contained perspectives germane to their authors, maps reflective of intensely-held opinion. All of the industry maps were from industry-generated publications: the oil companies boast large public relations departments and spend millions annually to influence the public's opinion of the industry. Sophisticated pamphlets and advertisements extol corporate environmental consciousness, with maps as well as pictures of juvenile birds and mammals to rival those in *Audubon* magazine. The environmentalist maps were collected from a variety of sources, including national periodicals, newspapers, activist newsletters, and books sympathetic to the wilderness status of ANWR.²²

By no means was this an exhaustive collection of subjective maps of ANWR; the ones used here were common and easily obtained, the sort most often seen by those interested in the public debate over ANWR. Some were extremely subjective, others less obviously so, and neither side of the debate can claim objectivity in the maps they present to support their written viewpoints on the issue. The pervasiveness of bias in these illustrations places them in the tradition of other types of propaganda maps; while the attention of the reader is primarily focused on the arguments, word pictures, and photographs, the accompanying maps subtly support the arguments, undermining the objectivity we typically associate with geographic illustrations.

The maps shown in Figures 1 and 2 are representative of the two categories and are comparable in their original intent, which was to accompany an article and illustrate basic geographic facts: the location of ANWR in Alaska, its varying land use designations, the coastal plain, a distance scale, and the direction of north. Again, it is only in the coastal plain—the 1002 area—that oil development is currently proposed. Neither of the maps were meant to highlight rivers or caribou habitat or development scenarios, nor do they represent extremes of generalization in their depiction of the area. Their apparent simplicity, though, does not diminish their contrast.

Figure 1 is from a brochure produced by an industry lobbying organization and presents a standard picture of ANWR, one used with only minor variations in many publications by the public affairs office of the Standard Alaska Production Company, known globally as British Petroleum (BP). The location of ANWR within the state is noted, and the proximity of the coastal plain to Prudhoe Bay and the Trans-Alaska Pipeline is evident. All the shown rivers skirt the coastal plain, no mountains are indicated, and only one settlement, Kaktovik.

Figure 2, from a general ANWR article in the magazine of the

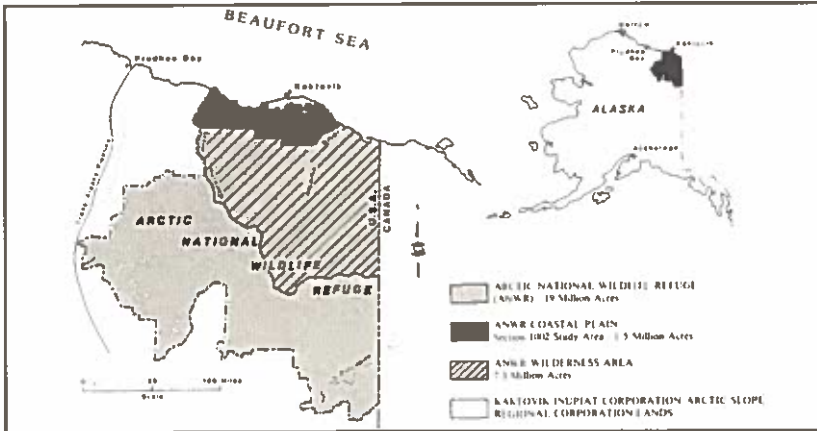


Figure 1 Arctic National Wildlife Refuge. Reproduced from *Arctic National Wildlife Refuge: The Facts*, 6th reprint with permission of Resource Development Council of Alaska, Inc.

Sierra Club, shows a similar picture with the inset of the state, yet what is included here in comparison to Figure 1 is notable: a river bisects the 1002 area; the Brooks Range, notable for being the world's only mountain range lying entirely north of the Arctic Circle, is present, as is the adjacent Northern Yukon National Park; and two settlements are shown, with the addition of Arctic Village.

Simple as these examples are, they illustrate exactly the same area quite differently. The depiction of ANWR's eastern border as an international one, representing only the meridional decision of diplomats, is enhanced in *Sierra's* map, both in the noting of the national park and in the inset, showing Alaska as a geographic projection of the continent; Canada is much less obvious in Figure 1. Decisions were made by these map authors about the placing of rivers and the noting of a mountain range. The portion of ANWR currently designated with wilderness status is shown on the original *Sierra* map by a different color, while, in Figure 1, the legislated wilderness is shown by strong black hatching, a symbology for the wilderness area that



Figure 2 Arctic National Wildlife Refuge. *Sierra*, Sept./Oct. 1987: 42. Reproduced with kind permission.

effectively connotes the “locked out” sentiment of those in the extractive industries toward restrictive designations of public lands. (Also contained in the Resource Development Council pamphlet were maps of Alaska showing “Federal Land Withdrawals (closed to mineral entry),” an attitude that ignores the lands being open for fish, wildlife, recreation, and hunting.) We who live near this area know of the Brooks Range and of its seamless natural integration with the Yukon Territory, but these maps were not created for us. Although they depict the same area, the Resource Development Council map restricts its information delivery to political subdivisions, while the map from *Sierra* includes information indicative of a natural history in the area.

Further visual comparisons between maps are not possible in this journal format, yet a summarization of information is useful.

Table 1.— Frequency of features in ANWR maps

Features	Oil Industry Maps N = 11	Environmental Maps N = 14
Mountain ranges	0	9
Named peaks	0	5
Coastal Plain rivers	2	9
Kaktovik village	7	10
Arctic Village	1	8
North Yukon N.P.	0	3
Shaded relief	0	4
No. named features	mean = 3.2 range = 0 - 13	mean = 11 range = 0 - 40

The maps examined in this survey were produced for different purposes and it would be unfair to accuse the oil industry of unconscionable editing by their failure to include mention of mountains or to criticize the environmentalists for ignoring the abundance of oil seeps in the Coastal Plain. It is overly generous to assume every editor has familiarity with theories of map communication (or even similar budgets to spend on illustrations) and is selecting charts with any degree of sophistication, and it is certainly paranoid to assume

a conspiracy among like-minded editors. Conscious or not, however, there are tangible differences in the way the oil industry and the environmentalists are portraying the Arctic Refuge.

The mountains, rivers, and landforms are all natural features for which mapping tradition has evolved a standard symbology, yet these are consistently deleted by the industry and enhanced by the environmentalists. The industry maps are flat, one-dimensional, and contain much blank space, somehow avoiding recognition of the major tectonic feature of arctic Alaska. The environmental maps show more features and greater detail; many show a greater sense of connectedness to Canada by including the paths of the rivers that cross the border, and three of them show include the adjacent Northern Yukon National Park. This is certainly consistent with the movement's arguments about the effects of development having consequences that extend beyond Alaska's borders. While not topographic, the major faunal force in the area, the 180,000 caribou of the Porcupine herd, are only noted on several of their maps. The simplified industry maps reflect their mission, which is to create a sense of value for the oil by a diminishment of the natural resources that will be affected by the oil's extraction. They are concerned with minimizing an area, with devaluing what is actually present, with making abstract what are very real mountains and rivers and animals and fish. That they have to do so is an indication of the effectiveness of environmental groups in exploiting scenic and faunal images to promote anti-development public opinion.

Decisions of inclusion and exclusion lie at the editorial core of mapmaking, for cultural evidence no less than natural features. Settlements, for example: there are two villages on the edges of ANWR, the Eskimo village of Kaktovik on the Beaufort Sea and the Gwich'in settlement of Arctic Village, one of several Gwich'in towns in the area on both sides of the U.S.-Canada border. Residents of Kaktovik are, by and large, in favor of petroleum development, having seen the benefits of oil tax revenues reaped by their neighbors to the west in Barrow. Publications from the industry typically quote Kaktovik people voicing their support for development; not surprisingly, it appears on most maps produced by the industry.²³ Kaktovik appears even more frequently in environmentalist maps, but the difference in frequency of Arctic Village is marked. The Gwich'in have mounted international campaigns against ANWR development, fearing the effects upon the Porcupine caribou herd if the herd's traditional calving area is disrupted by drilling rigs; caribou are a major source of food and material supply for these people, some of

the most traditional inland peoples extant. One poster distributed by the Alaska Federation of Natives shows the wrinkled face of an elder with the caption, "Our Arctic way of life has endured for 20,000 years. Must we now die for six months of oil?" The environmental lobby has been able to include a powerful human element into their arguments against development rather than debating the comparative value of caribou or scenery against the national need for oil. The message suggested by the industry maps is volatile, and, if accurate, belies the industry's statements of local concern and benefits: they wish us to believe oil production will affect only a tiny, limited area with tightly contained impacts; the only people that will be affected are in Kaktovik, and they are on our side; the Gwich'in are far away, don't matter, and thus don't exist.

British Petroleum published the one map that did show both settlements, a double-page spread of the North Slope showing blue seas, green land, and rivers, a handsome map that could have come from the Wilderness Society. A difference was still present, however, in the easily-altered font sizes of the names: just east of the "PRUDHOE BAY OIL FIELD" was "KAKTOVIK," yet "Arctic Village" was considerably less visible, a practice with North American precedents dating back to 1765 in colonial maps.²⁴

Named natural features are also cultural evidence on maps, and decisions over name inclusion occupy a great deal of effort by mapmakers, as too many names make a cluttered, messy map, while too few leave large blank spaces. Westerners place great value on place names and our continent is a good example of "creating" places by giving them European names. Only recently have we come to appreciate the place-naming that is endemic to all aboriginal cultures and represents critical cultural values.²⁵ The U.S. Geological Survey 1: 250,000 Mt. Michelson quadrangle, containing about 4500 square miles of ANWR and much of the 1002 area, was consulted for place names. Roughly half are English and half are Native names: there are twenty-seven named land features and sixty-six water features. Obviously the small-scale maps that are the subject of this paper cannot give justice to the rich history of human habitation in this area, but the creators of the environmentalist maps have included named features with far greater enthusiasm than their counterparts in the oil industry (Table 1).

The use of blank spaces and manipulation of scale is present in both categories of maps. The green and blue map by BP, titled "North Slope Development Overview," covers an area from Macken-

zie Bay to Point Hope and south to the Porcupine and Kobuk Rivers. The already developed oil fields at Prudhoe Bay are found on the right half of the map; to the left, across the page break, are vast expanses of blank land that don't contain any development. The viewer perceives that, in the grand scale of Alaska, oil development effects but a small fragment of land, and the coastal plain is but another small fragment in an overwhelming sweep of virgin territory. A similar tactic for the opposite point of view is used with Landsat photos of Prudhoe Bay published in *Wilderness*. A small inset photo taken in 1974 shows just one road across the tundra, while the comparative image twelve years later accentuates the visible proliferation of drilling platforms, causeways, roads, treatment facilities, and pipelines by spreading the image across the page break into a visually impressive mosaic of implied destruction. The geographically uneducated viewer could be at a loss in attempting to compare the two contrasting messages, since no scale is provided by either publication: a large, hostile, blank land surrounding the small points of development, or a network of cancerous development spreading yellow tentacles across a huge area?

While comparing differences in map generalization is useful, there were also maps that demonstrated more extreme forms of political subjectivity. Figure 3 illustrates the geologic potential in the vicinity

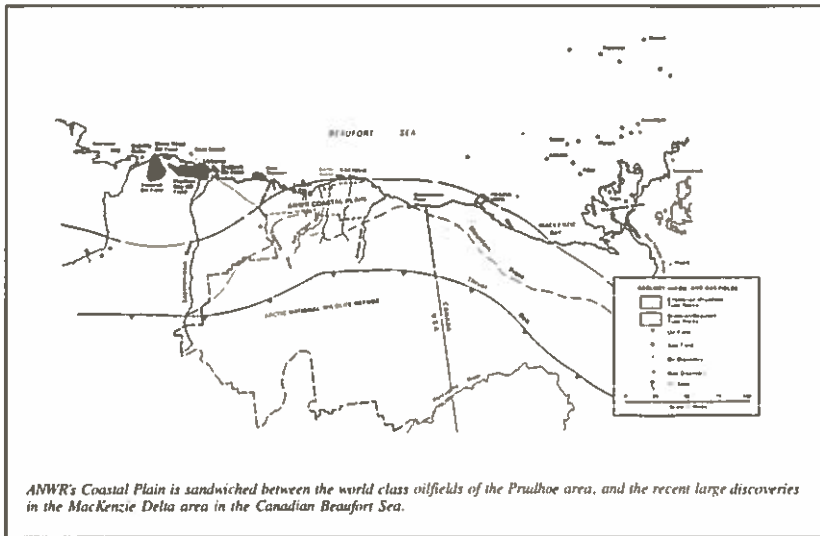


Figure 3 ANWR's Coastal Plain. *Jumeau Report*, Standard Alaska Production Co. 1986, p. 5. Reproduced with permission of BP Exploration (Alaska) Inc.

of ANWR. Most other information is excluded from the map, such as mountains or Gwich'in villages, to focus attention on the underlying structures. Three concentric lines extend northward to the sea: the Thrust Belt, the Mountain Front, and a concluding line that, while provocative, is mysteriously undefined. The connection with Canada is prominent, but not to highlight the migratory routes of the caribou. Although some geologists may categorize associated strata by such terms as "Ellsmerian (Prudhoe) and Brooks/Beaufort Type Rocks," the USGS geologic map of this area does not reveal those terms.²⁶ The Coastal Plain is inescapably squeezed between the shaded areas which promise oil and gas discoveries,²⁷ yet adjacent areas do not prove the existence of oil-bearing formations in the Coastal Plain, and the results of the only exploratory well drilled within it are a tightly-guarded BP and Chevron secret; this map implies everything, from visual insinuation to pseudoscientific lines and jargon.

By no means is the opposition above some visual exploitation of its own, however. Only four environmentalist maps in the survey showed existing oilfields and pipelines; the message, to a geographically uneducated audience, is that development of ANWR would take place in an area devoid of impact, a quantum step in infrastructure development, when Prudhoe Bay is only seventy miles to the west and preliminary indications are that the development of the 1002 area would be on a substantially smaller scale than what has already occurred nearby. A different map published in *Audubon* showed the seesaw oil pumps common to East Texas but unknown in Alaska seemingly ready to march from Prudhoe Bay east into the coastal plain, a truly threatening use of pictorial symbolism.

The Greenpeace organization produced Figure 4, which shows an area extending from the Mackenzie Delta to Wrangel Island and south to the Yukon River. This is a visually arresting yet highly subjective map. Although this map's title limits the subject to petroleum development, the map's visual activity is enhanced by the inclusion of roads, railroads, ports, and mining leases. Symbols of oil tankers surround the state, summoning to mind the *Exxon Valdez* disaster. Proposed development was indicated in alarming red (shaded in the reproduction); thick lines dice the frontier, while the northern coast of Alaska appears to have undergone an apocalyptic industrial transformation. This is hardly a representational map, however, flawed by both deceptive inclusion and exclusion. A compilation of numerous development proposals since 1959, the roads, railroads, and ports exist only on paper, yet the cumulative effect is alarming to those who envision a pristine Arctic Alaska. Less obvious

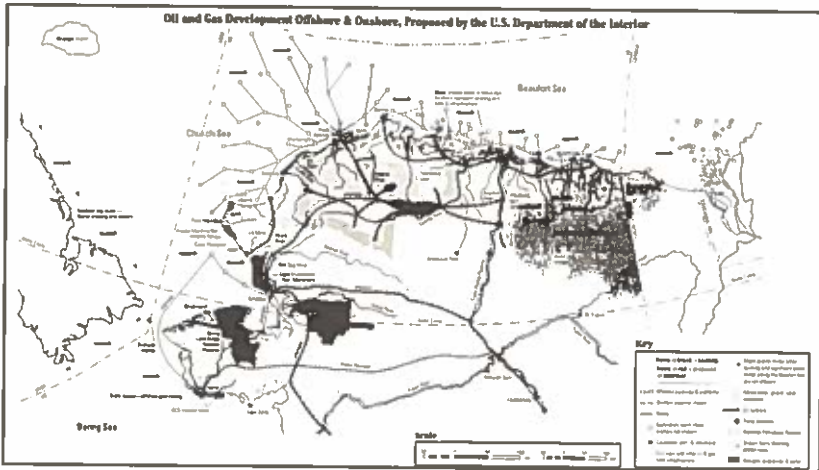


Figure 4 Proposed Oil and Gas Development. Reproduced with permission from Greenpeace Report "Oil in Arctic Waters," 1993.

is the deletion of lands already accorded protection against development: not shown (on the entire original) are three national wildlife refuges, two national parks, and one national recreation area. Much of the land in northern Alaska is unavailable for development and, by excluding the protected areas, Greenpeace is able to further an image of Alaska's northern lands lying helpless and unprotected against the developer's blades. Too much information on the map can be as inaccurate as too little; symbols can imply either wealth or destruction, but do little to predict either.

Two basic strategies are used in the maps of the Arctic Refuge: diminishment and enhancement. By not showing rivers and mountains on their maps, the industry seeks to deprive the land of its three-dimensional character; by minimizing named features, their maps imply that no one has lived there, that no human history has taken place in these faraway lands above the Arctic Circle. The industry would prefer that we view the Arctic as distant, inconsequential, and useless without development. Our continent's history is one of filling in the blank spaces on maps, of creating value, meaning, and wealth in unbroken territory, a tradition continued by the needs of the oil industry to seek out the last remaining pockets of exploitable resource. Without development the blank spaces cannot benefit society and would remain blank, an insult to our ability to be productive. Geographic knowledge diminishes quickly with distance, and the coast of the Beaufort Sea is as far from most people as a North American place can be. This very ignorance makes people sus-

ceptible to the most common images of the place, and mapmakers have long known that effective maps seek "the level of the least skilled,"²⁸ a fact which has been seemingly absorbed by the public relations departments of the industry.

Environmental groups are faced with a different obstacle, one which challenges our industrial heritage. Arguments for preserving tundra flowers or the lifestyle of several hundred Gwich'in wither in the utilitarian glare of gasoline prices and potential tax revenues for schools and hospitals. Consequently, environmental maps attempt to show the false premises of the blank spaces, emphasizing detail and inclusion of both natural and cultural features. Rather than trading nothing for something, they wish to show that we would trade something for development, that the land supports a rich biota and lifestyles established long before the machine age. The image of the Arctic Refuge for the readers of *Sierra* and *Audubon* is one of life, of an untouched wilderness that already exists sufficient unto itself. Development, as indicated on the maps, is unattractive and threatening, holding the promise of destruction rather than of benefits, yet the enhancement of natural features or spreading development can carry a false message also, a two dimensional script no closer to the reality of the land than any other map. Since the environmentalist's maps will be more complex, the viewers must be able to assimilate the more complex image of ANWR, and the mapmakers must be able to overcome the utilitarian arguments that are woven into our social fabric.

The public relations battle over ANWR's fate is about images, not facts. It involves a central debate in our history over the definition and valuation of resources, whether it is more worthy to exploit for the short term or to protect lands that might carry greater value in their undeveloped state. Decisions over the fate of public lands are, for better or worse, matters of public debate, and hence of subjectivity. There is no way of knowing what is best, for that best is a temporal product shaped by a partially-understood history, current cultural constraints, and uncertain implications. Rational and irrational arguments can be found for all competing interests, but the future of this area will be determined through national representation in Congress. To public officials facing re-election, the facts surrounding a debate may be far less important than the opinions of their constituents, and all competing interest groups are deeply concerned with shaping that opinion. As sources of information, maps are no less tools of their distributors than prose or pictures, and these maps of the Arctic National Wildlife Refuge represent the arguments

behind differing visions of reality.

Contradictory views are to be expected from opposing groups: statistics are manipulated, words and pictures carefully edited, threats and promises and ideas all cast to shape opinion to produce desired outcomes in the audience. We like to consider ourselves and our institutions as rational, yet the facts and truths surrounding arguments prove elusive to define and limp in their impact, leaving us susceptible to emotional appeals. The political process is one that nods briefly in recognition to rationality, yet rushes to embrace the subjective and the popular. Our desires are also contradictory: a world in which the waters still run clean and the birds still appear on their annual flight paths, yet one in which our personal comfort is only a thermostat away and our investments show appreciable annual increases. The maps we encounter to assist in our imaging of distant places reflect this dichotomy and its contradictions; both the creation and the vision is filtered by our value structure.²⁹ The Athapaskan hunters of northern British Columbia describe "dreaming" maps that show both places and events to come; they describe their map of heaven as being "to one side of, and at the same level as, the point where the trails to animals all meet."³⁰ The rutted trails of the Porcupine caribou herd converge on the coastal plain, where they meet the trails of an industrial continent; our aspirations for heaven are impossible to map until we define them.

Timothy Rawson is completing his MA in Northern Studies at the University of Alaska, Fairbanks and will be starting a doctoral program at the University of Oregon this fall.

Endnotes

1. Hans Speier, "Magic Geography," *Social Research* 8 (1941): 311.
2. J.B. Harley, "Deconstructing the Map," *Cartographica* 26:2 (1989): 11. Ample sources are listed in the footnotes for further exploration of postmodern cartographic revision.
3. *Ibid.*, 8.
4. Mark Monmonier has produced the latest work in this field, with his *How to Lie With Maps* (Chicago: University of Chicago Press, 1991), preceded by *Maps, Distortion, and Meaning* (Washington, D.C.: Association of American Geographers, 1977). J.S. Keates' *Understanding Maps* (New York: John Wiley & Sons, 1982) is

- equally useful. A splendid term to describe an audience's willingness to suspend critical judgement on maps was coined by S. W. Boggs, "Cartohypnosis," *Scientific Monthly* 64 (1947): 469-76.12
5. John K. Wright, "Map Makers are Human: Comments on the Subjective in Maps," *Geographic Review* 23 (1942): 527; also reprinted in *Human Nature in Geography* (Cambridge: Harvard University Press, 1966).
 6. Arthur H. Robinson and Barbara Bartz Petchenik, *The Nature of Maps: Essays Toward Understanding Maps and Mapping* (Chicago: University of Chicago Press, 1976), 15.
 7. C. Board, "Maps as Models," in *Models in Geography*. Richard J. Chorley and Peter Haggett, eds. (London: Methuen & Co., Ltd., 1967), 672.
 8. Monmonier, *How to Lie*, 2; Borden D. Dent, "Visual Organization and Thematic Map Communication," *Annals of the Association of American Geographers* 62.1 (1972): 80.
 9. Board, *Maps as Models*, 675: "The provision of superfluous detail only obstructs the transmission of the message to the recipient."
 10. Robinson, *Early Thematic Mapping*, 191.
 11. *Ibid.*, 191-3; Seymour I. Schwartz and Ralph E. Ehrenberg, *The Mapping of America* (New York: Harry N. Abrams, 1980), 263; Robinson, *Early Thematic Mapping*, 57.
 12. Monmonier, *How to Lie*, 2; he provides full perspective in *Maps with the News: The Development of American Journalistic Cartography* (Chicago: University of Chicago Press, 1989).
 13. Speier, *Magic Geography*, 313; Board, "Maps as Models," 676; see also Monmonier's *How to Lie*.
 14. William Leiss, Stephen Kline, and Sut Jhally, *Social Communication in Advertising* (New York: Routledge, 1990), 292, 372.
 15. In a pamphlet titled *Arctic National Wildlife Refuge: The Facts*, published by the State of Alaska's Resource Development Council, Anchorage, AK: n.d.
 16. T.H. Watkins, *Vanishing Arctic* (New York: Aperture, 1988), 34.
 17. Personal discussion with environmental group members.
 18. Interior Secretary Fred Seaton, with only days remaining in office, withdrew the land by administrative fiat over the objections of the Alaskan congressional delegation. See "Creation of the Arctic National Wildlife Range," in David L. Spencer, Claus-M. Naske, and John Carnahan, *National Wildlife Refuges of Alaska: A Historical Perspective* (Anchorage: Arctic Environmental Information and Data

Center, 1979).

19. Dyan Zaslowsky, *These American Lands: Parks, Wilderness, and the Public Lands* (New York: Henry Holt and Company, 1986) 269-78; this quote, and the following information.
20. Studies and perspectives of biologists can be obtained from the Wildlife Research Unit, University of Alaska Fairbanks, and from the Porcupine Caribou Management Board in Whitehorse, Yukon.
21. In perpetuating assumptions about some maps being neutral and others subjective, I write as one who is geographically curious yet well back from the cutting edge of professional cartographic theorists, a distance presumably shared by much of this readership.
Deconstructionists find subjectivity and reservoirs of implicit significance in all maps. For a highway map example, see Denis Wood and John Fels, "Designs on Signs/Myth and Meaning in Maps," *Cartographica* 22:3 (1986): 54-103.
22. Oil industry maps: *20,000 Acres*, satellite image by GEOPIC, Earth Satellite Corporation, in *Prudhoe Bay and Beyond*, 7th ed., BP Exploration, 1991; *ANWR's Coastal Plain*, in *Juneau Report*, Standard Alaska Production Company, December 1986; *Arctic National Wildlife Refuge*, in *Arctic National Wildlife Refuge: The Facts*, 6th Reprint, Resource Development Council, n.d.; *Arctic National Wildlife Refuge*, in *BP Exploration in Alaska*, BP Exploration, n.d.; *Arctic National Wildlife Refuge*, in *Major Environmental Issues*, 3rd ed., BP Exploration, 1991; *Arctic National Wildlife Refuge*, in *Prudhoe Bay and Beyond*, 7th ed., BP Exploration, 1991; *Area Proposed for Oil and Gas Exploration*, in *Juneau Report*, Standard Alaska Production Company, December 1986; *Coastal Plain*, in pamphlet ANWR, Alaska Oil and Gas Association, n.d.; *Federal Land Withdrawals*, in *Alaska Wilderness*, Resource Development Council, n.d.; *North Slope Development Overview*, in *BP Exploration in Alaska*, BP Exploration, n.d.; *Other North Slope Development*, in *Welcome to the North Slope*, ARCO Alaska, Inc., n.d.

Environmental maps: *1002 Area and Hypothetical Development Scenario*, in *The Northern Line*, Northern Alaska Environmental Center, Fairbanks: December 1986; *Alaska*, in "The Frontier Dream We Call Alaska," *National Wildlife*, June-July 1990: 6; *Alaska: An Arctic Perspective*, oblique map in *Audubon*, May 1988: 52-3; *Alaska Lands*, in *Wilderness*, Spring 1984: 37; *Arctic National Wildlife Refuge*, in "An ANWR Float Trip," *Fairbanks Daily News-Miner*, 28 July 1991: H10; *Arctic National Wildlife Refuge*, in *Midnight Wilderness*, San Francisco: Sierra Club Books, 1990, frontispiece; *Arctic National Wildlife Refuge*, in *The Northern Line*, Northern Alaska Environmental Center, Fairbanks: Jan.-Mar. 1986; *Arctic National Wildlife Refuge*, in "Polar Opposites," *Sierra*, Sept./Oct. 1987: 40-8; *Calving*

- Area and Range of the Porcupine Caribou Herd*, in *Audubon Activist*, October 1991; *Mixing Oil and Wildlife*, in "Truth and Consequences Along Oiled Shores," *National Wildlife*, June-July 1990: 40-1; *Oil and Gas Development Offshore & Onshore, Proposed by the U.S. Department of the Interior*, Washington, D.C.: Greenpeace, 1991; *Pixels of Prudhoe Bay*, Landsat photos in "The Perils of Expedience," *Wilderness* 54:191 (1990): 36-7; *Potential Development of Arctic Refuge*, 38; *Public Lands of Alaska*, 42-3.
23. The Kaktovik Inupiat Corporation owns 92,000 acres of the coastal plain and favors oil exploration on this land but has filed a federal lawsuit to overturn permission granted to ARCO Alaska by the National Marine Fisheries Service for offshore seismic testing, fearing possible effects on the migration patterns of bowhead whales; see lead article in the *Fairbanks Daily News Miner*, August 14, 1993. Residents of Kaktovik are more dependent on marine mammals for subsistence foods, while the Athapaskan Gwich'in depend on caribou.
 24. Gregory H. Nobles, "Straight Lines and Stability: Mapping the Political Order of the Anglo-American Frontier" (*Journal of American History* 80:1), 25.
 25. Kevin Lynch, *The Image of the City* (Cambridge: Harvard University Press, 1960), discusses this in the appendix.
 26. Map by Bader and Bird, 1986.
 27. This same effect appears in a map of Israel and surrounding nations in a recent article by Jeffrey Murray, "Maps that Deceive," *Canadian Geographic* 112:3 (May/June 1992), 82-8.
 28. "Magic Geography," 320.
 29. Kenneth E. Boulding, *The Image* (Ann Arbor: University of Michigan Press, 1956), 174.
 30. Hugh Brody, *Maps and Dreams* (New York: Pantheon Books, 1981), 47.