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# THE MYTH AND REALITY OF MULTIPLE USE FORESTRY

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"Multiple use" is the current magic phrase in forestry. The Forest Service has even converted this principle into a slogan and designed a five part multiple use emblem to symbolize the multiple contributions of the forests to national well-being. But is multiple use really a principle which insures that the national forests will make the best possible contribution to our welfare? Supporters claim that it is the closest we can come in the forest sector to having our cake and eating it too.<sup>1</sup> Others claim that it is merely a psychological weapon in the perennial cold war among federal land managing agencies and is more useful to public relations officials than to forest managers. This paper will consider, therefore, the extent to which current multiple use doctrine and practice promote the socially best administrative decisions for the national forests. The reasons for developing a theory of multiple use management and current doctrine will first be examined. Then, how this doctrine is reflected in forest management procedures will be considered. Finally, some suggestions for reorienting multiple use forestry will be presented.

In 1960 multiple use forestry was officially declared to be a part of our national forest public policy. The Multiple Use Act,<sup>2</sup> sponsored by the Forest Service, authorizes and directs the forests to be managed "under principles of multiple use." These are defined as follows:

'Multiple use' means: The management of all the various renewable surface resources of the national forests so that they are utilized in the combination that will best meet the needs of the American people making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the re-

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1. See, e.g., Neff, *Multiple Use Is A Reality*, 67 Am. Forests 18 (1961).
2. 74 Stat. 215 (1960), 16 U.S.C. §§ 528-29 (Supp. IV, 1963).

sources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.<sup>3</sup>

What does this mean for forest administration? The answer is that there are two doctrines purporting to interpret what the legal commitment to multiple use implies.<sup>4</sup>

## I

### CURRENT DOCTRINE

A fundamental attribute of forests is that they can produce a variety of products. At present the major products are: timber, grazing, water, wildlife, and recreation. The common input for all these outputs is forest land and this means that a decision about one product will affect the other outputs. Thus multiple use forestry is a necessity.

Interest in both the technical and public policy aspects of multiple use forestry has increased substantially in the last fifteen years. The growth in population, leisure time, national income and highways has meant rapidly growing demands for all forest products. Consumers of each product would like to see their demands receive the primary attention of forest managers. As conflicting demands on the forests have increased, an ancillary dispute has arisen among the land management agencies. Some of these agencies—particularly the National Park Service—advocate that non-timber use of land be placed under the jurisdiction of “specialists” rather than the Forest Service.

To deal with both the substantive and bureaucratic aspects of this problem, the Forest Service developed a multiple use doctrine and promoted the passage of the Multiple Use Act. The Service has emphatically maintained that passage of the act in no way changed traditional forest management practices. The statutory authorization for multiple use is traced back by the Service to such early forestry laws as the Act of June 4, 1897.<sup>5</sup> The Multiple Use Act, accord-

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3. 74 Stat. 215 (1960), 16 U.S.C. § 531 (Supp. IV, 1963).

4. No attempt will be made to present a complete bibliography of the many articles on multiple use. In recent years almost every issue of *American Forests* and the *Journal of Forestry* has dealt with the theory or practice of multiple use forestry. In addition to the articles cited elsewhere in this article, notable contributions include: Clawson and Held, *The Federal Lands 51-57* (1957); McConnell, *The Multiple Use Concept in Forest Service Policy*, Sierra Club Reprint Series No. 3 (1960); Shanklin, *Multiple Use of Land and Water Areas* (1961); Gulick, *American Forest Policy* (1951); Greeley, *Today's Opportunities for Conservation in Forests, Parks and Wilderness*, Transactions of the 23rd Wildlife Conference 18 (1958).

5. 30 Stat. 35 (1897). Other statutes specifying the authority of the Forest Service are 64 Stat. 82 (1950); and 58 Stat. 132 (1944) (Sustained Yield Unit Act).

ing to the Forest Service, protects the forests from the encroachments of single use advocates.<sup>6</sup> It also protects the Forest Service from the encroachments of other agencies on its area of authority.

The interpretation which the Forest Service and its supporters place on the language in the Multiple Use Act can be called the "equal priorities" doctrine. It has two tenets. The first is that multiple use involves "harmony and coordination" of uses but does not necessarily require a combination which produces the maximum yield per acre of land of any one output. Nor does it require a combination which produces the maximum economic benefits. Thus maximization of per acre production as well as a benefit-cost analysis such as is used for water resource management is rejected. The second tenet is that no one use has priority over another. In the hearings on the Multiple Use Bill the Acting Secretary of Agriculture made much of this point. Secretary Peterson said:

The order in which the resources and uses are enumerated in the bill is merely alphabetical and has no significance insofar as the relative priority of one resource to another. One of the basic concepts of multiple use is that all of the named resources in general are of equal priority, but the relative values of the various resources on particular or localized areas, and viewed in the broadest public sense, will be considered in the administrative application of management plans.<sup>7</sup>

While these two tenets are the foundation of the equal priorities position there are other aspects to be considered. The former Chief of the Forest Service, Richard E. McArdle, has listed six points which he feels are important. First, multiple use "does not require maximum production for all resources or for any one resource."<sup>8</sup> Intangible and non-monetary values are just as important as economic factors. Second, not all resources should necessarily be produced on each acre. Third, haphazard occurrence of more than one use is not multiple use; positive direction is required. Fourth, multiple use does not require that all uses be practiced concurrently and so the time period must be at least a year and often longer. Fifth, central decision making is necessary to obtain coordination of outputs. Sixth, the administrative unit of land to which multiple use is applied ordinarily must be large.<sup>9</sup> The first four points are concerned with the definition of multiple use while the last two assert the competence of the Forest Service to handle any job which might arise on forest land.

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6. Statement of E. C. Peterson at *Hearings Before the Subcommittee on Forests of the House Committee on Agriculture*, 86th Cong., 2d Sess., ser. RR, at 4 (1960).

7. *Id.* at 3.

8. *The Concept of Multiple Use of Forest and Associated Lands—Its Values and Limitations* 5, Address by Richard E. McArdle, 5th World Forestry Cong., Aug. 29, 1960.

9. *Id.* at 5-6.

This interpretation is far from unanimously accepted. The opposing doctrine may be called the "dominant use" view. Holders of this position reject both basic tenets of the equal priority school. They assert that land should be used to the fullest extent possible and that priorities must be established. To adherents of this position priorities usually involve some social ranking of consumption needs plus some ranking of land on the basis of technological capabilities. Thus, Warren A. Starr holds that:

Our land resource now has to accommodate a host of *primary* and *secondary* uses.

Primary needs for land are those involving production of essential commodities for food, shelter and raiment needed by an increasing population. Secondary needs are those involving sports, recreation, wildlife habitat, and embrace the specific sites needed for research and education in the natural sciences. The differentiation of these two needs are [sic] . . . considered as priority needs.<sup>10</sup>

Later he concludes that:

[We should] allow single, alternate, or multiple use choice of single tracts to be decided upon the competitive comparison of the single tract potentials. In this manner, land quality will determine use potential, and use potential will determine ultimate planned use.<sup>11</sup>

Dominant use supporters seldom specify the relationship of the "social" priority of needs and the ranking by physical characteristics of land. They are firmly convinced, however, that multiple use is not a social goal but merely a planning technique to enable one to decide for what uses a tract of land might be best adapted. Dominant use supporters would decide on a major use for each piece of land. Subsidiary uses then would be allowed *to the extent they did not interfere with the output of the major use.*

The cornerstone of the dominant use position is the belief that benefits from different land uses are not necessarily additive. As Howard Stagner illustrated this view:

[O]n a critical watershed, sheep grazing is a negative value and actually reduces the greatest benefit. Likewise, mining had lumbering are minus values when one is talking about national parks or recreation areas.<sup>12</sup>

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10. Starr, *Multiple Land Use Management*, 1 *Natural Resources J.* 238 (1961). (All italicized in original.)

11. *Id.* at 300.

12. Stagner, *A Second Look at Multiple Use*, 66 *Am. Forests* 24 (1960).

Equal priority supporters would not deny that some areas should be devoted to the production of a single good or service. Where then is the disagreement? The fundamental difference is that the equal priorities school sees diversity and a multiplicity of products as good itself; the dominant use school argues that some combinations of goods and services affect either the quantities or the qualities of the products and this should be avoided. The argument that combining many uses is *per se* desirable has been summed up by one observer as follows:

My conception of the phrase, 'the greatest good to the greatest number' is that the objective of management must be to satisfy the needs and desires of as great a cross section of the public as the physical limitations of the land and the abilities of the [forest] managers will permit. Thus the goals [of the national forests] are quantity, quality and variety, so that to the extent possible there is something for everyone.<sup>13</sup>

Thus a management plan which provided a substantial range of land uses would then be preferable to one with only a few uses even if the latter had more net economic benefits or had a higher output per acre of land for the goods actually produced. This reflects the belief that the forests belong to everyone and no user group has a right to exclude another.<sup>14</sup>

The dominant use school rejects this philosophy and asserts that what is important is to preserve "inherent values." There is an important insight here; for many forest products, the other uses combined with its production will affect the nature or characteristics of the product. Thus, while recreation can almost always be combined with timber production, the *kind* of recreational activities possible will depend upon how much timber is produced and the way in which the timber is managed and harvested.

The two doctrines are not, as is sometimes asserted,<sup>15</sup> merely different statements of the same idea. They represent opposing viewpoints about the goals of forest policy and when applied at the managerial level lead to radically different decisions about output and land use.

The effect of combinations of use on product characteristics has been too often overlooked in the discussion of forestry. In economic textbooks multiple use is usually discussed under a heading such as "allocation of factors among products." In the examples given, such as a farmer deciding on combinations of oats and wheat to grow on a specified acreage, the implicit assumption is made that his decisions will only affect the quantities of the two commodities

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13. Letter from Norman R. Tripp to George R. Hall, April 10, 1962.

14. See McArdle, *Multiple Use—Multiple Benefits*, 51 J. Forestry 323 (1953).

15. See Gregory, *An Economic Approach to Multiple Use*, 1 Forest Science 11 (1955).

produced and that the oats will remain the same oats regardless of how much wheat is produced. In forestry, the interdependence among outputs makes such an assumption inadmissible. A forest under intensive management for timber will have, for example, different forms of wildlife from an old-growth virgin stand. The amount of grazing allowed will also affect not only the amount of game but their species. Many other examples could be given, for this is the heart of the multiple use problem: different decisions will affect not only how much different consumers get but also the characteristics of the outputs they receive.

Dominant use advocates go further and point out that some uses are exclusionary. Stagner cited grazing and watershed management; the most common example is wilderness recreation and timber production. This school feels that non-compatible or exclusionary use conflicts can be resolved only through land use planning on the basis of "inherent values."

While the existence of exclusionary uses and the effects of different combinations on quality are points well taken, the supposed solution can be rejected out of hand. To devote all land to its "major" use and then allow only those "minor" uses which are completely compatible ignores three points. The first is that, as the equal priorities school argues, it often may be socially beneficial to permit either a decline in the quantity or quality of one product if the quantity or quality of another product is increased sufficiently. The second is that it may be possible through more complicated or costly managerial techniques to permit "minor" uses without damaging the quantity or quality of the "major" use. Thus in a campground it is often possible to harvest almost as much timber as would be possible under single use management. The timber will have to be cut in off-seasons and more costly roads, stump clearance, and slash removal techniques will be required. If, however, one is willing to expend the money and effort this is possible. Finally, the dominant use position is based on a fallacy: social priorities cannot be set on the supposed "basicness" of some products, nor can one assert as a social goal the maximization of per unit output land or the maximization of the quality of some product.<sup>16</sup> The

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16. These are old fallacies but they continue to pop up in forestry literature. The exchange value of a good is not determined by the total "worth" of the commodity if the good had to be obtained in one lump amount. What is relevant is the demand for, and cost of, obtaining an extra or marginal unit. Thus, while food is in some sense more "basic" than wilderness recreation, the importance of obtaining an extra unit of wilderness may outweigh the importance of an extra unit of food in a country with a great deal of food and little wilderness.

Nor is maximizing the quality of a product always a desirable objective. A Cadillac has more "quality" than a Ford, but we would be a poorer instead of a richer country if car manufacturers produced only "high quality" automobiles.

Finally, it can be shown that maximization of per-unit output is also a false goal. If the value of the extra inputs exceeds the value of the resulting additional output, there is little point to the additional effort regardless of the technological efficiency.

national forests are to be managed for the good of the public. There is little point to producing goods that people do not want—even if they are somehow more “basic.” Nor is the goal to see how high we can push up per acre productivity; to accept this would be to reverse the causation and argue that the purpose of the public is to work for the good of the forest land.<sup>17</sup>

Therefore, neither of the two interpretations of multiple use is satisfactory. The equal priorities doctrine glosses over the effect of land use combinations on product characteristics. It also fails to provide a criterion for resolving the conflicts among demands except for the general and unspecified standard of “the best interest of the public.” The dominant use doctrine falls down because it fails to state how priorities can be established and also because it implies that maximization of per unit output or product quality should be the goal.

One might accept this conclusion and yet argue the issue is academic because Congress has chosen, in passing the Multiple Use Bill, the equal priority approach. The language in the act, however, permits either interpretation. Nor can one say that the intent of Congress was to enact one view or the other. The hearings on the bill indicate that this conflict among interpretations was not brought out.<sup>18</sup> Many of the witnesses supporting the bill clearly held a dominant use position and believed that the act supported their interpretation.<sup>19</sup> It appears that in voting for multiple use Congress believed it was voting for virtue and against sin without having a definite idea about just what actions constituted virtue or sin. The conclusion seems warranted that the meaning of multiple use has not been established—either by a consensus among natural resource experts or by legislative decree.

## II

### MULTIPLE USE IN PRACTICE

It has been argued previously that multiple use problems arise from the technical nature of forest production. Therefore, some public policy rule must be established to settle the inherent conflicts among user groups. Before turning to this problem, however, it is important to consider multiple use as seen on the operating level by forest managers. The following account is generalized from procedures of one forest, the Jefferson National Forest in southwest Virginia. However, the attitudes described are broadly representative of those

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17. Scott, *Natural Resources: The Economics of Conservation* 20-21 (1955).

18. *Hearings Before the Subcommittee on Forests of the House Committee on Agriculture*, 86th Cong., 2d Sess., ser. RR, at 3 (1960).

19. See, *e.g.*, statement of C. R. Gutermuth of the Wildlife Management Institute, *id.* at 112.



throughout the Forest Service and the practices are typical of those found on most national forests.<sup>20</sup>

Long-range planning of land use takes place on three levels. The first is with the Forest Supervisor who prepares multiple use guides for the District Rangers. Planning on this level establishes general methods for handling conflicts arising from competing demands among activities. Planning on the second level is done by the staff specialists in the Forest Supervisor's office. The Supervisor's assistants are experts in the various aspects of forest management, timber, water, etc.; each specialist prepares management plans for the activity directly under his cognizance. Typically, the only plan in full operation on most forests is the timber management plan but the others are usually in some stage of preparation and implementation. This situation reflects the pre-occupation until recent years with timber management on the national forests. A management plan lists the over-all targets to be achieved and the criteria to guide the operating personnel in decisions specifically relating to the resource use in question.

The Ranger District or working block is the third and vital planning level. Working blocks are the operating units of the forest under the direct supervision of a District Ranger. Each block has a plan which translates the plans prepared at higher levels into specific programs. There is interaction between the various levels in the preparation of all plans. The Forest Supervisor and his staff work closely with the District Rangers in order to insure that plans made at higher levels will reflect local conditions and problems and that working block plans are consistent with the more general guides.

Forest planning has two dimensions: volume control and area control. Volume control operates through specification of the allowable timber cut and outputs of other forest products for each working block. Area control operates through specification of the use to be made of each compartment. Compartments are homogenous land areas of perhaps 500 to 1000 acres or larger areas; for example, a small valley or hillside slope. Working blocks are subdivided into compartments and records are kept for each compartment. To illustrate, on the Jefferson the foresters try to make a detailed examination of each compartment at least once every ten years. Upon the basis of the examination, decisions are made about the needed investment or change in the compartment's management.

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20. I am greatly indebted to the staff of the Jefferson National Forest for the effort they extended in instructing me in the fundamentals of multiple use forest practice. The following discussion is based on my observations and judgment and is not a statement of the official position of the Forest Service or of the Jefferson's administration. In fact, many conclusions presented here are opposed to the current view of the Forest Service.

That the Jefferson's procedures are reasonably typical can be seen in Neff, *supra* note 1; Kaufman, *The Forest Ranger* (1960); and Pike, *Recreation Plans for the Superior National Forest*, 51 *J. Forestry* 508 (1953).

The key decisions are those which go into making the working block plans; therefore, the District Ranger is the key man in multiple use management. His importance is recognized in the higher echelons of the Service. It is common knowledge that one Ranger may be "recreation conscious" and view each plot of land as a possible camp site. Another may be fascinated by opportunities to improve wildlife habitat. Still another may be a "timber beast" and view all other activities as distractions from his main job of growing wood.

Attitudes are important because most of the decisions involved in the day-to-day administration have such complex multiple use effects that a considerable degree of managerial discretion is unavoidable. To take an example from a Virginia situation, assume a forester must decide how to harvest the timber on a small compartment of mixed hardwoods. If the compartment is clear cut (all the trees removed), the deer population will likely increase because they need open areas. On the other hand, the turkey population will likely decline because they need old growth timber. If the timber is cut one way the area might be developed for a picnic area, but this will probably require special roads, slash removal, etc. Development of the area for recreation may lead to land compaction and erosion problems which may present watershed difficulties. Thus, any one of a variety of different land management programs could be selected each capable of being justified on the basis of multiple use management.

The wide range of choice leads forest managers to stress the subjective factors in multiple use management. One hears again and again that the vital element in land use decisions is "savvey," "good judgment" or "professional competence." This leads foresters to conclude that primary reliance must be placed on the judgment of the District Rangers and only very general rules can be established by higher authorities.

The Forest Supervisor's role is also important. Particularly he must insure that his operating personnel are conscious of the various possibilities for multiple use of the forest. His chief weapon is inspections by himself and the specialists on his staff. The wildlife specialist, for example, in his periodic visits to the working blocks, can consult with the foresters, point out possibilities for habitat improvement and emphasize the need for the Rangers to remain conscious of the need for attention to wildlife management.

The conclusion is warranted that, in practice, multiple use at the operating level is not a rule such that two foresters faced with the same objective situation will necessarily make the same land use decision. It is a subjective commitment to a "philosophy" that forest managers should take a "broad" view of the potentialities of the forest. Let us examine this view in somewhat more detail.

The flood of publicity about multiple use has made all foresters extremely conscious of the term. On the operating level, however, multiple use is seen as a

problem of coordinating separate resource programs rather than being a matrix into which an individual activity can be fitted. That is, multiple use starts with individual resource plans and tries to fit them together rather than beginning with an over-all multiple use program.

This is explained by history. Forest managers have had long experience in planning for particular resources, especially timber. Multiple use objectives are currently being superimposed on the older procedures. This poses some difficulties. For example, working blocks and compartments are geographical units which have long proved useful for timber management. They may or may not be useful for multiple use planning.<sup>21</sup> On the other hand, foresters are accustomed to working with the traditional tools and concepts of timber management and probably the easiest way to obtain multiple use objectives is by building on this base.

A vital aspect of multiple use in practice is what one forester described as the "hub" concept. In this explanation multiple use is thought of as similar to a wheel. A wheel is an integral unit in which all parts are dependent upon the other parts but do not have the same function, and all points revolve around the hub. Likewise, the forester explained, for each plot of ground there should be a hub use or one product around which the other outputs could be joined. While this theory was expounded as a personal view and does not represent Forest Service doctrine, it is an accurate description of how decisions about product mixes are usually made in practice.

A third aspect of multiple use stressed by foresters is that the time period involved is very important. Because some uses of an area are chosen as best now, for many areas this does not preclude other uses in the future. For example, a plot presently used as a campground might be shifted in twenty years to wildlife use by moving the camp facilities and seeding the area to grain. When trees have reseeded themselves and grown to marketable size, the area might again be used for camping or devoted to timber production. This shifting over time, it is argued, greatly reduces the conflict among competing uses for the service of the land.

Foresters also regard the multiple use problem as resolvable through variation of the production process. They tend to argue that under multiple use management one can obtain the same outputs of the various commodities and services that would be obtained were the land area devoted to single use management; however, more inputs would be required. For instance, timber can be cut in a scenic zone along a highway or the shore of a lake. But in such a zone the amount of timber harvested at any one time will ordinarily be much smaller than if the land were managed solely for timber. Also, logging roads may have to be disadvantageously located in order to keep them from view,

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21. I am indebted to Norman R. Tripp for this point. See also Starr, *supra* note 10.

and more attention will have to be given to land rehabilitation and trash removal. All of these requirements would make the logging operation more difficult and costly. Regardless, foresters claim that over time one can harvest almost the same physical amount of timber without affecting the scenic values. While in any specific period, say ten years, nearly the same number of board feet of timber might be obtained, note that the cost per board foot would be higher due to harvesting the timber in small lots, building high standard roads and engaging in more careful lumbering practices. Also, to be precise, the total amount of timber cut, though nearly the same as under single use management, would never be quite identical. There would be some difference in growth due to the change in management. Rotation ages of trees might be changed in recreation areas, or certain overripe trees might be left for wildlife management purposes. Foresters argue, nevertheless, that such effects are sufficiently small as to be *de minimis*.

Of course, to argue that with sufficient inputs multiple use management may produce the same quantities of outputs as would single use management does not mean that in fact this should be the goal. It is likely that the inclusion of some item in a multiple use plan will change other output quantities. Hopefully, there will be a social advantage to the shift. The important point to note is that in the thinking of forest managers outputs quantities and characteristics can be substantially maintained by increasing the inputs, if this is desired.

For example, commercial logging often can be made compatible with watershed protection. The methods used will raise the cost per board foot of the extraction process and decrease the stumpage price received by the forest. Of course, under some topographical conditions watershed protection may completely preclude logging. But to a large extent, the combination of timber production and watershed protection is a question of the expense one is willing to incur.<sup>22</sup>

In sum, foresters regard multiple use not as a decision-making rule but as a commitment to the principle that a variety of different demands will be considered when making professional judgments. Multiple use is seen as requiring the selection of a hub use and then a process of mutual adjustment of the hub use to the production of other goods and services, and vice versa. Foresters

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22. The illustrations used are drawn from competitive situations where the inclusion of an item in the product-mix affects adversely the quantity or characteristics of some other product. Foresters insist that many complementary and supplementary situations exist where no conflict difficulties present themselves. Clearly, one should capitalize on such situations. Stress on the competitive cases is not intended to indicate that such cases are the only ones that arise. They are, however, the ones which pose hard problems of choice and, therefore, pose public policy problems.

argue that the conflict between competing demands can be lessened considerably through various adjustments in management plans. Temporal adjustments are particularly important; foresters argue that because different parts of the land area of the forest can be used serially for different products, a variety of competing demands can be provided for on the same area. Another adjustment is through variation of the inputs in the production process. Such adjustments may make it possible to add more products to the output mix without affecting the other outputs. This adjustment will likely be more expensive than single use production.

National forest managers strongly support what they believe to be the Forest Service's commitment to multiple use and feel that in practice it yields the best possible product-mix decisions. However, do the current interpretations of multiple use and current administrative practices carry out the mandate of the Multiple Use Act—to manage the forests to “best meet the needs of the American people”?<sup>23</sup>

### III

#### AN EVALUATION OF MULTIPLE USE FORESTRY

The most important conclusion about multiple use is that it works best where conflicts can be resolved by intensive management and temporal variation. It will not resolve the conflicts which arise over forest product-mixes where decisions about combination change the characteristics of one product or substantially lower its “quality.” This situation occurs where the essence of a product is a non-intensive, “leave nature alone” form of management. Obvious examples of such products are wilderness recreation and scientific nature study. To the extent that conflicts can be resolved through modification of nature, present multiple use practices hold the promise of living up to the claims made for them.<sup>24</sup> Nevertheless, the hard core problem of modification of output characteristics and “quality” remains.

From an economic standpoint the major issue of multiple use forestry is determination of the optimum product combination where product characteristics are a variable. This problem becomes acute when one product is exclusionary. People who like both ice cream and garlic don't necessarily want them mixed. Exclusionary products must be taken into consideration when

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23. 74 Stat. 215 (1960) 16 U.S.C. § 531 (Supp. IV 1953).

24. The division between intensive and non-intensive forest management is a sub-case of the more general split among conservationists over “development” and “preservation.” My views on this subject are presented in Hall, *Conservation as a Policy Goal*, 51 Yale Rev. 400 (1962).

making product-mix decisions. Thus the conclusion is warranted that multiple use is no easy solution to the conflicts now raging about the appropriate uses of the national forests.

From a political standpoint the major issue of multiple use forestry is whether it satisfactorily reflects the wishes of the citizenry about the kinds of goods and services to be produced by the forests. As pointed out above, neither the theory nor the practice of multiple use provides a clear rule for selecting one land use plan over another; the main reliance is on "savvey" or professional judgment. This has led Charles A. Reich of the Yale Law School to argue that present legal and administrative procedures provide few, if any, safeguards to insure that public wishes will determine operating decisions.<sup>25</sup> He points out that the power of the Forest Service is awesome, for

the Service recognizes, in the matter-of-fact pages of its manual, that its ultimate job is nothing less than the definition of 'the public good,' a task once reserved for philosopher-kings. This is the tremendous responsibility that Congress has delegated to all the forest agencies and with it the power to determine the very character of the American land.<sup>26</sup>

This poses a delimma. The multiple use ramifications of any management decision are so great that non-professionals cannot be expected to evaluate all the possibilities and alternative advantages. Further, the Forest Service has an *esprit de corps* and professional dedication unmatched in the federal service which should not be damaged. The present fine condition of the national forests is a monument to the devotion and ability of the Forest Service and this is an important factor in any decision about the appropriate scope of professional responsibility. On the other hand, land use should reflect public wishes and desires. Forest management, like war, is too important a task to be left strictly to professionals however competent and dedicated.

Reich's suggestion for increasing the protection of the public interest in forest management is to establish more formal procedures for public hearings on land management decisions. This is not persuasive. Does any one familiar with natural resource administration really believe we need additional talk? More basic measures are required. The fundamental difficulty is that there are no methods whereby the advantages of alternative plans can be compared. Considerable adjustments in forest use to increase outputs or maintain or improve the quality of the products are possible. Such adjustments are not free of cost, and we need to know whether the multiple use adjustments will produce sufficient benefits to make them worthwhile. When confronted by exclusionary

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25. Reich, *Bureaucracy and the Forests* (1962).

26. *Id.* at 13.

use situations, some type of analysis is required to allow one to compare the advantages and disadvantages of limiting the product mix to the exclusionary product. This requires procedures similar to those used to analyze water resource investment.<sup>27</sup>

Development of such analytical tools will not be easy—as we are aware from the history of water resource administration. However, such procedures have the outstanding advantage of forcing administrators to specify the expected results of their action and they provide the lay public with a basis for deciding whether the professional judgment accords with popular wishes.<sup>28</sup>

#### SUMMARY

The current multiple use forestry situation involves both myth and reality. The myth is that such practices are capable of resolving all conflicting demands and allowing us to have our cake and eat it too. Resolution, of course, occurs in the sense that *some* land use plan is selected. Yet, present theoretical interpretations of multiple use are based on weak foundations, and professional administrative judgments are heavily dependent on intangible factors. Thus there is little assurance that the main objective of the Multiple Use Bill, to insure that the national forests will make the best possible contribution to our economic and social well-being, will be realized.

The reality behind the discussion of multiple use is that forestry decisions are primarily judgments about the characteristics of the goods and services produced. Decisions about product-mixes and output quantities affect the nature or “quality” of the outputs. Some outputs are even “exclusionary” in that their essential characteristics will be destroyed if combined with certain other land uses. A further part of the reality is that resolution of considerable conflicts is possible through temporal adjustments and changes in production techniques. This means that multiple use becomes a problem of evaluating the costs and benefits from alternative decisions. Present procedures do not exist which would allow such evaluation. Future attention to both the theory and practice of multiple use should concentrate on developing operational procedures to allow such analysis.

Our forests are a vital heritage. It is both a practical and moral concern

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27. For descriptions of the analytical techniques applied to water resource development, see Eckstein, *Water Resource Development* (1958); Hirschleifer, DeHaven and Milliman, *Water Supply: Economics, Technology and Policy* (1960); Krutilla and Eckstein, *Multiple Purpose River Development* (1958); Maass, Hufschmidt, Dorfman, Thomas, Marglin and Fair, *Design of Water-Resource Systems* (1962).

28. For an example of a dispute in which the data produced by the evaluative procedures required of the water resources agencies played an important role in the popular discussion, see Stratton and Sirotkin, *The Echo Park Controversy* (1959).

to see that they are managed in the best possible manner. The past and present contributions of the forest to our welfare point up the tremendous future potential of these social assets. This means that it is of prime importance to clarify the meaning of multiple use and develop managerial techniques for applying the principle.