§3.6 Incompatible Uses

Truly exclusive (absolute, unqualified) property rights would be a contradiction in terms. If a railroad is to enjoy the exclusive use of its right-of-way, it must be permitted to emit engine sparks without legal limitation; the value of its property will be impaired otherwise. But the value of adjacent farmland will be reduced because of the fire hazard from the sparks. Is the emission of sparks an incident of the railroad’s property right (that is, part of its bundle of rights) or an invasion of the farmer’s property right (or bundle)?

Before answering this question, we must ask whether anything turns on the answer. This requires us to revisit the Coase Theorem, mentioned in Chapter 1. Suppose that the right to emit sparks would, by enabling the railroad to dispense with costly spark-arresting equipment, increase the value of the railroad’s right-of-way by $100 but reduce the value of the farm by $50 by preventing the farmer from growing crops close to the tracks. If the farmer has a legal right to be free from engine sparks, the railroad will offer to pay, and the farmer will accept, compensation for the surrender of his right. The right to prevent spark emissions is worth only $50 to the farmer but imposes a $100 cost on the railroad, so a sale of the farmer’s right at any price between $50 and $100 will make both parties better off. If instead of the farmer having a right to be free from sparks the railroad has a right to emit sparks, no transaction will occur. The farmer will not pay more than $50 for the railroad’s right and the railroad will not accept less than $100. Thus, whichever way the legal right is assigned initially, the result is the same: The railroad emits sparks and the farmer moves his crops.

The outcome is not affected by reversing the numbers. Assume that the right to emit sparks would increase the value of the railroad’s property by only $50 but would reduce the value of the farmer’s property by $100. If the railroad has a right to emit sparks, the farmer will offer to pay and the railroad will accept some price between $50 and $100 for the surrender of the railroad’s right. If instead the farmer has a right to be free from emissions, there will be no transaction, since the farmer will insist on a minimum payment of $100 while the railroad will pay no more than $50. So whatever the relative values of the competing uses, the initial assignment of legal rights will not determine which use ultimately prevails.\footnote{1}

Coase’s article makes three other points, which are sometimes overlooked, relating to the case in which the costs of transferring the property right (transaction costs) are so high that a voluntary transfer is not feasible:

1. Placing liability on the party who in some crude sense “causes” the damage, that is, the active party (the railroad in our example), may not produce the efficient solution to the conflict. The reader can verify this by referring to the first example and assuming that the farmer has the property right and, because of high transaction costs, cannot transfer it to the railroad.

2. The common law of nuisance can be understood as an attempt to improve the allocation of resources by assigning the property right to the party to a conflicting land use to whom the right would be most valuable.

3. In deciding whether government intervention in the economic system is appropriate, it is not enough to demonstrate that the market would operate imperfectly without intervention; government also operates imperfectly. Comparison between the actual workings of the market and of government in the particular setting is necessary. Coase believed that the fact that parties might transact around a property-right assignment or liability rule illustrated the suppleness of markets, while the tendency of government to focus its regulatory efforts exclusively on the active party to a harmful interaction (e.g., by requiring railroads to equip their locomotives with spark arresters) illustrated the woodenness of much government regulation.

Two refinements of the Coase Theorem should be noted:

1. The initial assignment of rights, even when transaction costs are zero so that efficiency is not affected, may affect the relative wealth of the parties, and this may affect the use of resources in two ways. (a) If the parties do not spend their money in identical ways, a shift of wealth between them will alter demand, however slightly, for the various goods and services that they buy (cf. §1.1 supra). (b) If the value of the right is a large fraction of the wealth of either party, where the right ends up may depend on the initial assignment, as in the case of the right to a barrel of water in a desert. Neither point undermines Coase’s conclusion that efficiency is unaffected by the initial assignment of rights if transaction costs are zero; they just show that efficiency is often a range rather than a point.

2. Transaction costs are never zero. In fact they may be quite high even in two-party transactions, as we shall see many times in this book. Generally, however, the costs of a transaction rise with the number of parties to it—and very steeply; the formula for the number of links required to join all members of a set of $n$ members is suggestive: $n(n-1)/2$. Even though transaction costs are never zero, the Coase Theorem should approximate reality whenever the transaction cost is less than the value of the transaction to the parties.

\footnote{1} Ronald H. Coase, The Problem of Social Cost, 3 J. Law & Econ. 1 (1960).
The Theorem is sometimes said to be a tautology (that is, to be true by definition), because at bottom all it says is that if there are gains from trade rational parties will trade, and if not, not. So stated, it is indeed a tautology, because to an economist people who will not make exchanges that improve their net welfare are irrational. It can be given empirical content by being restated as the hypothesis that the initial assignment of property rights will not affect the ultimate use of property if transactions are permitted and are not highly costly. There have been efforts to test the hypothesis, with mixed results.²

The operation of the Coase Theorem is depicted graphically in Figure 3.1. The curve labeled $R$ shows the railroad’s marginal revenue as a function of the number of trains it runs each day. The curve is declining because each additional train is assumed to contribute less net revenue to the railroad than the train before. The curve labeled $F$ shows the farmer’s marginal cost of crop damage, also as a function of the number of trains. It rises as the number of trains rises, on the assumption that the farmer can adjust to some spark damage but that each additional train is more destructive than the preceding one. (Must $F$ and $R$ be assumed to be falling and rising, respectively?) Changing the number of trains is assumed to be the only way to alter the amount of damage to the farmer’s crop. Whether or not the railroad is liable for that damage, the number of trains operated each day will be $n$ if transaction costs are zero. To the left of $n$ the railroad can, by running additional trains, add more to its revenues than to the farmer’s costs, so of course the railroad will increase the number of trains. To the right of $n$, where reducing the number of trains would add more to the farmer’s net revenues than it would subtract from the railroad’s, the farmer will pay the railroad to reduce the number of trains to $n$. The number will be the same if the farmer has the legal right to be free from crop damages, rather than the railroad’s having the right to emit sparks. To the right

² This and other aspects of the Coase Theorem are the subject of a vast literature. See, e.g., John J. Donohue III, Diverting the Coasean River: Incentive Schemes to Reduce Unemployment Spells, 99 Yale L.J. 549 (1989), and studies cited there; also Coase’s lucid discussion of this literature in his book, The Firm, the Market, and the Law: Essays on the Institutional Structure of Production, ch. 6 (1988).
of \( n \), the farmer will sue the railroad to reduce the number of trains; to the left of \( n \) the railroad will pay the farmer to surrender a portion of his right to be free from damage.

It does not follow, however, that the initial assignment of rights is immaterial from an efficiency standpoint. Since transactions are never costless in the real world, efficiency is promoted by assigning the legal right to the party who would buy it—the railroad in our first hypothetical situation and the farmer in the second—if it were assigned initially to the other party. Moreover, as we shall see, the cost of transacting is sometimes so high relative to the value of the transaction as to make transacting uneconomical. In such a case the initial assignment of rights is final.

But assigning the property right to the party to whom it is more valuable is no panacea. It ignores the costs of administering the property rights system, which might be lower under a simpler criterion for assigning rights (a matter taken up in §§20.4 and 21.5 infra); and it is difficult to apply in practice. The engine-spark example was grossly oversimplified in permitting only two property right assignments, a right to emit sparks and a right to be free from spark damage. If administrative (mainly information) costs are disregarded, the combined value of the farmer's and the railroad's property might be maximized by a more complex definition of property rights, such as one that permitted the farmer to grow one kind of crop but not another, to plant nothing within 200 feet of the tracks, and to have no wooden buildings within 250 feet of the tracks, while permitting the railroad to emit sparks only up to a specified level. The possible combinations are endless, and it is unrealistic to expect courts to discover the optimum one—and uneconomical to make them search too hard for it.

But in most cases, and without excessive cost, they may be able to approximate the optimum definition of property rights, and these approximations may guide resource use more efficiently than would an economically random assignment of rights. Under English common law, for example, a landowner who built a structure that so obstructed his neighbor's window that the neighbor needed artificial light to be able to read in the half of the room nearest the window was considered to have infringed the neighbor's property rights, provided that the neighbor had had unobstructed access to light for 20 years (why this qualification?). Had the property right been given to the building party instead (B), then assuming that the cost to the person whose windows were blocked (A) would exceed the cost to B of setting back his wall slightly (all that would be necessary, given how limited the right was), A would buy the right; so assigning the right to him in the first instance avoids the transaction and its attendant costs. But the courts did not extend the rule to protect distant views. If A had a house on a hill with a beautiful prospect, and B built a house that ruined the prospect, A could not complain of an invasion of his property rights even if the value of his property had fallen. The presumption of relative values was reversed in this case. Because the house with a view commands a large land area, the values that would be created by developing such an area are likely to exceed the loss of value to the one landowner whose view is impaired by development.

This rule of the English common law ("ancient lights") was rejected in the United States—and rightly so (why?). And now apply the analysis of ancient lights to the fair use doctrine of copyright law (§3.3 supra).

Another common law rule (conventionally a rule of tort law, but as it defines a property owner's rights it can equally be viewed as a rule of property law) was that
a railroad owed no duty of care to people using the tracks as paths, except at crossings. The cost of using alternative paths would usually be less than the cost to the railroad of making the tracks safe for people who wanted to walk on them. The railroad's right, however, was a qualified one: The railroad was required to keep a careful lookout for cattle.\(^3\) It would be very costly for farmers to erect fences certain to prevent cattle from straying, so if transactions between farmers and railroads were feasible, farmers would frequently pay railroads to keep a careful lookout for animals on the track.

As with cattle, the burden of preventing accidents to child trespassers would, in the absence of a duty imposed on the landowner, fall on an adult custodian and be costly to discharge. Children are difficult to pen. But even young children have more sense than cattle or sheep. The doctrine of attractive nuisance provides an ingenious solution to the conflicting interests of parents and landowners. The landowner must fence or otherwise secure against child trespassers those artificial land conditions (classically, railroad turntables) that young children mistake for harmless playthings. It would be impracticable for the child or his parents to protect completely against this type of hazard, while the landowner can do so at relatively small cost, smaller, anyway, than the cost of fencing an entire railroad right-of-way. This is another case, by the way, in which the initial assignment of rights is also the final assignment; it would be impracticable for landowners to negotiate in advance with all of the parents whose children might stray onto their property.

Economic theory implies that property rights will be redefined from time to time as the relative values of different uses of land change. The fencing of cattle again provides an illustration. Suppose cattle wander off the land where they are grazing and onto a neighbor's land, where they damage his crops. Should the cost be borne by the neighbor on the theory that he should have fenced the cattle out, or by the owner of the cattle on the theory that the owner should have fenced them in? The answer should depend (and a comparison of rules over time and between different common law jurisdictions suggests that it does depend\(^4\)) on the ratio of cattle to crops. If more land is devoted to grazing than to crops, it will be cheaper for farmers to fence their land than for ranchers to fence theirs, and the law will place the burden of fencing on farmers. The burden will be reversed when the ratio of land uses reverses.\(^5\)

Are you concerned that continually redefining property rights to secure efficiency under changing conditions might create instability and discourage investment? X buys a farm long before there is a railroad in his area. The purchase price is not discounted to reflect future crop damage from sparks because the construction of a railroad line is not foreseen. But eventually a line is built near enough to X's farm to inflict spark damage. He sues the railroad, but the court holds that the amount of sparks emitted is reasonable because it would be more costly for the railroad to prevent the crop loss. With property values thus exposed to uncompensated depreciation by unforeseen changes in neighboring land uses, the incentive to invest in farming will be reduced.\(^6\) But as with our example of raising

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5. What assumption is being made about the pattern of land uses? For notice that if all land were used for either grazing or crops, and there were just one rancher and one farmer, the cost of fencing would be the same for either party.
6. But the example in the text is not a realistic one, since the coming of the railroad usually increased the agricultural value of nearby land.
hogs (§3.1 supra), a reduced level of investment in farming may be an efficient adjustment to the possibility that some day the highest value of the farmer's land may be as a dumping ground for railroad sparks.

A more serious problem when property rights are subject to being redefined as values change is that uncertainty imposes disutility on people who are risk averse. Whether any of the methods of eliminating the risks created by uncertainty would be feasible in the situation under discussion may be doubted. However, the amount and consequences of the uncertainty are easily exaggerated. If a harmful neighboring land use is foreseen at the time of sale, the price of land will be reduced accordingly, and the buyer will have no disappointed expectations. If the use is unforeseen, chances are that it lies well in the future, and a cost to be incurred in the far future will (unless astronomical) have little impact on present decisions (see §6.7 infra). The alternative—always to assign the property right to the prior of two conflicting land uses—would be inefficient, for the later use often will be the more valuable yet transaction costs may be prohibitive.

A number of states have passed "right to farm" statutes, which forbid deeming an agricultural use a nuisance. The only economic argument for such laws—which on their face offend against efficiency—is that in their absence the neighbors might invest resources in persuading zoning boards or courts to declare an agricultural use a nuisance even if the benefits of the use exceeded the costs to the neighbors. Of course such rent-seeking expenditures are possible (we saw an example in discussing broadcast frequencies), as are erroneous decisions not induced by such expenditures, but these seem odd grounds for exempting an activity from all liability for its external costs. Why should the production of pigs be treated differently from the production of pig iron?