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John Muir and the Ambivalence of Technology

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One may introduce John Muir in several different ways. He was an amateur scientist, a nature writer, an indefatigable advocate of the national park system and one of the co-founders of the Sierra Club. The so-called Deep Ecologists have singled him out as an early proponent of biocentrism (Naess 33). To many others he was a nature lover in the romantic vein. Such a pluralistic portrayal bears testimony to Muir's eclectic temperament and dynamism but it can also give rise to some contradictory impressions. Never is this more obvious than when one broaches the subject of Muir's perception of technology. In the biography Linnie Marsh Wolfe wrote about Muir, the author of *My First Summer in the Sierra* emerges as a hermit who thrived as long as he kept aloof from human civilization. In a similar fashion Richard Cartwright has depicted Muir as a kind of modern-day John the Baptist (16). No doubt all of this is true. On several occasions Muir felt no compunction in turning his back on human civilisation and there were no places he disliked as much as big cities. This, however, is not the whole story. Muir was also a mechanic and an inventor of remarkable ability. Although he did not consistently endorse technical progress in the way many of his fellow Americans were apt to do, it would be misleading to assert that he was wholly estranged from it. Muir's hesitations and qualms regarding technology are worth studying in that they may provide us with a dissenting account of America's technological coming of age at the dawn of the American century. What is more, Muir's reluctant fascination for technical progress and eventually his inability to set limits to it reflects the sheer potency and attractiveness of technology in American culture. This said, let us not forget that, Muir being from Scotland, his case is also relevant to the West at large, and not simply to American culture.

John Muir, Son of the Enlightenment

From a very early age Muir was fascinated by science. He would read any book about science—or about any other subject for that matter—he could lay his hands on. In addition he was adept at the applied sciences and was fond of inventing new mechanical devices. In his autobiography entitled *The Story of My Boyhood and Youth*, Muir draws a list of the countless inventions he had managed to create on the Wisconsin farm where he spent his teenage years:

> After completing my self-setting sawmill I dammed one of the streams in the meadow and put the mill in operation. This invention was speedily followed by a lot of others,—waterwheels, curious doorlocks and latches, thermometers, hygrometers, pyrometers, clocks, a barometer, an automatic contrivance for feeding the horses at any required hour, a lamp-lighter and fire-lighter, an early-or-late-rising-machine, and so forth. (Muir, *Boyhood* 122)

The fact that Muir's father was a deeply religious man who despised science made matters complicated for the young inventor. More often than not, he managed to finesse his father's opposition. That is why it is fair to depict John Muir as an inheritor of the Age of Reason. Indeed his youth bears some resemblances to the youth of Benjamin Franklin, a man who has come to epitomise the spirit of the American Enlightenment. Like Franklin, Muir was largely self-taught and his work ethic enabled him to acquire knowledge about a wealth of different subjects. Muir's lifelong thirst for knowledge is also reminiscent of Franklin's devotion to learning and self-improvement.[1]

After leaving the family home, Muir did not shed his interest in the applied sciences—quite the opposite. For instance during the two and a half years he spent at the University of Wisconsin, Muir's talent as an inventor did not go unnoticed. A letter written by a man who had studied alongside Muir at the time contains an edifying description of Muir's study:

> The room was lined with shelves, one above the other, higher than a man could reach. Those shelves were filled with retorts, glass tubes, glass jars, botanical and geological specimens, and small mechanical contrivances. On the floor around the sides of the room were a number of machines of larger size whose purposes were not

1 Muir's inventions were often aimed at setting his environment in order. He also sought ways to make farm work less gruelling through the use of mechanical devices. It must be borne in mind, however, that this was to be done against the will of his father to whom such endeavours smacked of hubris. That is also why Muir devised an early-rising machine which allowed him to wake up very early in the morning to read before going to work. After he left his family, he went to the State Fair in Madison where his inventions were highly praised (*Boyhood* 131). For a more detailed analysis of Muir's inventions, see Stephen J. Holmes (52).

> apparent at a glance, but which I came to know later. (Badè 89-90)

In 1863 Muir left the University of Wisconsin with no professional plan in mind. At this moment of his life he was not willing to start a career. He felt magnetically drawn to the wilds and just enjoyed studying and observing nature at close range. In the vein of Alexander von Humboldt and Charles Darwin, Muir roamed and explored the wilderness in order to get to know it. The naturalist observed natural phenomena, drew comparisons and tried to make connections and draw conclusions. In an entry of his journal in January 1870, Muir expressed his willingness to study nature by coming into close contact with it:

> If my soul could get away from this so-called prison, be granted all the list of attributes generally bestowed on spirits, my first ramble on spirit wings would not be among the volcanoes of the moon. . . . I should study Nature's laws in all their crossings and unions; I should follow magnetic streams to their source, and follow the shores of our magnetic oceans. . . . Alas, how little of the world is subject to human senses! (*Unpublished Journals* 43-44)

Muir's dream bears testimony to the priority he always gave to scientific work in the field. For instance, he would often send plant specimens to Harvard botanist Asa Gray but when Gray asked him to come and teach on the east coast, Muir declined the offer. He much preferred staying in California where he could revel in nature's harmony. In Muir's view going into the wilds was much more important than reading books: "No amount of word making will ever make a single soul to *know* these mountains. As well to warm the naked and frostbitten by lectures on caloric and pictures of flame. One day's exposure to mountains is better than cartloads of books" (*Unpublished Journals* 95). That is why Muir never stopped exploring nature throughout his life. But, as a young man, after leaving his *alma mater*, he also needed to make a living. As a result he took several jobs as a machinist or as a foreman in various places. In Meaford, Canada, Muir was hired by one William Trout to work in a factory where brooms and rakes were produced. After a while Muir proved his technical ability and came to play a central role in the way the factory was run. Most notably he volunteered to improve the machinery used in the factory (Holmes 52). One year later, in 1866, Muir joined a sawmill called Osgood, Smith & Co and located in Indianapolis. One entry of his diary suggests that factory work turned out to be more than a way to make ends meet: "I greatly enjoyed this mechanical work, began to

invent and introduce labor-saving improvements and was so successful that my botanical and geological studies were in danger of being seriously interrupted" (Badè 153). Once more it did not take long before his talents were acknowledged by his employer who asked him to run the sawmill. In both cases Muir's bosses did their best to convince him not to leave—all to no avail.

Moreover several laudatory remarks on technology can be found in his writings. For example, in his autobiography, Muir gives a bleak picture of farm work on the Wisconsin Frontier before technology started being used to relieve farmers from some of the most gruelling tasks they had to perform: "In those early days, long before the great labor-saving machines came to our help, almost everything connected with wheat-raising abounded in trying work . . . —and it often seemed to me that our fierce, over-industrious way of getting the grain from the ground was too closely connected with grave-digging" (*Boyhood* 107). Here technology undeniably makes life easier than it used to be. Not only was Muir prepared to acknowledge the benefits of technology for the health of men, he could also sometimes take pride in his own technical achievements. In October 1898 he visited a rake factory in Massachusetts which reminded him of his spell at Trout's factory in Canada. He then wrote in his diary that he "could make rakes at half the cost of those made here" (*Unpublished Journals* 369). Significantly Muir felt some pride in what he had achieved as a machinist. At first glance therefore all those anecdotes and remarks conjure up an image far removed from the portrayal of John Muir as a recluse who shied away from human society and modern sophistication. Yet on further examination Muir's perception of technology sounds highly ambivalent.

The Reluctant Technologist

On several occasions Muir left the factories he worked for in a fairly sudden manner. Such was the case for instance at William Trout's factory in Canada. Muir decided to quit after part of the factory burnt down. Although Trout did his utmost to convince Muir to stay on, the latter refused to comply and left for Indianapolis. The most spectacular illustration of Muir's proclivity to desert his job in an abrupt fashion occurred at the Osgood, Smith & Co. sawmill. One night, Muir accidentally injured one of his eyes and lost his sight for a few weeks. After such a traumatic experience he had no intention of holding on to his job. On account of the many hours he had spent operating the sawmill he had come close to never seeing the wilderness he cherished again. As soon as he recovered he decided that he would quit his job and set out for South America to walk in the footsteps of his intellectual role model the German natural philosopher Alexander von Humboldt. Muir embarked on a thousand-mile walk to the Gulf

of Mexico. After having been subjected to the mechanical rhythm of the sawmill, his first impulse was to run away into the wilderness. The same pattern kept recurring, as if Muir could only bear the pace imposed by technology for a while. Furthermore Muir did not always enthuse over the achievements brought about by technical progress. The railroad best exemplifies the triumphant march of technical progress in nineteenth-century America; and in those days the steam engine was certainly the most revered token of the gospel of progress. Muir for one was in two minds about it. In an article about the Grand Cañon of the Colorado published in *The Century Magazine* Muir began by cautiously praising the advent of the railroad in the American West (790). However he went on to state that the railroad, this most popular by-product of human genius and technical know-how, paled in comparison with the sublime scenery which surrounded it: "I was glad to discover that in the presence of such stupendous scenery they are nothing. The locomotives and trains are mere beetles and caterpillars, and the noise they make is as little disturbing as the hooting of an owl in the lonely woods" (790). Such a statement has to be interpreted within the context of early twentieth-century America. In effect Muir was giving short shrift to the gospel of progress. He wanted to remind his contemporaries that wild nature could create things that far surpassed the greatest exemplars of technical progress.

Overall it is very difficult to give a fair account of Muir's view of technology. Why was Muir prone to contradict himself when contending with technical progress and the consequences thereof? Why did he take such an ambivalent approach to technology, now being fascinated by it, now being put off by it? Certainly Linnie Marsh Wolfe overstates the case when she contends that John Muir was an adversary of progress (*Life of John Muir* 33). At any rate, it seems reasonable to assert that Muir could be quite uncomfortable with the notion of progress underpinned by technology which most of his fellow Americans enthusiastically endorsed. The works of French philosopher Jacques Ellul may help us account for Muir's deeply ambivalent attitude.

John Muir and Ellulian Theory

For Jacques Ellul, technology has to be regarded as a principle. Put simply the term does not just apply to machinery—it is also relevant to all realms of human experience, whether material or not. Broadly speaking Ellul claims that the domination of technology tends to usher in a society in which the search for efficiency overrides all other objectives. In what Ellul dubbed the technological society the drive for efficiency becomes the most—if not the only—legitimate pursuit men indulge in. Ellul concedes that technology has

always performed a role at all stages of human history. Nevertheless he holds that the Enlightenment and the advent of Western modernity marked a radical departure from the kind of attitudes as regards technology which had prevailed before. As time went by, men had to abide more and more by the principles and demands of technology. According to Ellul, technology has a tendency to become ever more autonomous when not restricted by customs and cultural or religious limitations. So much so that technology may gradually come to hold sway in all areas of life. Ultimately, Ellul argues, technology is bound to "algebrise the world" (*Bluff* 274), to subject nature to a purely mathematical form of rationality. To Ellul, one of the most striking consequences of the establishment of the technological society is that all values which are distinct from the pursuit of maximum efficiency are either marginalised or reshaped in order to fit the technological framework: "Technical progress now stems from the search for efficiency only. . . . An individual is allowed to take part only insofar as he or she discards all the concerns which are now regarded as being of minor importance like aesthetics, ethics or imaginativeness" (*Technique* 69 my translation). It is worth noting that Ellul marks the late nineteenth century in the West as one of the moments when the technological cult could be most acutely felt (*Bluff* 323). That is why Ellulian theory may be useful to shed some light on Muir's ambivalence as regards technology.

Ellul holds that man usually struggles to cope with life in a purely rationalised environment: ". . . the most perfect machine remains purely rational . . . Man is not. In addition man is not rational in his feelings, opinions, behaviours but, what is more, he suffers in a purely and exclusively rational environment" (*Bluff* 315-16 my translation). John Muir's life provides some enlightening evidence of man's inability to thrive in an environment where technical rationality was all-pervasive. At Trout Mill in 1865, Muir wrote a letter to his friend Emily Pelton which read: ". . . it seems as though I should be dragged into machinery whether I would or no—for the last three or four months I have been inventing machinery about twenty-four hours per day" (Letter). His achievements notwithstanding, Muir was feeling more and more uncomfortable in the confined atmosphere of the factory. He left a few months later. The first chapter of *A Thousand-Mile Walk to the Gulf of Mexico*, which Muir wrote after recovering from the eye injury he sustained in Indianapolis, also speaks volumes. The first pages of his travel journal are significant: "My plan was simply to push on in a general southward direction by the wildest, leafiest, and least trodden way I could find, promising the greatest extent of virgin forests" (1-2). Muir's impulse was to vanish into the wilderness to seek some sort of a *catharsis*.

More generally, his relentless efforts to promote the national park system can be interpreted as an attempt to relieve industrial America from the worst effects of the increasingly mechanised way of life it fostered. Ellul's point seems to be further substantiated by the wilderness cult which took centre stage in urban America toward the end of the nineteenth century and afterwards. The more American life was being rationalised and bureaucratised, the more American citizens longed for wild playgrounds where the impact of technology would be conspicuous by its absence. In other words the triumph of technology came at a cost and it had to be alleviated by the preservation of wild places seemingly free from the influence of human rationality. Thus Frederick Law Olmsted's city parks and John Muir's national parks can be regarded as offsetting the dulling rationality of life in industrial America.

Another aspect which is relevant to Ellul's thinking is Muir's blunt refusal of the "algebrisation of the world." During the second half of the nineteenth century the influence of positivism was making itself felt. According to Leszek Kolakowski, the proponents of positivism put the emphasis exclusively on observable facts. To them the notion of a dichotomy between matter and spirit was null and void. Positivism rested on a purely materialistic approach which rode roughshod over any principle deemed non-rational and unscientific (Kolakowski 10-18). The proponents of positivism, who wholeheartedly espoused the gospel of progress, thought that the world could indeed be algebrised and controlled through the use of science and technology. Nothing could have been more remote from Muir's perception of nature—and of science for that matter. Though Muir thought highly of science, he took a stand against the unmitigated dominance of sheer rationality which was consubstantial to positivism. In Muir's opinion imagination and aesthetics had as large a part to play as reason. In that regard he was in line with two of his role models, the German natural philosopher Alexander von Humboldt[2] and Henry David Thoreau (Walls).

2 As a child, Muir was fascinated by Humboldt's account of his voyage to South America from 1799 to 1802. So much so that he dreamt of walking in Humboldt's footsteps. He first attempted to do so in 1867, but to no avail (after walking from Indiana to Florida, Muir was struck by malarial fever and had to give up his plan). Yet he did eventually go on a trip to South America in 1911 (for a detailed account of this trip, see *John Muir's Last Journey*, ed. Michael P. Branch). Humboldt deeply influenced Muir's approach to nature in that he claimed that nature had to be observed in the field, that nature ought to be interpreted as a whole and that rationality and aesthetics were not mutually exclusive, quite the contrary. In fact he viewed science as an amalgamation of both. Muir subscribed to the main tenets of Humboldtian science—which foreshadowed ecology—until the end of his life.

Central to Muir's mindset was the notion that the mystery of nature would never be eliminated. To be sure Muir did encourage his fellow Americans to go into the wild and study nature at close range. This did not mean, however, that man would ever get to *know* nature in its totality. Nor was it desirable that man should one day be able to harness nature completely. Muir firmly believed that some wild areas were so infused with divine grandeur that men had the moral duty to preserve them as sanctuaries. But if, in some given areas, nature was to be conceived of as a sacred trust, it would become problematic to manipulate it with a view to bending it to human desires. To someone like Muir, the use of technology on a large scale in a place like Yosemite Valley was tantamount to the desecration of a holy temple. Progress and the concomitant triumph of technology were all very well, but they could not prevail everywhere. There were places where wild nature, not man, had to retain the upper hand. In *A Thousand-Mile Walk*, the writer/naturalist expresses a wish that the human invasion of the natural world somehow be limited:

> . . . even of the land only a small portion is free to man, and if he, among other journeys on forbidden paths, ventures among the ice lands and hot lands, or up in the air in balloon bubbles, or on the ocean in ships, or down into it a little way in smothering diving-bells—in all such small adventures man is admonished and often punished in ways which clearly show him that he is in places for which, to use an approved phrase, he was never designed. (179)

The underlying message is that man does not belong everywhere and that the manipulating influence of technology should not be allowed to extend to the whole world. Such a call for self-restriction would have been anathema to proponents of positivism. In *The Maine Woods*, Henry David Thoreau had also castigated the shallowness and emptiness of the kind of material development at work in the United States: "The Anglo American can indeed cut down and grub up all this waving forest and make a stump speech and vote for Buchanan on its ruins, but he cannot converse with the spirit of the tree he fells—he cannot read the poetry and mythology which retire as he advances" (229). Such qualms echo Ellul's critique of technical progress as a self-perpetuating process without a definite purpose. Certainly to the likes of Thoreau and Muir, there was more to nature than the mere opportunity to manufacture goods and make profits.

And that is one of the reasons why, in the early 1890s, the editor of *The Century Magazine* Robert Underwood Johnson managed to convince Muir to

act publicly in favour of the national park system. For preservationist-minded activists like Johnson the fledging parks could come in handy since they could be used as tools to limit the expansion of technical progress and commodity exploitation. In places such as Yellowstone, aesthetics and recreation were to be given free rein. It must be added however that Richard West Sellars has shown that many of the early supporters of the national parks shared a utilitarian agenda. After all, the railroad companies which had a vested interest in the development of tourism were instrumental in creating the first national parks, although they were not the only factor contributing to the parks' creation (Sellars 9). As for Muir he was thinking and acting along completely different lines. Although he undeniably ranked among the most efficient promoters of tourism of his time, deep down Muir thought Yosemite had value in and for itself regardless of whether men would have access to it (*Unpublished Journals* 16; *Thousand-Mile* 138). Yet Muir did not mind collaborating with people with an agenda different from his own—as long as it furthered his purposes. He knew that the parks, whatever the interests that had contributed to their birth, stood as bulwarks against the complete algebrisation of nature which was already well underway. Or did they?

The Limits of Compromise: Technology Unbound

John Muir was wary of economic development and technical progress but he was also well aware that his was a minority opinion. Maldwyn A. Jones refers to late nineteenth-century America as "a push-button civilization" (331) in which technology took centre stage and came to shape people's life and habits more and more. In *Anti-Intellectualism in American Life,* Richard Hofstadter argues that one of the traits which distinguishes America from Europe is "a widely shared contempt for the past" (238). The upshot is that, as the industrial revolution unfolded throughout the Western world, technical changes did not encounter as intense an opposition in the United States as in Europe where traditions and old customs were more rooted in people's experience (239-40). This is not to say, Hofstadter adds, that technical progress went on unhindered in the United States but many more voices rose to oppose this trend in Europe. Hofstadter mentions the examples of Carlyle, Ruskin, Goethe and others. As far as America is concerned, he does mention Nathaniel Hawthorne, Herman Melville and Henry Adams but the main exception in the American context appears to have been Henry David Thoreau: "Thoreau's *Walden* was, among other things, a statement of humane protest, a vision of the dead men, the lost life, buried under the ties of the railroads. He was immune to the American passion for the future; he was against the national preference for movement,

expansion, technology and utility" (240). In a passage of *Walden* reminiscent of Ellul's critique of the invasion of human life by technology, Thoreau castigates the new technological order: "Men have become the tools of their tools" (25). Such a dissenting opinion went largely unheard in a society almost wholly committed to the mechanical age. In his history of the resistances to technology, François Jarrige seems to uphold Hofstadter's point. In the chapter he devotes to the nineteenth century, he focuses mainly on Europe and mentions the United States only briefly, contending that the belief in the goodness and power of technology was then becoming one of the props of American national identity. Consequently very few dissenting voices made themselves heard at the time. Jarrige also cites Henry David Thoreau as a notable exception (92).

America's passion for technical progress made matters more difficult for those who were willing to say a word for wild nature. Since Muir wanted to make a difference by convincing public opinion, he could hardly take a radical path. Rather than launch an onslaught on the nefarious effects of technical progress, he sought to promote tourism which, he believed, would provide the political support necessary to preserve places like Yosemite valley. In other words he would not confront technical progress and economic development head-on but would only suggest that limits be set to them in some areas. To be sure technology would prevail and man would master nature in a more thorough and spectacular way than ever before. Yet some preservationists hoped that this would not be the case everywhere. To them some spots of outstanding beauty had to be exempted from the triumph of technical progress. In those tracts of land, the technical manipulation of nature was to be kept at a minimum—or even be absent. It should be noted that the preservationists rooted for the national park idea for various reasons which sometimes made for strange bedfellows. Some responded to a nationalistic impulse. In their view the wilderness was worth protecting as a remnant of the mythical age of the Frontier. California's sequoias for example were to be America's answer to the age-old monuments of Europe (Schama 188-91). Some other preservationists conceived of the national parks as components of the rationalising process at work in the United States. National parks were places where city-dwellers could go to have a break from pressures of urban life, without which the health of the nation would be put at risk. Without occasional access to wilderness, the nation might eventually become dysfunctional. All this did not really matter to Muir who was only willing to protect nature from "the temple destroyers" (Muir, Hetch Hetchy 817). Moderation and compromise looked the best way to achieve this goal. In adopting such a strategy, however, he failed to take on board the ambivalence of technical progress and its unexpected consequences. Ironically enough Muir

soon had to grapple with a movement he had upheld from its beginnings in the 1890s—Gifford Pinchot's conservationism.

In many ways, Gifford Pinchot, who was the head of the U.S. Forest Service from 1905 to 1911, embodied the faith in technical progress which was so pervasive in Muir's times. Pinchot, who prided himself on inventing the very concept of conservation (Pinchot 325), did his utmost to promote the values underpinning Ellul's technological society. His aim was to turn the United States into a highly efficient nation through the use of the applied sciences. Muir and Pinchot were on good terms and at first the former supported the latter. Muir, who had roamed the American West for many years, regarded Pinchot's brand of conservation as a vast improvement on the wasteful and destructive ways of the pioneers he had witnessed as a farm boy on the Wisconsin Frontier and as a grown man in California, Nevada, Colorado, Alaska and elsewhere. Somewhat reluctantly he endorsed the conservationist agenda of the Division of Forestry—renamed Forest Service in 1905 (Miller 126-35). Surely, he thought, science and rational planning would serve nature's interests better than the maddening free-for-all to which the American West had long been accustomed.. No doubt this was true. But the rub was that, unlike Muir, Pinchot had very little time or inclination to reflect upon the ambivalence of technical progress and the limits which men ought to impose thereon. In fact Pinchot thought that science and the promotion of efficiency, what Samuel P. Hays has called "the gospel of efficiency," were the best ways to serve the common good. He discarded any resistance to his conservationist platform either as the result of short-sighted ignorance or of the selfish opposition of the so-called special interests, the *nemesis* of the American progressive.

The attitude of the Forest Service as regards the national parks highlights the inability of the conservationists and, more broadly, of the proponents of the technological society, to accept limitations derived from a non-technological *ethos*. As suggested by its name, the Forest Service was in charge of managing the forest reserves (whose name changed to national forests in 1907). Yet their prerogatives did not extend to the national parks. Gifford Pinchot and Henry S. Graves, who took over from him as head of the Forest Service in 1911, tried very hard to bring about the transfer of the management of all national parks to their agency (Steen 114). Their plan was to apply to the parks the same technical norms they had devised for the national forests. Pinchot deemed it absurd not to make the most of the natural resources contained in the parks. The notion of the inviolability of the parks was a reproach to the conservationist promotion of "national efficiency" (Pinchot 349). Since men were capable of using the land

in a rational way thanks to their scientific and technical knowledge, Pinchot wondered why America would abstain from economic development in places where it could flourish. This was all to no avail since a new federal agency called the National Park Service was set up in 1916. Though Pinchot's and Graves's efforts came to nothing, it is worth noting that they pushed for a transfer on the ground that the parks were hindering the course of technical progress, in this case a rational version of commodity exploitation.

As time went by, Muir grew increasingly uncomfortable with Pinchot's relentless drive for efficiency. Once an ally of the conservationists, Muir became their bitter foe when San Francisco's municipal authorities applied for a permit in 1906 to build a dam in Hetch Hetchy valley, which was located within the precinct of Yosemite National Park. Muir's Sierra Club[3] and a few other organisations fought very hard to scuttle the project, which they saw as an outright attack on the idea that the parks should remain inviolate forever—that is, free from commodity exploitation. By contrast Gifford Pinchot openly supported the San Francisco scheme because he deemed it necessary to the material development of the state of California (Miller 172). In his view the beauty of the valley was not sufficient to block a project that was to enhance the growth of San Francisco and shore up economic development. The account of the Hetch Hetchy controversy (H. Jones 82-169) should not detain us any further. Suffice it to say that the Sierra Club and its allies lost the battle for the preservation of the valley in 1913.

In the sublime setting of Hetch Hetchy Valley a dam symbolized the sheer strength of technology and man's ability to master nature to cater to his own needs. To the likes of Gifford Pinchot, it was unthinkable not to reap material profits from Hetch Hetchy when technology could provide the means to this end. For their part the preservationists had chosen to emphasise the aesthetic worth of the valley. However, in the technological society which was gradually coming into its own, such concerns were bound to be given short shrift. The fact that the controversy dragged on for several years serves to suggest that technological rationality did not always rule supreme and did encounter some opposition.

3 The Sierra Club was founded by Robert Underwood Johnson, John Muir and a few middle-class intellectuals in the San Francisco Bay area in 1892 with a view to preserving and enhancing Yosemite National Park and advocating the fledging national park system at large. The Club's board of directors resorted to political lobbying and sought to popularise the appeal of American wilderness. They also hoped to cash in on John Muir's national reputation. Muir was the president of the club from 1892 until his death in 1914. Today the Sierra Club is one the main environmental organisations in the United States.

But the eventual construction of the dam left little doubt as to who actually had the upper hand. Significantly, Muir had been so confident as to believe that technical progress could be relied upon to a point and then subjected to what he saw as higher purposes. It was not long before he was proved wrong. As the American century was about to begin, it was Gifford Pinchot, not John Muir, who had the edge. In the contemporary debate technology is often labelled as a means to avert environmental hazards. No doubt this is true to some extent. Yet the case of John Muir should give us pause for, in the technological society, there is also an inherent risk in allowing technical progress to become autonomous and self-perpetuating and to become a meaningless end in itself.

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