

CHAPTER 1 THE PUZZLE

Rachel Levy died when Ayat al-Akhras detonated the bomb wrapped around her body.

The fact that both girls were about the same age (17, 18) captured media attention for a day or two. Less interesting was that the bomb that Ayat set off in Jerusalem's Kiryat Yovel supermarket also killed the guard who stopped her near the door, and wounded 28 other shoppers. After all, this was only one of 108 terrorist attacks in Israel in 2002, and it only killed two people. The Khobar Towers bombing in Saudi Arabia in 1996 had killed ten times this number. The U.S. Embassy bombings in Kenya and Tanzania in 1998 killed more than ten times the number of people killed in the Khobar Towers bombing. The attacks on the U.S. on September 11, 2001, killed significantly more than 10 times the number of people killed in the U.S. Embassy bombings, three orders of magnitude greater than the deaths at the Kiryat Yovel supermarket.

In the mid 20th century, terrorist incidents reported in the international media numbered one or two per year. The number rose to around one per day through the late 20th century. Terrorist incidents skyrocketed to around three per day by the first years of the 21st century. The attack that killed Rachel Levy constituted only one of the 760 terror attacks on Israel carried out after the signing of the Oslo agreement in 1993, which was intended to establish non-violent relations between Israel and Palestinians. Rachel Levy died in Israel. But jihadist terrorist attacks have also killed Russians, Americans, British, Danes, Canadians, Saudis, Germans, French, Egyptians, Jordanians, Indians, Australians, Japanese, Philipinos, Indonesians, Pakistanis, Iraqis, and Afghans. Jihadists left Dutch filmmaker Theo van Gogh dead on the sidewalk with a knife in his chest, and the editor of a Sudanese newspaper, Mohammed Taha, without a head. Jihadist threats drove Hirsi Ali, a member of the Dutch parliament, to flee to the United States, and Seyran Ates, a German women's rights lawyer who won the Berlin Women's Prize in 2004 and a Civil Courage Prize in 2005, to close her law practice. Over the last three years, jihadists have carried out more than 700 attacks in southern Thailand. The Rand-MIPT data base now contains information on nearly 31,000 terrorist attacks carried out since 1968.

Why would a girl kill herself to murder people who she did not know and had done her no harm? If she felt impelled to kill, why not learn to shoot a rifle and kill soldiers at a distance? But why did she kill – why not write to the newspaper or hold a non-violent protest? Why not complete her secondary schooling, complete college, get an MBA, and start a business that manufactured farm implements or household furniture to raise her compatriots' standard of living, and help transform Palestine into a prosperous, independent state?

Quick answers don't get to the heart of the matter. The heart of the matter is that Ayat did not act alone and the elements that went into her behavior may be traced to a striking array of places and times, including ancient Jewish thought in the 3rd Millennium BC, China in the 8th century, and Bell Labs in the 20th. How did they originate? What happened for them to get from their origins to concentrate in Ayat's mind and behavior?

And not only Ayat's mind and behavior-- large numbers of people throughout the world risk their lives, or kill themselves, to participate in a global jihadist culture by murdering people they do not know and who did them no harm. They don't write letters to newspapers. They don't hold peaceful protests. They don't start businesses that produce food or household furniture. Like all cultures, this one consists of a coordinated set of activities (involving recruitment, training, supplies, financing, target selection, insertion, detonation, and advertisement) which its participants rationalize with a set of shared norms, which derive from shared assumptions about the things that make up the world of experience. Sayyid Qutb and, later, Ayman Muhammad Rabi' Al-Zawahiri, made explicit the most important of the assumptions that rationalize jihad:

- Allah constitutes the highest authority for human affairs;
- Shari'a, based primarily on the word of Allah (the Qur'an) and the practices of the Prophet Muhammad, constitutes the ultimate law for all humans;
- Apostasy consists of any rejection of the first two principles and constitutes a crime punishable by death;
- Muslims who reject the first two principles, any non-Muslim who rejects Islam by failing to convert, and Democracies, because they assume that the people who are governed constitute the ultimate authority for human affairs, count as examples of apostasy.

The norms of jihadist behavior follow from these assumptions:

- Democracies should be destroyed, and
- All individuals guilty of apostasy, Muslim or non-Muslim, should be killed.

The cultural inviolability of the central assumptions about Allah and Shari'a, the definition of apostasy, its association with the death penalty, and what counts as apostasy, vary dramatically from one time and place to another, and within any given region at a particular time. Jihadist culture adherents generally consider Saudi Arabia, for example, an apostate, despite its application of Shari'a which has been so rigid that its religious police refused to let school girls flee a burning building because they were insufficiently covered. By contrast, the *Newsweek* story of Ayat's murder-suicide by Joshua Hammer reported that her fiancé said that he would have stopped her if he had known ahead of time, and hoped that God would forgive her – the Qur'an condemns both homicide and suicide as sins. While jihadists joyfully advertised her death, Ayat's father voiced the intense pain that parents endure with the death of a child.

Muslims ordinarily don't think and act very differently from ordinary Buddhists, Christians, or Jews. And, in that, we glimpse the shared humanity that produces cultural similarities and, sometimes, dramatic cultural differences, by concentrating in one shared set of understandings and coordinated activities things that originated at many different places and times.

This book will show that the cultural processes which explain Ayat's murder of Rachel also explain why Rachel went to the supermarket and why you and I buy food at supermarkets. It will also show that the processes that led Ayat to murder Rachel operate independently of Islam, Christianity, or Judaism and result at other times and places in 62 million people murdered in the U.S.S.R. between 1917 and 1987, genocides in the Balkans, Rwanda, and Darfur, and the battering and death of women and children worldwide. The processes that explain mass murder also explain how the relatives of both girls expressed their love and grief. The process comes unbidden from people

born just like you and me with minds that think creatively and respond predictably to variation in the consequences of choices.

You'll need some background to understand how and why mechanisms in the minds with which you and I were born explain both terrorism and the love and support of family and friends, both mass murder and supermarkets. Chapter 2 will explain where new cultural things come from. In the process, it will explain:

- why new things must come from old things;
- why the things of the moment set limits on the future;
- how Islam evolved out of Christianity and Judaism;
- why individuals can't help but create new things;
- why each of us is unique and can't be otherwise;
- why we all make mistakes all the time; and
- why we can't predict the future.

Chapter 3 will outline the principal patterns of cultural evolution that emerge from the ways in which minds take information from sensory fields and produce cultural outputs. In the process, it will explain:

- how and why people with no contact invent the same things;
- how and why cultures evolve divergently, or not;
- how and why cultural diversity in today's world emerged from periods of isolation and later information flow;
- why the contemporary jihadic culture, like all cultures, consists of things created at other times in other places;
- why information volume regulates how much we learn from our neighbors, which makes enclaved cultures evolve in different directions than the cultures which surround them; but
- the utility of that information regulates *what* we learn.

Chapter 4 will explain why we act on useful information, and what makes something useful or not. In the process, it will explain:

- why people learn some things but not others;
- why people weigh costs and benefits
- why some costs and benefits weigh more than others
- why winnowing makes cultures look, in retrospect, like they were purposefully designed to minimize energy expenditure and maximize energy capture;
- why human culture history exhibits directional change toward increasing levels of productivity; and
- why the most consistent producers of cultural evolution are climate change, population change, and the human exercise of power.

Chapter 5 will examine how variation in consequences produces specific forms of cultural evolution. In the process, it will explain:

- what climate change, population change, and the exercise of power have in common;
- why capitalism distributes inequalities around the world in ways that reduce the inequities of the world just past;
- when and why women want only two children, if any;
- the emergence of cultures of corruption;
- mass murder; and
- the battering of women and children.

Chapter 6 will look at lessons learned and will end where it began, with Rachel, Ayat, and jihad. In the process, it will explain

- how changes that occur in and to individuals may acquire power over hundreds of millions of people;
- how mistake correction
- Jihad, conflict and defense

First, however, let's look more closely at this thing we call culture. Culture takes on different meanings, depending on how you look at it, and a satisfactory account must explain important features of each view. Most important, this book will account for both ideas and behavior and explain why and how they come to correspond fairly closely, but never close to perfectly. We will also account for our ancestors' proclivity for doing things better and better, and why doing things better meant creating qualitatively different ways of living as our ancestors shifted from simple hunting and gathering to food production to industrial production. We will explain how some cultures acquire names and others don't, and how each of us participates in many cultures, some of which extend around the globe. One way to state the central question for this book is: where do new cultural things come from, how do they become concentrated in collective agreements and patterned behavior, and how and under what circumstances does culture either change or remain the same? But the underlying issue concerns human minds and how they work to learn some things and not others.

What's This Thing Culture?

In his 1871 book *Primitive Culture* Edward B. Tylor wrote that culture consists of "that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society." Tylor thus provided anthropology its first modern definition of culture. He made two important observations. First, culture is an holistic, integrated thing. Culture isn't just art, or families, or ways of making a living, or religion. Culture is all of these and more because the things that comprise it fit together. Second, we acquire it by virtue of living with other people – we *learn* our cultures.

Alfred Kroeber and Clyde Kluckhohn published a comprehensive review of uses of the term culture in 1952. They found a consensus about this acquired, holistic thing that focused Tylor's enumerative definition more tightly. "Culture," they wrote, "consists of patterns, explicit and implicit, of and for behavior, . . . including their embodiments in artifacts" (1952: 181).

Over the last half of the 20th century, anthropologists used the word culture to refer to an array of things. Marvin Harris and a small number of other cultural anthropologists, along with most

archaeologists and biological anthropologists, continued to write about culture as something that encompassed both ideas and behavior. Archaeologists, of course, work primarily with the embodiment in artifacts of “patterns of and for behavior,” material culture. In the late 1950s and 1960s, the anthropologist Ward Goodenough argued that the most useful definition of culture was the one that restricted it to shared ways of thinking about the world. Cognitive anthropologists like Roy D’Andrade systematically examined the structure, organization, and operation of culture as a shared set of ideas. By the end of the 20th century, most cultural anthropologists had adopted this narrower view of culture. I did too, for most of my career. However, over the past few years I’ve come to think of a culture as a (more-or-less) coherent set of patterned and coordinated activities rationalized by a shared set of norms, which are rationalized by a shared set of assumptions about the world of experience. I place emphasis on behavior rather than ideas because behavior provides the information our minds use to produce behavior and what we do or don’t do determines how well, or if, we live.

Directional Change in Productivity

Culture, too, means different things depending on the level of comparison we use. If we focus on ourselves as individuals, it’s plain that each of us constitutes a unique being. If we focus on ourselves as fellow members of the same biological group, *Homo sapiens*, we see similarities that dramatically set us and our ancestors apart from other living things. A survey of our shared history over the last 300,000 years or so, for example, reveals dramatic growth in productivity, the number and kind of cultural elements, and the complexity of their organization. In the Middle Stone Age, our ancestors made a living by foraging – hunting game and gathering plants. Initially, they used simple, partially-flaked stone cobbles, stones that had been carefully and fully chipped to resemble a flattened, pear-shaped oval with a sharp edge around most of the circumference, called hand axes, sharp blades that had been carefully removed from fine-grained stone cores, grindstones, and pigments. Over time, they added small, sharp stone points and they developed techniques for shellfishing, long distance trade, fishing, mining, and means to make tools out of bone, including barbed points. By the beginning of the Late Stone Age, they made a wide variety of tools with very small shaped stones called microliths, and made beads and drew images. Soon afterwards, our ancestors added to their material inventory polished stone tools, basketry, nets, weirs, storage techniques and implements, sleds and canoes, bows and arrows, pottery, and domesticated dogs. Despite birth and death rates that produced very, very slow population growth rates (on the order of .001 percent per year), our foraging ancestors populated Africa by 100,000 years ago, Asia by 50-60,000 years ago, Europe by 40,000 years ago, Indonesia, the Philippines, and Australia by 40,000 years ago, and the Americas perhaps as early as 35,000 years ago.

About 10,000 years ago in East Asia, Southeast Asia, South Asia, Southwest Asia, East Africa, West Africa, Mesoamerica, and South America, specific foraging populations ushered in the Agricultural Revolution when they transformed themselves into farmers. Farming and farmers spread from Southwest Asia into Europe; from a point of origin in West Africa throughout that region and south across the Congo River basin into the grasslands of central and southern Africa; from an origin in northeast Africa south into the grasslands of East Africa; from a point of origin in what today is central Mexico both north and south; and from the other centers of crop domestication to adjacent regions. Farming spread both because some foragers adopted the new technologies, and because others were killed or driven from their homes. Early farming techniques worked poorly in the drier regions of sub-Saharan Africa, Southwest Asia, and the Central Asian grassland. There, people

found ways to make a living off herds of animals – cattle, goats, sheep, camels, and horses, depending on location.

Dramatic population growth in early farming populations led to increasingly productive farming technologies, fighting produced centralized governments and, beginning about 6000 years ago, metallurgy (in Southwest Asia, the west central coast of South America, Mesoamerica, and around the Great Lakes and Northwest Coast of North America). About 5,000 years ago, further expansion created the earliest cities and civilizations in the Nile River delta, Mesopotamia, the Indus River Valley, the Yellow River basin, the Valley of Mexico, and the west central coast of South America in what is now Peru. Life in these earliest civilizations was marked by very high levels of occupational specialization, increasingly complex and sharply stratified social communities, slavery, writing, monumental architecture, major increases in productivity in the form of irrigation-agriculture, money-based exchange, and increasingly important long-distance trade. By the time of Rome, for example, merchants of the Silk Road moved goods from China to Europe, from which they found their way to the Briton barbarians who lived off the northwestern coast of Europe. In exchange for salt from the Sahara, the forested regions of West Africa sent gold north and provided most of Europe's supply from Roman times on. Malagueta pepper, whose center of supply in historical times was the lightly populated central coast (the Pepper Coast) of what is now Liberia, was carried to northwestern Europe through the trans-Saharan trade by the early 1200s if not earlier.

Just over 200 years ago, the agricultural population in England ushered in the Industrial Revolution when they transformed themselves into manufacturers who employed energy based on steam, electricity, and petroleum in addition to that of people or animals. Industrialization raised human productivity by several orders of magnitude, generated increasing levels of global competition among increasingly large manufacturing, distribution, and service organizations, broke barriers to communication, trade, and movement, raised standards of living, reduced death rates and birth rates, and both reduced and changed the nature of social inequalities. Today, you can watch the movie *Out of Africa* on a VCR in an African bush village 150 miles from the coast and a 3 hours walk from the nearest road, talk with your broker in London on a cell phone while he tours the British Museum exhibit on ancient Egyptian civilization. After that, you can arrange a flight to Singapore for the following day.

Revolutions Create Qualitative Change

When we compare people with people, it makes more sense to talk about cultures by reference to shared similarities and dissimilarities rather than the Tylolean “all things that we do and think.” Both the Agricultural Revolution and Industrial Revolution ushered in qualitative changes in how people thought and lived their lives. Foragers, for example, tended to live in small, mobile, family-based groups widely spread over space. Whether they lived in the dry Kalahari region of southern Africa, the Australian outback, the rainforest of the Congo, Arctic America, or the grasslands of East Africa, people who made their living hunting game, gathering plant food, and fishing, rarely lived in groups larger than 30-40 people. Sometimes, foragers collected in numbers as large as 500 or 1,000, but rarely for long periods. Camps of 30 people often broke up into tiny groups of 3-10 people, depending on the season. Camp composition varied widely because foragers had few rules that constrained membership, children characteristically had to find mates in camps other than the one in which they grew up, newly married couples might shift from the camp of the husband's parents to that of the wife's parents, and local droughts, floods, or other conditions that reduced the availability of the wild foods on which life depended might force families, if not entire camps, to move

elsewhere. Foragers assumed, like we do, that your family consisted of all people to whom you can trace relationships through both father and mother, bilaterally. Social relations among members of a camp of foragers generally exhibited little inequality and much sharing.

Pastoralists, whether sheep-herding Kazaks of the Central Asian Steppes, camel-herding Bedouin in the Arabian Peninsula, or cattle-herding Fulani, Karimojong, Jie, or Maasai in the sub-Saharan and East African grasslands, tended, like foragers, to live in small, mobile, family-based groups widely spread over the landscape. But pastoral camps tended to consist of a core group of related men and their families organized into family corporations that held title to herds of animals. Each small family corporation traced its descent to earlier ancestors and, through these ancestors, to other small family corporations, and to earlier and earlier ancestors and more distantly related family corporations. The identity of these earliest ancestors lost in the mists of time were replaced by significant beings – perhaps a wolf, or Adam. Ties of ancestry and descent nonetheless led to living descendents and created bonds between people who lived in widely separated camps, who never met each other until, or if, those bonds were activated for coordinated action. This mode of tracing one's family through patrilineal links, called a system of segmentary lineages, might encompass hundreds of thousands of people, unlike the bilateral linkages between individual foragers which might join together only 30-40 people through a genealogy of only 3-4 generations depth. Among pastoralists, a woman generally had to leave the camp in which she grew up to move to the camp of her new husband and his relatives. Her leaving reduced the family by one worker but brought with it a compensatory gift of cattle, goats, sheep, or camels, as appropriate. The one exception, first described for the ancient Jews in *Numbers* 36: 8-9, and still characteristic of Middle Eastern peoples, assigns preferential marriage between the sons and daughters of brothers. Marriage between the children of brothers (meaning, usually, men who belong to the same patrilineal family) keeps both the wealth and manpower within the family. Inequality marked the relations between men and women in pastoralist communities and, to some extent, old and young men. Men owned the herds, defended them when necessary, and enlarged them when they could. Young men depended on their fathers for the basis of their herds, but their fathers depended on sons to manage their herds. Women managed the household and produced the children. If one woman performed poorly, she could be replaced far more easily than a man.

The earliest farmers consisted of small, family units that applied hoes, digging sticks, axes, knives, and sickles to small amounts of land to feed themselves. Farming meant that you found some arable land (perhaps one acre per person), cleared the brush and forest, burned the debris, planted crops, engaged in practices to minimize weed growth and protect the growing food from birds, rodents, and deer, harvested the mature crop, and stored it for the coming year. Farmers grew two or three starchy staples. In wet regions this meant rice, or root crops like manioc, yams, and sweet potatoes, in dry regions, grains like millet, sorghum, wheat, and barley. They also grew a dozen or more additional vegetables and fruits, and hunted, fished, and collected wild plants, depending on the demands of farming and the relative abundance of these additional sources of food. Swidden cultivation practices of this kind still prevail in Africa, the Americas, and in sporadic locations across Southeast Asia and the islands of the Pacific Basin. This form of agriculture made children very important because the number of people who worked on your farm determined how much food you produced. But plows appeared in Southwest Asia by about 8,000 years ago and were carried throughout Eurasia by 5,000 years ago. Heavy plows with a coulter to cut turf and a mouldboard appeared around 1,400 years ago. About 200 years later, the 2-field Mediterranean pattern of alternating a winter crop with fallow was replaced in Northern Europe by the 3-field system which alternated a winter crop, fallow, and a spring crop.

Farm settlements might consist of 50 people, or 1,000, 10,000, or 100,000. Small villages might consist, like pastoralist camps, of a core group of related men and their families, although a few (primarily in northeastern North America and central Africa) consisted of a core group of related women and their families. Some communities (scattered primarily along the West African coast) organized themselves into both patrilineal and matrilineal families, and a few (primarily in the Pacific Basin and Indonesia) organized themselves into family corporations defined bilaterally. Individual households consisted of a core set of parents and their children. Although means of birth control and abortion came to be widely known in this pre-industrial world, people rarely used them. Except in Europe, where marriage took place relatively late (in women's 20s), women bore children beginning in their teens. In all farming communities, women bore children often, on average experiencing anywhere from 6-10 live births by the end of their reproductive years. Child bearing gave women an importance they did not otherwise enjoy, and women with many children lived far better than women with few. Characteristically, 1 out of 4 children born died before they reached their first birthday, and disease or famine might make that 3 of 4 children born during hard times. Farmers commonly experienced a life expectancy at birth of only 25 years. This did not mean that everyone died early. Although some reached age 80 or 90, farming communities contained very few elders and these were valued highly.

Marriage meant a process, not a simple ceremony. The process might begin in childhood and it often ended well after the birth of the first children. Over most of the world, the process was marked by gifts given to the family of the bride by the family of the groom and, frequently, work carried out by the groom for his prospective in-laws. Some young men made preferential marriages with their mother's brother's daughter. Others acquired a wife from their father's best friend. In most farming communities, men could marry more than one woman at the same time, a practice called polygyny. Rich, powerful men might have hundreds of wives. In a small region of the Himalayas, women could marry more than one man at the same time, a practice called polyandry. Among Eurasian populations with plow agriculture, which placed a premium on the contributions of men, families of unmarried daughters provided gifts (a dowry) to the families of prospective sons-in-law. Commonly, living units of husbands, wives, and their children also included additional relatives who helped with household and farm chores. Extended households might include a young brother or sister of the wife or husband, or the parents of one or both, or a set of brothers and their families, or a set of sisters and their families. Individual households commonly worked with their neighbors to accomplish farm tasks, and shared their food with family, friends, and community members. In larger settlements, these groups of relatives tended to occupy specific regions, or quarters, of the town or city. In 1850, the Yoruba city of Ibadan counted 100,000 occupants and was ruled by an elaborate administrative bureaucracy, but still was divided into quarters, each occupied by the large kinship groups which organized most social relations. Remains that date to around 2000 years ago from the city of Teotihuacan in the Valley of Mexico, which may have been larger than Rome at the time, show evidence of a similar manner of organization. Farmers who lived as parts of centralized societies with Chiefs, or Kings, supported the administrative bureaucracy with labor and crops.

Even in the smallest farming communities, inequality marked the relations between old and young and men and women. Younger men depended on the older men who either owned the land or, in communities organized into matrilineal families, managed land allocation. As in pastoral communities, for the most part women managed the household and produced the children. But if one woman performed poorly, she could be replaced. In parts of Africa, a barren wife or a wife who

produced many children who died soon after birth might be suspected of witchcraft. Childless women suffered badly compared to others, unless they found a way to foster children from fruitful marriages. The emergence of centralized polities added further inequalities. Some reflected growing occupational specializations (e.g., manufacturers, merchants, service providers, and members of a judiciary and its associated police). The emergence of the institution of slavery and the growing wealth of the King or Emperor and religious and political elites produced the most dramatic inequalities.

As recently as the mid-20th century, most Americans lived on farms. Today, only one or two percent do, and these few feed much of the world. Among foragers, high birth and death rates meant that children made up much of the population and that perhaps 15 people fed a camp of 30. Today, agricultural technologies make it possible for 1 person to feed 200. The other 199 extract other resources, manufacture things, transport resources to manufacturers and farmers and both food and manufactured goods to distributors who sell to distributors who sell to consumers, who purchase a huge range of services from governmental and non-governmental organizations, which range from fast-food meals and utilities maintenance and repair to health care, public safety, and national defense. Our move from the land to the cities transformed them. The cities of today dwarf the largest of pre-industrialized cities like Rome or Teotihuacan. Nearly 3 million people now live in Rome, and nearly 9 million people now live near Teotihuacan in Mexico City.

Rather than carry wood and water, wash clothes, tend fires, care for animals or accompany a parent to the farm, children in the industrialized world go to school. They know little about what it takes to produce their food supply or move it to local markets. They and their parents hope for a degree that will help them acquire well-paying employment from one or more of millions of employers in sectors other than agriculture. The largest single employer, government, consists of a huge bureaucracy concerned with housing, natural resources, transportation, national defense, police, education, unemployment, public safety and health. Some children grow up in ghettoized neighborhoods and see few opportunities beyond serving as merchants of illicit drugs or other equivalent activities. Furthermore, the industrialized world came with unemployment, which was unknown earlier. Nonetheless, the prevailing goal is to acquire a good job, periodic promotions and pay increases, a life-time of increasing material welfare, and a leisured old age.

Irrespective of how we end up making a living, we expect to choose our own mates, and live where we want, perhaps thousands of miles from our parents and siblings (although, some times, for short periods of time, with our parents). We expect to travel, take vacations, watch TV, receive quality health care, and surf the Web. In the meanwhile, we expect to have no more than 2 children, if we have any at all. Despite life expectancies at birth that range into the mid 80s in many industrialized countries, we don't produce enough children to replace ourselves. Below-replacement fertility dramatically changed the social landscape. Populations no longer grow without migration, and immigrants rapidly change the composition of populations in ways that threaten native populations. The proportion of elderly grew dramatically. This changed the composition of the labor force, consumer interests and spending habits, and our health care needs. Today, our elders rarely die at home surrounded by sons, daughters, and grandchildren. Far more likely, they die surrounded by other elders in planned retirement communities and nursing homes.

Names Aren't Cultures

When we make finer comparisons among people, culture often means how specific groups of people live. We learned about foragers, pastoralists, farmers, and the changes wrought by industrialization by studying historical records, by excavating the remains left by former populations, and by living among, observing, and talking with our contemporaries. We differentiated among our contemporaries based on shared similarities and dissimilarities in location, language, and ways of living, called each a culture and gave each a name, like Nuer, Grebo, Chinese, Arabs, Comanche, Eskimo, or Apache.

Names are tricky things. Sometimes, these names came from enemies of the people we studied. Comanche, for example, originated as a Ute word for “people who want to fight me all the time.” Eskimo originated as an Algonkian word for “eaters of raw meat.” Apache means “enemy” in Zuni. Sometimes, they came from major errors of the observer. Columbus, for example, thought that he had reached India when he called the people of the New World Indians. Sometimes, they came from the work people did or the manner in which we learned of a group. The Kru of West Africa appear to have acquired their name after, and because, they actively sought work on ships that plied the West African coast in the 1800s. Chinese emerged as an Anglicized version of the name used in trade of an early Chinese dynasty (Chin). All names gloss over internal differences. Chinese, for example, ignores the differences among the more than 50 different national identities or ethnic groups who make up the more than 1 billion people within China’s national boundaries. Even Bajan, which applies to fewer than 400,000 people who grew up on Barbados, an island only 15 miles wide by 25 miles long, ignores differences that distinguish people from different parishes.

Scholarly usage over the last century made it easy to imagine that each named culture constituted a distinct thing. As the anthropologist Eric Wolf reminded us in 1982, however, the constituency of such groups, their labels, and even their existence, change dramatically. Germans did not exist, for example, until the German state melded together dozens of previously independent towns and principalities in the 1800s. Some of the people we take to be French today were English in the 11th century – or, since England did not exist and the people who lived there had moved from Scandinavia, the people of Normandy were, at that time, as English as anyone could be said to be. Great Britain, formed by Anglo-Saxon domination of native Celtic-speakers, still experiences difficulty with Wales and Scotland. In the summer of 2006, the Scottish National Liberation Army, for example, threatened to poison English water supplies. On the Pepper Coast of West Africa, men who differentiated themselves as father and son became undifferentiated members of a regional political group called a *dako* which competed with its neighbors for control over land, rights over women and children, and trade; men of competing *dako* became undifferentiated “Kru” when they sought work on ships plying the commercial shipping lanes off the West African coast. A few “Kru,” along with “Yoruba” and despite marked differences in language, customs, and physical attributes, became undifferentiated “slaves” who worked plantations in the West Indies and the southern United States. Those who found a way to own their own plantations and slaves came to be called “Gens du Colours” in Haiti and equivalent names elsewhere, although their descendants as well as those of their slaves who now live in the United States became undifferentiated “African Americans.” Names for nationalities, ethnicities, and languages often do not correspond with the shared set of things and patterned behavior we call culture.

Many Cultures Intersect to Make a Person

Indeed, many cultures do not have names. The names we give to things carve out and set apart specific things from our sensory experience. The stuff of sensory experience changes, and we may

choose to look at the same sensory information in multiple ways. All clinicians share a common set of understandings that come from their training in biomedicine, for example. We've only recently begun to call this a culture of biomedicine. But physicians work with a body of knowledge that distinguishes them from, say, nurse practitioners, and family practice physicians work with a body of knowledge distinct from that used by surgeons. We haven't yet highlighted the differences between these cultures with different names.

And the problem is far broader. Older people – whether physicians or plumbers or anthropologists – share a distinctive vantage point owing only to age, and older anthropologists typically share a body of knowledge that distinguishes them from junior faculty or graduate students, just as older plumbers typically share a body of knowledge that distinguishes them from apprentices. The knowledge of people the same age – sociologists, developmental psychologists, or airline pilots -- may differ solely because some are men and some are women. Men and women the same age may work with a common body of knowledge merely because they grew up in poverty, or experienced the privileges bestowed by wealthy parents. Puerto Ricans, irrespective of age, gender, and class, may use a common body of knowledge because they share an ethnic heritage, which may differ significantly from a body of knowledge shared by Mexicans. Fathers – whether Puerto Rican or Mexican, Eskimo or Navaho, whether physicians or nurse practitioners, whether old or young, rich or poor – may share a body of knowledge simply because they share the experience of being fathers. Academics, whether they live in China, Russia, Nigeria, Mexico, or America, share a distinctive culture irrespective of other differences. So do the students at Moscow State University and the universities of Ibadan, Singapore, and Connecticut.

Thus it's fair to say that no one possesses or participates in a single culture. Many sets of experiences go into making us who we are. For example, I am a man, husband, father, grandfather, college graduate (the first of my family), born in Memphis, Tennessee, U.S.A., at a time that made me a member of the 1960s Generation. Each label points to a body of knowledge and patterns of behavior that I share with others. I spent my early years in California's Central Valley, but within an enclave of southerners from Tennessee and Mississippi. I felt almost at home in West Africa when I went there to conduct research for my M.A. and PhD degrees. Because I could look around and see people say and do the same things that I grew up with, it felt like I had come home when I conducted research in the West Indies. I felt surprised by how comfortable I felt working with Russians, they acted so much like Americans, and by the discomfort I felt among Eskimo in Alaska and the Russian Far East, because they acted so differently. Similarly, I'm a fisherman, shooter, writer, and small farmer. I'm not a musician, urbanite, New Yorker, or Vietnam veteran, so what I share with people who are comes from other ways in which our life experiences intersect. In this way, I'm like you. Each of us stands at the intersection of many different cultures that we share with many other people. The specific combination of cultures that comprise that intersection sets each person apart from others. That goes a long way to making each of us different. But that also makes each of us a part of many cultures, some of which may extend around the globe.

A Thing, *Sui Generis*

The anthropologist Leslie White liked to call culture a thing *sui generis*, meaning that it fit into no other category, that it comprised a thing unique among all that we know. Alfred Kroeber, in a similar vein, pointed out that we don't have to study individual minds to study culture because it possesses properties that go far beyond individuals, even if individuals are its only repositories. If a specialist dies, that bit of culture goes to the grave with him, or her. But most of culture forms the

environment into which we arrive as infants, changes independently of how we might want it to change, and requires our attention however much we may detest it. You can't wish culture away, any more than you can wish away the rising and setting of the sun and the phases of the moon. Because culture possesses qualities that go beyond the organisms that create, bear, and change it, Kroeber called culture a superorganic phenomenon.

Culture exhibits these qualities because, as John Searle observes, it consists of an agreement among people about a set of assumptions in which certain things exist, and that certain things count as other things in specific contexts. Moreover, because they exist, we should do this rather than that, and we should not do something else. For example, language consists of a set of assumptions and rules that allow you to recognize significantly different sounds, assemble sounds into meaningful units, and assemble meaningful units into intelligible sentences. English distinguishes between the sounds /p/ and /b/, which make the difference between /pill/ and /bill/. In English, the sounds /s/, /z/, and /iz/ or /ez/ mean plural, but only for nouns, as in /chairs/, /boys/, /dishes/ or /glasses/. In English, the sound /m/ may form a part of word but by itself it doesn't mean anything – though it may signal thoughtfulness. In the West African language called Bassa, the sound /m/ may mean /you/ or /me/ depending on whether or not you say it with a low tone or a high tone. If you use one set of rules to say something and another person uses (approximately) the same set of rules to decode and understand it, you both speak the same language. If one of you uses a different set of rules, you don't. Mutual intelligibility or unintelligibility thus differentiates one language from another. Different sets of rules produce /a monyee; na fenuta/, /pazhalsta, ya magu gavaritz Dima/, and /quelle heure est-il/. We call these outcomes of different sets of rules Kru, Russian, and French, respectively.

Similarly, money consists of a set of assumptions and rules that allow you use certain things as a store of value, a measure of worth, and a means of exchange. The earliest forms of money may have been beads or shells or things that had intrinsic value like pepper, iron, pigs, or bread. Today, we recognize pieces of metal and paper with specific kinds of markings as forms of money, but in our daily living we've increasingly come to accept as money distinctive electronic transactions made with plastic cards. You may detest the concept of money but without it you'll be hard pressed to acquire the daily necessities of food, shelter, and clothing.

Culture thus makes us do things, whether to speak or buy food according to its specific rules. Culture, from one point of view, is merely an idea, an abstraction and generalization about what people think and do. A.R. Radcliffe-Brown, a prominent anthropologist in the mid 20th century, once quipped that to say that culture did things was like claiming that a quadratic equation could commit murder. Quadratic equations can't murder, but culture can. Culture can murder as well as do many other things because we experience this abstraction and generalization about what people think and do through the repetitive behavior of other people, as a thing. Because you encounter repetitive behavior, you create expectations, you make comparisons between what you think and do and what you know others think and do, you anticipate consequences, and thus you feel pressure to do one thing rather than another. Ordinary men, Christopher Browning reminds us in his 1993 book of the same name – only about 500 of them and in only four months – murdered 38,000 Jews in Poland and sent another 45,000 to Treblinka merely because they came to a collective agreement that it was right to do so. Jihad by another name.

Significant cultural change thus entails a change in assumptions.

Galton's Problem

In 1889, Tylor presented a talk to the Royal Anthropological Institute which explained variations in marriage and descent practices by reference to the needs of individuals and the social effects of different practices. One member of the audience, Sir Francis Galton, pointed out that similarities between cultures might reflect either a common history or geographical closeness or both, and have nothing to do with the effects of a social practice. What became known as Galton's Problem was born when Tylor couldn't rule out the common history or geographical closeness explanations.

Galton's Problem is this: does cultural sharing come about because individuals respond to the world of experience in common ways (independent invention) or take their culture with them when they move (descent) or because individuals borrow from their neighbors (diffusion)? People do all three, of course. Shortly after the independent origins of agriculture in Southwest Asia, around 6,500 years ago Proto Indo-Europeans, for example, emerged as a cattle-keeping population of farmers and fishers in the steppe region around the Black Sea. From there, they spread over all of Europe, much of Southwest Asia, and South Asia. They took their language with them, and it evolved into thousands of regional dialects the descendants of which subsequently spread over the entire world to become languages spoken by more than 3,000,000,000 people. The most prominent of these languages is the one you're reading, English, which has become internationalized and used by speakers of every other language on the planet. Languages like Chinese, Grebo, and Algonkian may be related to English, but the differences are so vast that we cannot tell for sure. Languages like German, Russian, Hindi, Greek, Latin, and Persian, by contrast, share with each other and English many obvious similarities that point to descent from a single Proto Indo-European ancestor.

Robert L. Bee published the most recent summary of anthropologists' ideas about culture change in 1974. His book contained no summary about what anthropologists know about cultural dynamics. Anthropologists didn't agree and the answers they had arrived at left too many questions unanswered. The state of the field remains largely the same. The questions first made explicit in the 19th century of where new cultural things come from, how they become concentrated in collective agreements and patterned behavior, and how and under what circumstances cultures either change or persist largely the same, remain central questions without a coherent answer. Galton's Problem hasn't gone away.

Evolutionary anthropologists, however, reformulated the problem as a distinction between individual learning by trial-and-error and social learning by copying. Although Tylor's original definition of culture in 1871 emphasized that it was something we learn, he never explained how, precisely, we learn it. In 1957 Noam Chomsky proposed that language learning assumed the existence of a specific neural structure. In 1962 Clifford Geertz proposed that humans had no choice but to create culture because the evolutionary processes that created us had made it a necessary product of the way human minds work. In 1969, John Bowlby argued more specifically that, among humans, mother-child attachments reflected evolved behavioral mechanisms that protected children from predators. These challenges to the Tylorian distinction between learned and non-learned things suggested that we had evolved specific neural architectures, or modules, that regulated human behavior. By 1992, the search for these modules had come to be called evolutionary psychology. Evolutionary psychologists drew the conclusion that patterns of and for behavior emerged from a large number of built-in modes of mental processing. There's one for language learning, another for cheating-detection, and others for mate selection, for different kinds of social attachments, and for all the other important domains of human activity. Jointly, these

mental modules produce ecologically adaptive behavior for individuals, with or without trial-and-error learning.

Since people plainly engage in much learning from each other, this doesn't make a lot of sense, of course. Indeed, we now know that action or the observation of action activates a specific system of neurons in the premotor cortex and inferior parietal cortex, appropriately called mirror neurons. These allow us to mirror the behavior of others in our own, and may allow us to intuit the reasons why others may act one way or another. But neither does the contrary claim made by dual inheritance theorists Robert Boyd and Peter Richarson in 1985, that culture consists solely of things that are acquired and transmitted between (descent) or within (diffusion) generations. When many people are subject to equivalent experiences at roughly the same time, many "simultaneous" innovations may occur. The most prominent examples consist of the roughly simultaneous origins of agriculture in East Asia, Southeast Asia, South Asia, the Middle East, East Africa, West Africa, Mesoamerica, and South America; of metallurgy in the Middle East, the west central coast of South America, Mesoamerica, and around the Great Lakes and Northwest Coast of North America; and of civilization in the Nile River delta, Mesopotamia, the Indus River Valley, the Yellow River basin, the Valley of Mexico, and the west central coast of South America in what is now Peru. When people experience equivalent things at very different times, they still may arrive at the same conclusions. For example, in 1987 James Boster presented evidence from Jivaro Indians who live in the Peruvian tropical forest and college students in Kentucky consistent with the claim that human brains recognize the same patterns in sensory experience without having to learn from each other the pertinent distinctions. My own research over the last 15 years and related work by Catherine Fuentes shows, likewise, that people who have had no opportunity to interact, who grew up in places as diverse and distinct as the West Indian islands, rural Eastern Connecticut, an American Indian reservation on California's North Coast, and the Arctic regions of both North America and the Russian Far East, all agree that hitting and words that demean constitute violence and that hugging and words that praise constitute forms of social support and affection.

The Argument in This Book

This book takes the view that there's no meaningful difference between individual learning and social learning. When you think about it, it would make no sense for living things to evolve an ability to create new ideas or behavior that did not include the ability to do so with information from other things, whether living or not. A 2002 report by Simon Reader and Kevin Laland tells us, indeed, that's what happened in recent primate evolution. Human minds process information about and, so, learn from sensory fields that encompass both non-living and living things, and we learn as much from what we see other people (or other things, animate or not) not do as from what they do. And, to judge from the data presented by Etienne Danchin and his research team in 2004 studies of birds, rodents, and fish suggest that we're not alone. As I argued in 1989, our creative learning abilities may exceed those of other species by many orders of magnitude, and in some ways differ in kind, but the mental processes that generate them must have originated millions of years earlier than we previously imagined. As Roy D'Andrade pointed out in 2002, what sets us apart is language.

Whether we call it individual learning, social learning, copying, imitation, diffusion, acculturation, independent invention, or some other name, each of us learns by creating what, for us, constitutes a new idea or form of behavior and both ideas and behavior arise from the same mental process. Our minds use one mechanism to take information from the sensory fields in which we exist to create new ways to act and think about the world all the time, automatically, largely unconsciously,

unexpectedly, and with error. Because no one can learn through directed teaching about institutionalized assumptions and norms by authorities without error, social learning can't take place without individual trial-and-error learning. Our minds use a second mechanism to assign emotional weights to the consequences of new things. These emotional weights distinguish bad from good and induce behavior which makes the things that produce bad effects disappear, the things that produce good effects spread, and the things that make no difference either disappear or spread or just linger, depending on random and minor influences. Selection concentrates the things that, jointly, produce still better effects.

Selected Bibliography

Edward Tylor 1871 *Primitive Culture*
1889

Kroeber and Kluckhohn 1952 *Culture: A Critical Review of Concepts and Definitions.*

Eric Wolf 1982 *Europe and the People Without History*

John Searle 1995 *The Construction of Social Reality*

Christopher Browning 1993 *Ordinary Men*

Robert Bee 1974 *Patterns and Processes*

Noam Chomsky 1957 *Syntactic Structures,*

Clifford Geertz 1962 “The Growth of Culture and the Evolution of Mind,”

John Bowlby 1969 *Attachment*

Jerome Barkow, Leda Cosmides, and John Tooby, eds. 1992 *The Adapted Mind,*

Robert Boyd and Peter Richarson 1985 *Culture and the Evolutionary Process,*

James Boster “Agreement between Biological Classification Systems Is Not Dependent on Cultural Transmission” *American Anthropologist* in 1987,

Simon Reader’s and Kevin Laland’s 2002 article “Social Intelligence, Innovation, and Enhanced Brain Size in Primates” published in the *Proceedings of the National Academy of Science,*

Etienne Danchin 2004 *Science* “Public Information,”

Handwerker 1989 *American Anthropologist* “The Origins and Evolution of Culture,”

Roy D’Andrade 2002 *American Anthropologist* “Cultural Darwinism and Language,”

Handwerker WP Cultural Diversity, Stress, and Depression. Working Women in the Americas. *Journal of Women’s Health & Gender-Based Medicine* 1999b;8(10):1303-1311.

Handwerker WP Universal human rights and the problem of unbounded cultural meanings. *American Anthropologist* 1997;99:799-809.