

Let's Sing "Auld Lang Syne"



Buttonwood Tree
Andrew Wyeth, 1941.
Courtesy of Alfred E. Bissell

**Or, to continue with Burns, how the best laid
environmental schemes of men "gang aft a-gley"**

for the Upper Brandywine

by Luna B. Leopold

Perhaps the most lamentable mistake that one can make is to be right too soon. This was the story of the Brandywine Plan, an attempt to organize local people for the permanent protection of the environmental amenities of their own land.

The Upper East Branch of Brandywine Creek drains a rolling basin of farms, fields, woodlands, and a sprinkling of residential areas. Because it lies at the far edge of the commuting range to the population centers of Philadelphia and Wilmington, the basin's natural beauty has barely been touched by the blight of suburban sprawl. The waters of its streams are clear; its ample woodlands and fields are filled with wildlife. Driving slowly through the basin's winding roads and across its narrow bridges evokes the feeling of a pastoral painting, of the ideal landscape of rural eastern America.

For two years, I had the privilege of working closely with a group preparing a land plan for the Brandywine area. The plan was designed to offer the inhabitants of the basin a feasible way to preserve forever the natural qualities of their region from the inevitable wave of urbanization. A report in *Science* magazine called it the perfect plan that failed.

My connection with the Brandywine Plan began one day in 1965 when three people came into my office in Washington. I had not pre-

viously known them, but their subsequent influence on my views about living in this world has been immense. Lawyer Ann Louise Strong, pretty and vivacious; Robert Coughlin, tall, taciturn, and practical; and Benjamin Stevens, dynamic idea man, wanted to talk about a project for which hydrologic help was necessary. They were affiliated with the Institute of Environmental Studies of the University of Pennsylvania and the Regional Science Research Institute.

Over the previous several years I had been attempting to organize a study project in which a combination of people—engineers, hydrologists, land planners, economists, and lawyers—might study the impact of urbanization on landscape in some local area. I had met with practically no success because, although I could muster the necessary talent in the engineering and hydrological fields, I could not find the right kind of people from the other disciplines. When my visitors explained that they had such a project well under way and now needed the infusion of engineering and hydrologic talent, I felt as if Dame Fortune had delivered them into my lap. "Your project has just acquired a hydrologist," I said.

They had not as yet picked the land area on which the experiment was to be tried, but they had worked out in some detail the things they believed the project

might accomplish. The general idea was to choose a basin of small or moderate size and to draw up a land plan, hydrologically sound and legally possible, that would give assurance of the long-term maintenance of landscape amenities. The plan would be predicated on the idea that landowners within the basin, with the support and authority of their local elected officials, would take community action to achieve the desired results.

The plan would allow for population increase, but the location of developments would be guided. Through her legal and land-planning experience, Mrs. Strong had developed some innovative schemes that centered around the purchase of easements against uncontrolled development. Voluntary community action could lead to the design and testing of these new legal instruments. Hopefully, the plan would overcome some of the intrinsic and time-proved weaknesses of mere land zoning.

Under the plan, landowners in various parts of the basin would sell easements, thereby precluding any further development of those lands. Each landowner would not only be paid a fair price for the easement on development rights but, we reasoned, would also benefit because the land surrounding the undeveloped tracts would gain in value. In fact, we believed that the preservation of certain sites from

development would ultimately increase total property values so that tax revenues eventually would be greater for the region. However, such a scheme had never been tested.

This meant that we had to obtain financial support for the plan, including funds to buy the easements. And we had to convince the inhabitants that their participation in the plan would reap both esthetic and financial benefits to themselves. We believed the plan would prove itself in the long run, but we found to our regret that the success or failure of a plan depends on short-run events.

First came the selection of a river basin. We considered several sites and finally settled on the Upper East Branch of the Brandywine Creek for many reasons. The region had a heritage of watershed protection through the efforts of the Brandywine Valley Watershed Association. The leader of the association, Robert Struble, was also executive director of the Chester County Water Resources Authority, a state-authorized agency. The basin was sufficiently close to our technical headquarters at the University of Pennsylvania in Philadelphia and was of adequate size, but not too big. It covered 23,500 acres and was about 12 miles long and 3½ miles at its widest point. The area already was feeling the pressures of urbanization, yet it still remained agricultural, with only 3 percent of the land covered with homes, barns, streets, and driveways.

The upper part of Brandywine Creek watershed is located primarily in Chester County, Pennsylvania, but the mouth is at Wilmington, Delaware. The lower end of the basin is the site of some beautiful, large estates owned by executives of that industrial city. The upper part of the basin, farther from the centers of industry, is populated by middle-class landowners. We felt it would have been easier to persuade a group of landowners whose economic status afforded them the luxury of foregoing development of a portion of their land. However, as a pilot project applicable in principle to other areas, a watershed owned primarily by wealthy landowners would not be representative. We therefore chose the difficult job of

persuading people of modest means to organize in their own behalf for purposes that would have to be only partially monetary. I still think that decision was right, although it was the underlying cause of many of our impending difficulties.

One of the principal constraints in the development of the land plan was the legal authority under which it would be possible to buy easements. Over a period of time Strong and her associates had assisted in the preparation of legislation that, if passed by the Pennsylvania legislature, would clarify and extend the powers of the state and counties to act for resource protection. But for the present, the main legal basis for the plan was a forward-looking but somewhat restrictive Pennsylvania law that permitted a county to form a water resources authority with certain legal powers. Among these powers was the right of eminent domain for the protection of the water resources of that county. This law gave protection of the water resources as the only justification for the exercise of the legal rights. The law did not include protection of other environmental features, such as natural beauty, open space, and recreation. Under this legislation, therefore, we had to devise a plan whose net result would be justified by its protective effect on the quantity and quality of the water.

Next came the financing of the project. Since the easement concept had never been tried, we felt we needed major financial support to implement the Brandywine Plan. Toward this end, Strong, Coughlin, Stevens, and John Keene, a lawyer-planner who was on the team, had been negotiating for some time with the Ford Foundation even before they had approached me for help in hydrologic work.

I remember well my first meeting, in the fall of 1965, with Gordon Harrison of the Ford Foundation when we called on him at his New York office. We realized that we were talking about an experiment, indeed, a far-out one. There were many possibilities of failure. We did not know whether the basic Pennsylvania legislation was sufficient for our purposes. We had no idea whether the residents of the Upper East Branch would be

interested. We did not know whether the county commissioners could be persuaded to let us make a try. We did not know how much the study would cost or exactly what the technical problems were of compiling maps of soils, woodlands, land slopes, and land ownership.

Harrison was patient and understanding, but he was trying to make an honest assessment of whether the project's likelihood of success was sufficient to justify the Ford Foundation's financial help. There was a lot of money involved. To do the planning and associated studies during a period of a year and a half could cost several hundred thousand dollars. If the landowners accepted the plan, we were asking the Ford Foundation for a commitment to provide at least a portion of the cash needed to purchase land easements. We argued that if we had a firm guarantee that the foundation would provide half of the money necessary for the purchase of the easements, the possibility of interesting the federal government in providing the other half would be enhanced.

To his credit, Harrison agreed that the project was worthwhile. He stated that he would recommend to his board the approval of an important part of the money we requested. Further, if they agreed to finance the project through the eighteen-month planning stage, the financing would be accompanied by a gentleman's understanding that the Ford Foundation would furnish some support for the purchase of easements. So far, so good.

Next came technical problems of a type none of us had ever faced before. To my discomfiture, it became clear that the designation of the lands to be protected against development would have to be based on hydrologic principles alone because it was only for the protection of water resources that the state law allowed a county water resources authority to exert legal jurisdiction.

To protect the water resources of a small basin from degradation—either by pollution, increased flooding, or erosion—what parts of the basin would be the most important to protect and what should be the nature of the protection? Research results give some hints of possible answers, but there is an amazingly

small amount of quantitative information available on the effects of urbanization on the hydrologic functioning of stream basins. A flood plain is that part of a river valley where water spreads out during heavy storms and floods. The river constructs its channel only large enough to take the highest flow of water of every year or every other year. Discharges in excess of this spread widely over the valley flat, a mechanism that decreases flood peaks as a flood control reservoir would. Long experience has shown that when people build on the flood plain, they are asking for trouble. When structures border the channel itself, flood damage is assured. This knowledge and experience made it evident that there must be restrictions against permanent buildings on the flood plain.

The Brandywine Basin, like many similar agricultural drainages in eastern United States, has no central water supply system and no sewage disposal plants. Because the houses are dispersed, each must have an individual septic system, which moves sewage from a tank into tile drains from which the effluent infiltrates the soil. In a satisfactorily operating septic tank system, where most of the organic materials are broken down by bacterial action in the tank, effluents in the drain fields are screened of bacteria within a distance of 100 feet in permeable soils. We reasoned, therefore, that all structures should be set back from even the minor stream channels by at least 100 feet. Furthermore, soil eroded from construction sites within 100 feet of a small, usually dry channel will find its way into the channel and move into the river system. To protect the river system against erosion products from construction and other activities, it was felt that a 100-foot setback from minor channels was not sufficient and 300 feet would be preferable.

Steep slopes produce more rapid runoff and are more susceptible to soil erosion. The maximum slope on which construction should be allowed was another point not clearly shown by research data. We believed that slopes steeper than 15 percent gradient (a 15-foot fall per 100 feet of distance) should be protected from encroachment.

At the suggestion of the Pennsylvania Department of Forests and Water, the importance of trees as watershed cover was recognized in the plan. It was decided that wooded areas in excess of ten acres should be protected against encroachment and timber cutting, both for watershed protection and for the visual amenities that are provided by the mixture of open land and woods.

When the areas chosen for restriction were plotted on a map, the result was close to our intuitive estimate that about 50 percent of the total drainage basin would have to be protected from housing and other development if the hydrologic functioning was to be preserved. This protected area would be a fan-shaped interfingering of open green space, coincident with the channel network following each valley nearly to its headwaters. The unprotected area where housing and other development would be concentrated would be the uplands. From there, houses and factories would have a vista downhill into a mixture of woods and fields so that nearly everybody on the upland would be only a short distance from some portion of the protected green space. There would be another advantage to this type of distribution of housing and industry: it would lead to cluster development rather than the less interesting pattern of one house right after another in boring uniformity.

To maintain this kind of land pattern as the population continued to increase, lands would be protected by the sale of an easement to the County Water Resources Authority. The easement would be a legal contract, permanently and irrevocably attached to the property deed. The landowner would, under the terms of the easement, be able to continue whatever land use was presently on the property, but he would forfeit the right to construct new buildings, put in a housing development, or construct a factory. Each property owner, however, would have the right to build one house for his own use.

Another innovation was the proposed formation of a land development corporation into which a landowner could invest the money from his easement in hilltop land

which, because of the plan, would be far more likely to be used for housing or industrial development. In addition, the Brandywine Plan proposed long-range studies of regional water supply and sewerage installations located with regard to environmental protection as well as to engineering feasibility.

When the legal and technical details were worked out, the hard work began—the job of convincing the people. I live in Washington, whereas Strong, Coughlin, Stevens, and Keene live near Philadelphia. One can hardly imagine the number of meetings that were required. First, it was necessary to convince the elected county commissioners of Chester County. We wanted to persuade them to let us make a try with the understanding that if the local people accepted the plan, the county commissioners would give it the weight of their authority in carrying out the implied legal obligations. Then it was necessary to convince the recently created Water Resources Authority of Chester County, a body hardly in a position to be looking for new legal tests of its authority. We needed the support of the County Planning Commission. There were evening meetings in schoolhouses and firehouses, in churches, and in community halls.

We got the go-ahead from the county commissioners provided we could persuade the elected supervisors from nine townships. That meant convincing not fewer than eleven administrative entities and many more individuals. It took many meetings with each group, and in all of these meetings, the people donated their time to hear us out.

Amazingly, we persuaded the county commissioners and the Water Resources Authority, as well as the elected representatives of all the townships, to allow us to proceed with developing the plan. It was understood that the plan would be a document that could be presented to the constituencies of each of these bodies for some sort of referendum. Although I attended many of the meetings, the time I spent was small compared with that spent by my associates. All I can say is that the job of convincing people, persuading people, and telling people was unbelievably time con-

suming. How my colleagues kept peace in their respective families during these trying times, I don't know, because the number of evenings away from home, traveling to some distant schoolhouse, were practically beyond count.

I remember a meeting in a schoolhouse one snowy evening in 1966. My presentation concerned the characteristics of flood plains and why such areas should not be used for building houses. We tried to elicit questions but the small audience, mostly farmers and business people, although attentive, was not inclined to speak out. Even when the formal presentations were over, it was not easy to engage the landowners in conversation. I always had the feeling we were not quite reaching them—maybe we were not explaining ourselves in their terms. In the early stages it was impossible to tell each owner how the plan would affect his particular land.

A few began a vigorous and vocal campaign to defeat the plan, even while it was still being constructed. In October, 1967, opponents formed the Chester County Freeholders' Association, which garnered a membership of about 50 of the 1,400 families that owned land in the basin.

A typical "letter to the editor" from these opponents appeared in the *Local News* of West Chester on February 17, 1968:

"We believe that time-honored private property rights and management of private lands are a basic keystone in a capitalistic democracy. We believe that when a state agency attempts to restrict these rights for eternity in from 50 percent to 60 percent of the land areas of whole townships, we are approaching a decision which will affect our heritage and future as free citizens. . . .

"This program is not conservation, it is conscription. It is not in the public welfare. Projects such as these are dangerous, not only because of the loss of the individual's rights but because they may well lay government open to vastly increased opportunity for venality in conjunction with builders and developers, who naturally will flock to influence just which land areas will be restricted and which adjacent land will rise enormously

in value because of the artificially created scarcity of building ground.

"We hope that you, Mr. Weaver [Secretary of Housing and Urban Development], will see through this thinly veiled power grab. That you will learn just who will benefit from this loss of citizens rights, and that you will protect us against the first thrust of a forcible seizure of civil rights, which if allowed will create a precedent undermining the very bedrock philosophy of our Democracy."

Many factors contributed to the ultimate failure, which came in the form of voted disapproval by several townships even before the final plan was printed. The disapprovals snowballed. Where had we failed?

One of our greatest bumbles was the attempt to persuade the landowners to agree to the use of eminent domain to obtain easements from the presumably small proportion of owners who would refuse to sell an easement. The inhabitants of the basin had experienced bitter battles with utility companies and other bodies who had used eminent domain to obtain easements for pipelines, a 500-kilowatt powerline, and a reservoir. They had had enough of eminent domain, regardless of the purposes. We realized this too late, and by the time the staff backed off from eminent domain and accepted the idea of voluntary sale of easements, the public reaction against any plan had built up beyond reversal.

But perhaps the greatest mistake lay in our failure to organize leaders among the landowners as principal spokesmen for the plan. We relied too much on the project staff to give the explanations and to answer questions. So it appeared to the landowners that the plan was something concocted by outsiders to be pressed upon them, rather than merely a proposal aimed at accomplishing what they, the landowners, wanted for themselves. Though we had support from many owners who could see the need for such land planning to protect their own interests, these friends of the effort were never organized to be the principal leaders in public discussion. Whether we could have spurred local leadership to organize, it is impossible to say.

Then we had a poor streak of

luck in the process of obtaining independent appraisal of the monetary value of the easements. The staff hired an experienced land appraiser, and he used two local appraisers, but his work started late. Further, his appraised values were less specific than we needed and did not cover the variety of combinations of acreage, location, land type, and land use that existed. As a result, when owners first asked how much they could expect from the sale of a particular easement, we were unable to give any answer. And at the end the answers were too unspecific to satisfy the potential seller. Also we experienced what other planners have seen: that the seller of an easement often jacks his price up to an amount equal to, or perhaps greater than, the present sale value of the land itself. Some owners, therefore, felt that the staff was, in the early stages, being devious about the monetary value of an easement when, in fact, we were trying desperately to obtain specific appraisals. And when appraisals became available, some owners felt that the easement was worth more than the appraised value.

An interesting aspect of the failure of the plan was apprehension. The landowners had several fears, some quite understandable, others irrational but nevertheless influential. They were worried by the possibility that if an easement were sold, they could not get a mortgage. Although local bankers disclaimed the possibility in private, absence of clear public statements allowed the apprehension to persist.

Residents had an understandable fear of legal entanglement. They also were concerned about whether the protected land in woods and flood plain would be open game for location of highways, pipelines, electric lines, and other utilities. There was a pervasive fear of government—that government was impersonal, unresponsive to local needs and desires, and corruptible. There was concern that at some future time the Chester County Water Resources Authority, who would own the easements, would use them in some unforeseen way to the detriment of landowners.

We conducted an attitude survey of owners in the basin to determine

how important landscape beauty and amenities were to the local population. A surprisingly large proportion, 83 percent of those interviewed, expressed themselves as being concerned with their natural environment. But this expressed attitude was apparently outweighed by natural cupidity, for a large number of owners harbored the idea that if urbanization did spread into the basin, they would make a killing by sale of property to some developer. There were many people, on the other hand, who believed that the basin would not change, that urbanization was far away and would not strike their watershed. The actual record of land sales and growth on the immediate edges of the basin and along the main highways in the basin did not dispel this complacency.

Finally, the plan rested on too weak a legal base. If the protection of the landscape—the whole environment—has meaning, then basic legislation should spell out not merely the water resources, but also amenities of a nonmonetary and esthetic type as societal values to be given some legal protection.

In the three years since the Brandywine Plan was voted down, great impetus has been given to the imperative need for environmental protection as a necessary ingredient in maintaining the quality of life. But even if the surge of public interest had begun earlier, the detailed problems faced by any new scheme for achieving rational land planning would have been the same. There is no substitute for local leadership in community action, in the collection and dissemination of relevant facts, and in grassroots organization. These take time. The terms of the financing for our planning effort did not permit us to take the time that, hindsight says, was required.

The protection of the environment is a lofty goal. Necessary as it seems in principle, it is in many respects diffuse and elusive. A society attains it indirectly by action or inaction on common and mundane matters, heavily influenced by custom, by monetary considerations, and by political forces. Experience on the Brandywine is a clear signal that the road to such a goal is long, steep, and rocky.