Book Reviews

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The Human Share. By John R. Gillis. Chicago, Illinois: University Press of Chicago, 235p. $27.50 paperback. ISSN 0749-0208.

The Human Shore is a history of human use and occupation of seacoasts with special emphasis on Europe and NE United States. Written by an acclaimed historian and professor emeritus, this book traces *Homo sapiens* from Eden to high-rise condominiums built at the water's edge. I learned quite a bit from reading this book and recommend it to anyone who is interested in the evolution of our relationship with seacoasts.

The Human Shore consists of six chapters and concluding comments about how to live with coasts. I found the early chapters more difficult to navigate and the latter chapters easier to read and more suited to my interest. Gillis makes the point that the sea has long been considered an alien and dangerous environment in western culture with Noah's flood being a prime example. Our descendants migrated from the interior of Africa (the landlocked Garden of Eden) and left that continent 50,000 years ago. A major turning point in the development of *Homo sapiens* was reaching the seacoasts where the availability of salt-water shellfish and fish containing fatty acids led to large brain development. The coast is also where the weather was warmer and food sources more abundant in temperate climates. In addition, the coast was the staging point for exploration and settlement of the rest of the world. Seventy percent of the earth is covered by oceans, and today 80% of the population lives in coastal areas and 90% of commerce is accomplished by ships.

Ancient mariners paddled or sailed the Mediterranean sea, which is more like a lake than an ocean compared to the Atlantic and the Pacific—the largest of the great oceans. In Greek times there were vigorous trading networks in the Mediterranean wherein land was often in sight. Most navigators stayed close to shore as the sea was considered a dangerous place. Legends of mermaids and sirens date back at least 5000 years to Babylonian mythology. Belief in mermaids reached a crescendo in the late 18th century as what had been considered sirens were actually the Atlantic manatee and the Pacific dugong.

Coastal civilizations that predate Stonehenge and the Egyptian pyramids were found in the Scottish Orkney Islands along the North Sea. An intact Stone Age Village in Skara Brae was a fully developed community five millennia ago; houses had stone furniture and drains to remove human waste. The Romans built a number of fortress cities, including Dunwich on the English cliffs of the North Sea. It is said that seven churches disappeared in seven centuries as erosion toppled sediments and structures along this high-energy seacoast. Today Dunwich is less than half its original size and only occupied by a few hundred people.

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Another story of coastal change recounted in this book involves the most northern point of Denmark where the resort town of Skagen is located. The tower of a church built in 1400 was unexpectedly exposed in recent years. The Buried Church was abandoned in 1591 when deforestation and overgrazing caused massive dune migration, and old Skagen was flooded with sand. Similar problems occurred at Provincetown, Massachusetts, in the 1700s when their school house was buried by a migrating sand dune primarily attributable to overgrazing by farm animals, especially sheep and goats, in the Provincelands—the first common lands in the United States.

People who lived on the edge of the sea in Europe were largely uncontrolled and untaxed, and there was free movement of trade and peoples without government interference. This mentality of coastal peoples, especially on islands, continued into recent history with the Florida Keys still being called the Conch Republic by some locals. Rum smuggling was considered ordinary commerce, and goods were often not taxed until the 1950s. It has been difficult to rein in the free spirit of coastal dwellers. Even today, there are small islands in Buzzards Bay, Massachusetts, where people drive cars without license plates or insurance because the arrival of the state police by boat is well known and cars are then parked.

Historically, poorer people have concentrated in coastal areas. Peasants learned to fish as the seas were rich and the land poor. Shipwrecks and beached whales were considered a blessing, and later whaling became a way of life for many New Englanders at seaports such as Nantucket and Provincetown. Farmers shunned barrier beaches as the soil was sandy and infertile. About half of Delaware's oceanic coastline is state parks because no one in the 1930s wanted to pay the taxes for land that could not grow potatoes and hence was considered virtually worthless. Today, North Bethany Beach in Delaware is called the quiet Gold Coast with beachfront houses costing more than a million dollars.

Gillis points out that when the English settled New Jersey in the 17th century, they completely ignored the beaches, which now define the state and compose its most prized real estate. Coastal people knew about the big waves and surge produced by storms and built their houses far back from the sea. The original villages along the Outer Banks of North Carolina, such as Salvo and Rodanthe, were built on the sound side of the island. It was not until after World War II that beachfront development became popular, first with the construction of beach shacks and later mansions along the shore.

The noted writer Henry Thoreau left Walden Pond and made two trips to Cape Cod. He walked along the shore from which he made all his observations, making him America's pioneer beachcomber. On Outer Cape Cod, he encountered high sea cliffs wherein a large slab of claylike sediment collapsed near the Highlands Lighthouse during a fierce coastal storm. This lighthouse was moved inland in the mid-1990s to save it from toppling over the edge because of progressive erosion. The community of Wellfleet-by-the-Sea is sometimes called Well-

fleet-in-the-Sea as many houses and coastal roads have disappeared in historical times. The sediments left by the last glaciers some 15,000 years ago to form this spectacular foreland continue to erode on both sides. Cape Cod is literally shrinking.

Once scorned as a place to live, coasts took on a new identity by the end of the 19th century. In fact, Gillis aptly states that coasts had come to define America as the land "from sea to shining sea." Mariners were harbingers of new trends in dress and speech with their houses adorned with exotic items from distant shores.

The earliest beachfront developments occurred along Coney Island, New York, and the New Jersey shore for city people trying to escape for pleasures of the beach and therapeutic reasons. Philadelphia in the summer was unbearable as the coal-cooking stoves produced considerable soot in the air. Because of thermal inversion, polluted air in the city was trapped close to the ground; it was said that the sky was dark even on a sunny day. The New Jersey shore air was clean and clear because of daily sea breezes. Cities on the beach arose with names like Atlantic City and Ocean City along the Jersey shore. Wooden boardwalks were constructed to promote coastal tourism, which, according to Gillis, also served the purpose of keeping nature literally at bay. Bathing costumes kept people fully clothed, and swimming in the ocean was not common in these early days. The sexuality of the beach did not fully develop until later times when bikinis became popular.

In seamen's jargon, being on the beach once meant being unemployed and destitute, which is far from the appeal of the three S's—sun, sea, and sand. The word "vacation" originally meant an involuntary suspension or loss of work. After World War II, working class people had more leisure time and money, and new roads and bridges opened up the oceanic seashore, making beach vacations the primary summertime activity for Americans. Swimming came late to the beach, and surfing only gained popularity in the 1960s, brought to the mainland from Hawaii. Now it is common to build houses as close to the shore as possible. Once the least populated area in America, the coast is now one of the most densely populated areas. The majority of the 18 million Floridians live along the coast with coastal real estate valued in the trillions of dollars.

Beaches are always changing, but newcomers to the coast seem to believe that all land is permanent and all borders (*e.g.*, lot boundaries) fixed. Intensive beachfront development has occurred along the U.S. East and Gulf Coasts in the last half century. At Ocean City, Maryland, the protective sand dunes were bulldozed in the 1970s to allow construction closer to the sea and to better sell the first-floor condominiums whose view of the beach was blocked. Inlets were stabilized with rock jetties to allow fishing and pleasure boats easy access from the bay to the ocean. These massive shore-perpendicular coastal engineering structures also promoted wholesale beach erosion that extended miles downdrift. For instance, construction of the mile-long jetties in the 1900s at the entrance to Charleston harbor in South Carolina resulted in rapid erosion of Morris Island to the south so that the lighthouse now stands in the Atlantic Ocean more than 460 m offshore.

Bulkheads and seawalls were constructed by individuals and towns, respectively, to prevent beach erosion that threatened the buildings and infrastructure. The U.S. Army Corps of Engineers played a major role in construction of hard structures on the shore, which were later shown to have mixed results—often promoting stability or accretion in one section of the shore and accelerated erosion elsewhere. The placement of groins is akin to "robbing Peter to pay Paul" because no new sand is created; that is, the sand is simply redistributed along the shore. In the last three decades, beach nourishment has become the predominant means of dealing with erosion problems.

John Gillis did an excellent job of portraying the people's evolving relationship with the shore and their eventual love affair with beaches, which was the last part of the shore to be settled. While his history is sound, the coastal science is not exact. For instance, he implies on p. 173 that damming of rivers causes beach erosion universally. While it is a problem along the California coast, dams are rarely an erosion factor along the U.S. East and Gulf barrier island coasts. Here the sediments are naturally deposited and trapped in bays and estuaries so that sand and other coarse-grained material never reaches the outer coast.

Gillis also states that it is well known that "restored beaches are twice as likely to erode as those that are left alone" (p. 173). Therefore, it follows that nourished beaches are doomed. Actually, the sand obtained from offshore is usually coarser than the native sand and hence less erodible. Material is pumped ashore and piled up on the dry beach where it is sculpted by bulldozers. It must be understood that beaches are like icebergs in that 90% of their extent is under water, and an equilibrium profile (*e.g.*, a particular slope) is maintained in response to different wave energies and sand size. Therefore, sand pumped only onto the dry beach will be spread by the waves and currents to a considerable distance offshore, which appears to the casual observer as accelerated beach erosion. The real question involving beach nourishment is the issue of who profits and who pays because the lion's share of the cost of restoring beaches is borne by the American taxpayers as a whole, most all of who will never visit those beaches.

The Hawaiian kings and queens understood that the higher energy waves of the winter coastal storms caused beach erosion, moving sand from the beach berm to the near-to-shore sand bars. This presented a problem to the descendants of the seafaring Polynesians because beaches were primarily used for launching their fishing boats and canoes. The royal families would "magically" make the beaches return each summer where they were merely thin veneers of sand above volcanic rock. This is one reason that the common people bowed to the kings and queens: The people did not understand the natural rhythm of beaches, the widening and eroding in response to seasonal changes in wave energy.

The concluding chapter in *The Human Shore* presents an overview of the beach erosion problem but does not provide scientific clarity. Living with coasts requires an understanding of coastal processes, which involves coastal storms, especially hurricanes in the SE United States, waves and currents, and long-term changes in sea level.

The human wave continues to roll seaward, requiring more coastal construction. Poorly constructed buildings can be overpowered during major events, as Super Storm Sandy

graphically illustrated in northern New Jersey. Wooden houses built at ground level were easily swept away by the large waves riding on a 3–4-m storm surge. If Sandy had made landfall in South Florida, it would have largely been a nonevent because most houses are well fortified against hurricane-force winds and are elevated above the surge level. In addition, the storm surge would have been much lower because the shoreline is relatively straight in contrast to the juncture of the New York and New Jersey seacoasts, which form a funnel so that water is bunched up and rises higher, just like the normal tide entering the Bay of Fundy in Canada increases several fold as it travels upstream. As shown in the previous example, beaches are not as simple as some people seem to think, and clearly all beaches are not alike, as tacitly assumed by the author.

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