

ADVANCED READING

PASSAGE 1

Oil companies need offshore platforms primarily because the oil or natural gas the companies extract from the ocean floor has to be processed before pumps can be used to move the substances ashore. But because processing crude (unprocessed oil or gas) on a platform rather than at facilities onshore exposes workers to the risks of explosion and to an unpredictable environment, researchers are attempting to diminish the need for human labor on platforms and even to eliminate platforms altogether by redesigning two kinds of pumps to handle crude. These pumps could then be used to boost the natural pressure driving the flow of crude, which, by itself, is sufficient only to bring the crude to the platform, located just above the wellhead. Currently, pumps that could boost this natural pressure sufficiently to drive the crude through a pipeline to the shore do not work consistently because of the crude's content. Crude may consist of oil or natural gas in multiphase states—combinations of liquids, gases, and solids under pressure—that do not reach the wellhead in constant proportions. The flow of crude oil, for example, can change quickly from 60 per cent liquid to 70 percent gas. This surge in gas content causes loss of “head”, or pressure inside a pump, with the result that a pump can no longer impart enough energy to transport the crude mixture through the pipeline and to the shore.

Of two pumps being redesigned, the positive-displacement pump is promising because it is immune to sudden shifts in the proportion of liquid to gas in the crude mixture. But the pump's design, which consists of a single or twin-screw pushing the fluid from one end of the pump to the other, brings crude into close contact with most parts of the pump and thus requires that it be made of expensive, corrosion-resistant material. The alternative is the centrifugal pump, which has a rotating impeller that sucks fluid in at one end and forces fluid out at the other. Although this pump has a proven design and has worked for years with little maintenance in waste-disposal plants, researchers have discovered that because the swirl of its impeller separates gas out from the oil that normally accompanies it, significant reductions in the head can occur as it operates.

Research in the development of these pumps is focused mainly on trying to reduce the cost of the positive-displacement pump and attempting to make the centrifugal pump more tolerant of gas. Other researchers are looking at ways of adapting either kind of pump for use underwater, so that crude could be moved directly from the sea bottom to processing facilities onshore, eliminating platforms.

PASSAGE 2

To critics accustomed to the style of fifteenth-century narrative paintings by Italian artists from Tuscany, the Venetian examples of narrative paintings with religious subjects that Patricia Fortini Brown analyzes in a recent book will come as a great surprise. While the Tuscan paintings present large-scale figures, clear narratives, and simple settings, the Venetians filled their pictures with dozens of small figures and elaborate building, in addition to a wealth of carefully observed anecdotal detail often irrelevant to the paintings' principal subjects—the religious stories they narrate. Although it occasionally obscured these stories, this accumulation of circumstantial detail from Venetian life—the inclusion of prominent Venetian citizens, for example—was considered appropriate to the narration of historical subjects and underlined the authenticity of the historical events depicted. Indeed, Brown argues that the distinctive style of the Venetian paintings—what she calls the “eyewitness style”—was influenced by Venetian affinity for a strongly parochial type of historical writing, consisting almost exclusively of vernacular chronicles of local events embroidered with all kinds of inconsequential detail.

And yet, while Venetian attitudes toward history that are reflected in their art account in part for the difference in style between Venetian and Tuscan narrative paintings, Brown has overlooked some practical influences, such as climate. Tuscan churches are filled with frescoes that, in contrast to Venetian narrative paintings, consist mainly of large figures and easily recognized religious stories, as one would expect of paintings that are normally viewed from a distance and are designed primarily to remind the faithful of their religious tenets. In Venice, where the damp climate is unsuited to fresco, narrative frescoes in churches were almost nonexistent, with the result that Venetian artists and their public had no practical experience of the large-scale representation of familiar religious stories. Their model for painted stories was the cycle of secular historical paintings in the Venetian magistrate's palace, which were indeed the counterpart of written history and were made all the more authoritative by a proliferation of circumstantial detail.

Moreover, because painting frescoes requires an unusually sure hand, particularly in the representation of human form, the development of drawing skill was central to artistic training in Tuscany, and by 1500 the public there tended to distinguish artists on the basis of how well they could draw human figures. In Venice, a city virtually without frescoes, this kind of skill was acquired and appreciated much later. Gentile Bellini, for example, although regarded as one of the supreme painters of the day, was feeble at drawing. On the other hand, the emphasis on architecture so evident in the Venetian narrative paintings was something that local painters obviously prized, largely because painting architecture in perspective was seen as a particular test of the Venetian painter's skill.

PASSAGE 3

Currently, legal scholars agree that in some cases legal rules do not specify a definite outcome. These scholars believe that such indeterminacy results from the vagueness of language: the boundaries of the application of a term are often unclear. Nevertheless, they maintain that the system of legal rules, by and large, rests on clear core meanings that do determine definite outcomes for most cases. Contrary to this view, an earlier group of legal philosophers, called “realists,” argued that indeterminacy pervades every part of the law.

The realists held that there is always a cluster of rules relevant to the decision in any litigated case. For example, deciding whether an aunt’s promise to pay her niece a sum of money if she refrained from smoking is enforceable would involve a number of rules regarding such issues as offer, acceptance, and revocation. Linguistic vagueness in any one of these rules would affect the outcome of the case, making possible multiple points of indeterminacy, not just one or two, in any legal case.

For the realists, an even more damaging kind of indeterminacy stems from the fact that in a common-law system based on precedent, a judge’s decision is held to be binding on judges in subsequent similar cases. Judicial decisions are expressed in written opinions, commonly held to consist of two parts: the holding (the decision for or against the plaintiff and the essential grounds or legal reasons for it, that is, what subsequent judges are bound by), and the dicta (everything in an opinion not essential to the decision, for example, comments about points of law not treated as the basis of the outcome). The realists argued that in practice the common-law system treats the “holding/dicta” distinction loosely. They pointed out that even when the judge writing an opinion characterizes part of it as “the holding,” judges writing subsequent opinions, although unlikely to dispute the decision itself, are not bound by the original judge’s perception of what was essential to the decision. Later judges have tremendous leeway in being able to redefine the holding and the dicta in a precedential case. This leeway enables judges to choose which rules of law formed the basis of the decision in the earlier case. When judging almost any case, then, a judge can find a relevant precedential case which, in subsequent opinions, has been read by one judge as stating one legal rule, and by another judge as stating another, possibly contradictory one. A judge thus faces an indeterminate legal situation in which he or she has to choose which rules are to govern the case at hand.

PASSAGE 4

The English who in the seventeenth and eighteenth centuries inhabited those colonies that would later become the United States shared a common political vocabulary with the English in England. Steeped as they were in the English political language, these colonials failed to observe that their experience in America had given the words a significance quite different from that accepted by the English with whom they debated; in fact, they claimed that they were more loyal to the English political tradition than were the English in England.

In many respects, the political institutions of England were reproduced in these American colonies. By the middle of the eighteenth century, all of these colonies except four were headed by Royal Governors appointed by the King and perceived as bearing a relation to the people of the colony similar to that of the King to the English people. Moreover, each of these colonies enjoyed a representative assembly, which was consciously modelled, in powers and practices, after the English Parliament. In both England and these colonies, only property holders could vote.

Nevertheless, though English and colonial institutions were structurally similar, attitudes toward those institutions differed. For example, English legal development from the early seventeenth century had been moving steadily toward the absolute power of Parliament. The most unmistakable sign of this tendency was the legal assertion that the King was subject to the law. Together with this resolute denial of the absolute right of kings went the assertion that Parliament was unlimited in its power: it could change even the Constitution by its ordinary acts of legislation. By the eighteenth century, the English had accepted the idea that the parliamentary representatives of the people were omnipotent.

The citizens of these colonies did not look upon the English Parliament with such fond eyes, nor did they concede that their own assemblies possessed such wide powers. There were good historical reasons for this. To the English the word "constitution" meant the whole body of law and legal custom formulated since the beginning of the kingdom, whereas to these colonials a constitution was a specific written document, enumerating specific powers. This distinction in meaning can be traced to the fact that the foundations of government in the various colonies were written charters granted by the Crown. These express authorizations to govern were tangible, definite things. Over the years these colonials had often repaired to the charters to justify themselves in the struggle against tyrannical governors or officials of the Crown. More than a century of government underwritten constitutions convinced these colonists of the necessity for and efficacy of protecting their liberties against governmental encroachment by explicitly defining all governmental powers in a document.