

1.

Years before the advent of plate tectonics—the widely accepted theory, developed in the mid-1960's, the holds that the major features of Earth's surface are created by the horizontal motions of Earth's outer shell, or lithosphere —a similar theory was rejected by the geological community. In 1912, Alfred Wegener proposed, in a widely debated theory that came to be called continental drift, that Earth's continents were mobile. To most geologists today, Wegener's *The origin of Continents and Oceans* appears an impressive and prescient document, containing several of the essential presumptions underlying plate tectonics theory: the horizontal mobility of pieces of Earth's crust; the essential difference between oceanic and continental crust; and a causal connection between horizontal displacements and the formation of mountain chains. Yet despite the considerable overlap between Wegener's concepts and the later widely embraced plate tectonics theory, and despite the fact that continental drift theory presented a possible solution to the problem of the origin of mountains at a time when existing explanations were seriously in doubt, in its day Wegener's theory was rejected by the vast majority of geologists.

Most geologists and many historians today believe that Wegener's theory was rejected because of its lack of an adequate mechanical basis. Stephen Jay Gould, for example, argues that continental drift theory was rejected because it did not explain how continents could move through an apparently solid oceanic floor. However, as Anthony Hallam has pointed out, many scientific phenomena, such as the ice ages, have been accepted before they could be fully explained. The most likely cause for the rejection of continental drift —a cause that has been largely ignored because we consider Wegener's theory to have been validated by the theory of plate tectonics—is the nature of the evidence that was put forward to support it. Most of Wegener's evidence consisted of homologies—similarities of patterns and forms based on direct observations of rocks in the field, supported by the use of hammers, hand lenses, and field notebooks. In contrast, the data supporting plate tectonics were impressively geophysical—instrumental determinations of the physical properties of Earth garnered through the use of seismographs, magnetometers, and computers.

2.

Many economists believe that a high rate of business savings in the United States is a necessary precursor to investment, because business savings, as opposed to personal savings, comprise almost three-quarters of the national savings rate, and the national savings rate heavily influences the overall rate of business investment. These economists further postulate that real interest rates—the difference between the rates charged by lenders and the inflation rates—will be low when national savings exceed business investment (creating a savings surplus), and high when national savings fall below the level of business investment (creating a savings deficit ). However, during the 1960's real interest rates were often higher when the national savings surplus was large. Counter-intuitive behavior also occurred when real interest rates skyrocketed from 2 percent in 1980 to 7 percent in 1982, even though national savings and investments were roughly equal throughout the period. Clearly, real interest rates respond to influences other than the savings/investment nexus. Indeed, real interest rates may themselves influence swings in the savings and investment rates. As real interest rates shot up after 1979, foreign investors

poured capital into the United States, the price of domestic goods increased prohibitively abroad, and the price of foreign-made goods became lower in the United States. As a result, domestic economic activity and the ability of businesses to save and invest were restrained.

3.

More selective than most chemical pesticides in that they ordinarily destroy only unwanted species, biocontrol agents (such as insects, fungi, and viruses) eat, infect, or parasitize targeted plant or animal pests. However, biocontrol agents can negatively affect nontarget species by, for example, competing with them for resources: a biocontrol agent might reduce the benefits conferred by a desirable animal species by consuming a plant on which the animal prefers to lay its eggs.

Another example of indirect negative consequences occurred in England when a virus introduced to control rabbits reduced the amount of open ground (because large rabbit populations reduce the ground cover), in turn reducing underground ant nests and triggering the extinction of a blue butterfly that had depended on the nests to shelter its offspring. The paucity of known extinctions or disruptions resulting from indirect interactions may reflect not the infrequency of such mishaps but rather the failure to look for or to detect them: most organisms likely to be adversely affected by indirect interactions are of little or no known commercial value and the events linking a biocontrol agent with an adverse effect are often unclear. Moreover, determining the potential risks of biocontrol agents before they are used is difficult, especially when a nonnative agent is introduced, because, unlike a chemical pesticide, a biocontrol agent may adapt in unpredictable ways, so that it can feed on or otherwise harm new hosts.

The passage suggests that the author would be most likely to agree with which of the following statements about the use of biocontrol agents?

A.

Biocontrol agent should be used only in cases where chemical pesticides have proven ineffective or overly dangerous.

B.

Extinctions and disruptions resulting from the use of biocontrol agents are likely to have increasingly severe commercial consequences.

C.

The use of biocontrol agents does not require regulation as stringent as that required by the use of chemical pesticides.

D.

The use of biocontrol agents may even finally supersede the use of chemical pesticides in controlling unwanted species.

E.

The risks of using native biocontrol agents may be easier to predict than the risks of using nonnative biocontrol agents.

4.

Is it possible to decrease inflation without causing a recession and its concomitant increase in unemployment? The orthodox answer is “no.” whether they support the “inertia” theory of inflation (that today’s inflation rate is caused by yesterday’s inflation, the state of the economic cycle, and external influences such as import prices) or the “rational expectations” theory (that inflation is caused by workers’ and employers’ expectations, coupled with a lack of credible monetary and fiscal policies), most economists agree that tight monetary and fiscal policies, which cause recessions, are necessary to decelerate inflation. They point out that in the 1980’s, many European countries and the United States conquered high (by these countries’ standards) inflation, but only by applying tight monetary and fiscal policies that sharply increased unemployment. Nevertheless, some governments’ policymakers insist that direct controls on wages and prices, without tight monetary and fiscal policies, can succeed in decreasing inflation. Unfortunately, because this approach fails to deal with the underlying causes of inflation, wage and price controls eventually collapse, the hitherto-repressed inflation resurfaces, and in the meantime, though the policy-makers succeed in avoiding a recession, a frozen structure of relative prices imposes distortions that do damage to the economy’s prospects for longterm growth.

The passage suggests that the high inflation in the United States and many European countries in the 1980’s differed from inflation elsewhere in which of the following ways?

A.

It fit the rational expectations theory of inflation but not the inertia theory of inflation.

B.

It was possible to control without causing a recession.

C.

It was easier to control in those countries by applying tight monetary and fiscal policies than it would have been elsewhere.

D.

It was not caused by workers’ and employers’ expectations.

E.

It would not necessarily be considered high elsewhere.

Which of the following, if true, would most strengthen the author’s conclusion about the use of wage and price controls?

A.

Countries that repeatedly use wage and price controls tend to have lower long-term economic growth rates than do other countries.

B.

Countries that have extremely high inflation frequently place very stringent controls on wages and prices in an attempt to decrease the inflation.

C.

Some countries have found that the use of wage and price controls succeeds in decreasing

inflation but also causes a recession.

D.

Policymakers who advocate the use of wage and price controls believe that these controls will deal with the underlying causes of inflation.

E.

Policymakers who advocate the use of wage and price controls are usually more concerned about long-term economic goals than about short-term economic goals.

5.

In a 1918 editorial, W.E.B. Du Bois advised African Americans to stop agitating for equality and to proclaim their solidarity with White Americans for the duration of the First World War. The editorial surprised many African Americans who viewed Du Bois as an uncompromising African American leader and a chief opponent of the accommodationist tactics urged by Booker T. Washington. In fact, however, Du Bois often shifted positions along the continuum between Washington and confrontationists such as William Trotter. In 1895, when Washington called on African Americans to concentrate on improving their communities instead of opposing discrimination and agitating for political rights, Du Bois praised Washington's speech. In 1903, however, Du Bois aligned himself with Trotter, Washington's militant opponent, less for ideological reasons than because Trotter had described to him Washington's efforts to silence those in the African American press who opposed Washington's positions.

Du Bois's wartime position thus reflected not a change in his long-term goals but rather a pragmatic response in the face of social pressure: government officials had threatened African American journalists with censorship if they continued to voice grievances. Furthermore, Du Bois believed that African Americans' contributions to past war efforts had brought them some legal and political advances. Du Bois' accommodationism did not last, however. Upon learning of systematic discrimination experienced by African Americans in the military, he called on them to "return fighting" from the war.

6.

In most earthquakes the Earth's crust cracks **like porcelain**. Stress builds up until a fracture forms at a depth of a few kilometers and the crust slips to relieve the stress. Some earthquakes, however, take place hundreds of kilometers down in the Earth's mantle, where high pressure makes rock so ductile that it flows instead of cracking, even under stress severe enough to deform it **like putty**. How can there be earthquakes at such depths? That such deep events do occur has been accepted only since 1927 when the seismologist Kiyoo Wadati convincingly demonstrated their existence. Instead of comparing the arrival times of seismic waves at different locations, as earlier researchers had done, Wadati relied on a time difference between the arrival of primary(P) waves and the slower secondary(S) waves. Because P and S waves travel at different but fairly constant speeds, the interval between their arrivals increases in proportion to the distance from the earthquake focus, or initial rupture point.

For most earthquakes, Wadati discovered, the interval was quite short near the epicenter; the point on the surface where shaking is strongest. For a few events, however, the delay was

long even at the epicenter. Wadati saw a similar pattern when he analyzed data on the intensity of shaking. Most earthquakes had a small area of intense shaking, which weakened rapidly with increasing distance from the epicenter, but others were characterized by a lower peak intensity, felt over a broader area. Both the P-S intervals and the intensity patterns suggested two kinds of earthquakes: the more common shallow events, in which the focus lay just under the epicenter, and deep events, with a focus several hundred kilometers down.

The question remained: how can such quakes occur, given that mantle rock at a depth of more than 50 kilometers is too ductile to store enough stress to fracture? Wadati's work suggested that deep events occur in areas (now called Wadati-Benioff zones) where one crustal plate is forced under another and descends into the mantle. The descending rock is substantially cooler than the surrounding mantle and hence is less ductile and much more liable to fracture.

Information presented in the passage suggests that, compared with seismic activity at the epicenter of a shallow event, seismic activity at the epicenter of a deep event is characterized by

- A.  
shorter P-S intervals and higher peak intensity
- B.  
shorter P-S intervals and lower peak intensity
- C.  
longer P-S intervals and similar peak intensity
- D.  
longer P-S intervals and higher peak intensity
- E.  
longer P-S intervals and lower peak intensity.

The passage is primarily concerned with

- A.  
demonstrating why the methods of early seismologists were flawed
- B.  
arguing that deep events are poorly understood and deserve further study
- C.  
defending a revolutionary theory about the causes of earthquakes and methods of predicting them
- D.  
discussing evidence for the existence of deep events and the conditions that allow them to occur
- E.  
comparing the effects of shallow events with those of deep events

The method used by Wadati to determine the depths of earthquakes is most like which of the following?

A.

Determining the depth of a well by dropping stones into the well and timing how long they take to reach the bottom

B.

Determining the height of a mountain by measuring the shadow it casts at different times of the day

C.

Determining the distance from a thunderstorm by timing the interval between the flash of a lightning bolt and the thunder it produces

D.

Determining the distance between two points by counting the number of paces it takes to cover the distance and measuring a single pace

E.

Determining the speed at which a car is traveling by timing how long it takes to travel a known distance

7.

In the fourteenth and fifteenth centuries, many Western Pueblo settlements in what is now the southwestern United States may have possessed distinctly hierarchical organizational structures. These communities' agricultural systems—which were “intensive” in the use of labor rather than “extensive” in area—may have given rise to political leadership that managed both labor and food resources. That formal management of food resources was needed is suggested by the large size of storage spaces located around some communal Great Kivas (underground ceremonial chambers). Though no direct evidence exists that such spaces were used to store food, Western Pueblo communities lacking sufficient arable land to support their populations could have preserved the necessary extra food, including imported foodstuffs, in such apparently communal spaces.

Moreover, evidence of specialization in producing raw materials and in manufacturing ceramics and textiles indicates differentiation of labor within and between communities. The organizational and managerial demands of such specialization strengthen the possibility that a decision making elite existed, an elite whose control over labor, the use of community surpluses, and the acquisition of imported goods would have led to a concentration of economic resources in their own hands. Evidence for differential distribution of wealth is found in burials of the period: some include large quantities of pottery, jewelry, and other artifacts, whereas others from the same sites lack any such materials.

8.

In recent years, Western business managers have been heeding the exhortations of business journalists and academics to move their companies toward long-term, collaborative “strategic partnerships” with their external business partners (e.g., suppliers). The experts' advice comes as a natural reaction to numerous studies conducted during the past decade that compared Japanese production and supply practices with those of the rest of the world. The link between

the success of a certain well-known Japanese automaker and its effective management of its suppliers, for example, has led to an unquestioning belief within Western management circles in the value of strategic partnerships. Indeed, in the automobile sector all three United States manufacturers and most of their European competitors have launched programs to reduce their total number of suppliers and move toward having strategic partnerships with a few.

However, new research concerning supplier relationships in various industries demonstrates that the widespread assumption of Western managers and business consultants that Japanese firms manage their suppliers primarily through strategic partnerships is unjustified. Not only do Japanese firms appear to conduct a far smaller proportion of their business through strategic partnerships than is commonly believed, but they also make extensive use of “market-exchange” relationships, in which either party can turn to the marketplace and shift to different business partners at will, a practice usually associated with Western manufacturers.

According to the passage, the advice referred to in line 9 was a response to which of the following?

- A.  
A recent decrease in the number of available suppliers within the United States automobile industry
- B.  
A debate within Western management circles during the past decade regarding the value of strategic partnerships
- C.  
The success of certain European automobile manufactures that have adopted strategic partnerships
- D.  
An increase in demand over the past decade for automobiles made by Western manufacturers
- E.  
Research comparing Japanese business practices with those of other nations

Which of the following is most clearly an example of the practice referred to in lines 38-49 of the passage?

- A.  
A department store chain that employs a single buyer to procure all the small appliances to be sold in its stores.
- B.  
An automobile manufacture that has used the same supplier of a particular axle component for several years in a row.
- C.  
A hospital that contracts only with union personnel to staff its nonmedical positions.
- D.

A municipal government that decides to cancel its contract with a waste disposal company and instead hire its own staff to perform that function.

E.

A corporation that changes the food-service supplier for its corporate headquarters several times over a five-year period as part of a cost-cutting campaign.

9.

Researchers studying how genes control animal behavior have had to deal with many uncertainties. In the first place, most behaviors are governed by more than one gene, and until recently geneticists had no method for identifying the multiple genes involved. In addition, even when a single gene is found to control a behavior, researchers in different fields do not necessarily agree that it is a “behavioral gene.” Neuroscientists, whose interest in genetic research is to understand the nervous system (which generates behavior), define the term broadly. But ethologists — specialists in animal behavior— are interested in evolution, so they define the term narrowly. They insist that mutations in a behavioral gene must alter a specific normal behavior and not merely make the organism ill, so that the genetically induced behavioral change will provide variation that natural selection can act upon, possibly leading to the evolution of a new species. For example, in the fruit fly, researchers have identified the gene Shaker, mutations in which cause flies to shake violently under anesthesia. Since shaking is not healthy, ethologists do not consider Shaker a behavioral gene. In contrast, ethologists do consider the gene period (*per*), which controls the fruit fly’s circadian (24 hour) rhythm, a behavioral gene because flies with mutated *per* genes are healthy, they simply have different rhythms.

The primary purpose of the passage is to

A.

summarize findings in an area of research

B.

discuss different perspectives on a scientific question

C.

outline the major questions in a scientific discipline

D.

illustrate the usefulness of investigating a research topic

E.

reconcile differences between two definitions of a term

10.

Whereas United States economic productivity grew at an annual rate of 3 percent from 1945 to 1965, it has grown at an annual rate of only about 1 percent since the early 1970’s. What might be preventing higher productivity growth? Clearly, the manufacturing sector of the economy cannot be blamed. Since 1980, productivity improvements in manufacturing have moved the United States from a position of acute decline in manufacturing to one of world prominence. Manufacturing, however, constitutes a relatively small proportion of the economy. In 1992, goods-producing businesses employed only 19.1 percent of American workers, whereas



service-producing businesses employed 70 percent. Although the service sector has grown since the late 1970's, its productivity growth has declined. Several explanations have been offered for this decline and for the **discrepancy in productivity growth** between the manufacturing and service sectors. One is that traditional measures fail to reflect service-sector productivity growth because it has been concentrated in improved quality of services. Yet traditional measures of manufacturing productivity have shown significant increases despite the under measurement of quality, whereas service productivity has continued to stagnate. Others argue that since the 1970's, manufacturing workers, faced with strong foreign competition, have learned to work more efficiently in order to keep their jobs in the United States, but service workers, who are typically under less global competitive pressure, have not. However, the pressure on manufacturing workers in the United States to work more efficiently has generally been overstated, often for political reasons. In fact, while some manufacturing jobs have been lost due to foreign competition, many more have been lost simply because of slow growth in demand for manufactured goods.

Yet another explanation blames the federal budget deficit: if it were lower, interest rate would be lower too, thereby increasing investment in the development of new technologies, which would spur productivity growth in the service sector. There is, however, no dearth of technological resources, rather, managers in the service sector fail to take advantage of widely available skills and machines. High productivity growth levels attained by leading edge service companies indicate that service sector managers who wisely implement available technology and choose skillful workers can significantly improve their companies' productivity. The culprits for service-sector productivity stagnation are the forces – such as corporate takeovers and unnecessary governmental regulation – that distract managers from the task of making optimal use of available resources.

Which of the following, if true, would most weaken the budget deficit explanation for the discrepancy mentioned in line 27?

- A.  
Research shows that the federal budget deficit has traditionally caused service companies to invest less money in research and development of new technologies.
- B.  
New technologies have been shown to play a significant role in companies that have been able to increase their service productivity.
- C.  
In both service sector and manufacturing, productivity improvements are concentrated in gains in quality.
- D.  
The service sector typically requires larger investments in new technology in order to maintain productivity growth than does manufacturing.
- E.  
High interest rates tend to slow the growth of manufacturing productivity as much as they slow the growth of service-sector productivity in the United States.

11.

Until recently, zoologists believed that all species of phocids (true seals), a pin-nipped family, use a different maternal strategy than do otariids (fur seals and sea lions), another pinniped family. Mother otariids use a foraging strategy. They acquire moderate energy stores in the form of blubber before arriving at breeding sites and then fast for 5 to 11 days after birth. Throughout the rest of the lactation (milk production) period, which lasts from 4 months to 3 years depending on the species, mother otariids alternately forage at sea, where they replenish their fat stores, and nurse their young at breeding sites. Zoologists had assumed that females of all phocids species, by contrast, use a fasting strategy in which mother phocids, having accumulated large energy stores before they arrive at breeding sites, fast throughout the entire lactation period, which lasts from 4 to 50 days depending on the species. However, recent studies on harbor seals, a phocids species, found that lactating females commenced foraging approximately 6 days after giving birth and on average made 7 foraging trips during the remainder of their 24-day lactation period.

The maternal strategy evolved by harbor seals may have to do with their small size and the large proportion of their fat stores depleted in lactation. Harbor seals are small compared with other phocids species such as grey seals, all of which are known to fast for the entire lactation period. Studies show that mother seals of these species use respectively 84 percent, 58 percent, and 33 percent of their fat stores during lactation. By comparison, harbor seals use 80 percent of their fat stores in just the first 19 days of lactation, even though they occasionally feed during this period. Since such a large proportion of their fat stores is exhausted despite feeding, mother harbor seals clearly cannot support all of lactation using only energy stored before giving birth. Though smaller than many other phocids, harbor seals are similar in size to most otariids. In addition, there is already some evidence suggesting that the ringed seal, a phocids species that is similar in size to the harbor seal, may also use a maternal foraging strategy.

The primary purpose of the passage is to

- A.  
present evidence that several phocids species use the maternal fasting strategy
- B.  
explain why the maternal strategy typically used by phocids is different from the maternal strategy used by otariids
- C.  
argue that zoologists' current understanding of harbor seals' maternal strategy is incorrect
- D.  
describe an unexpected behavior observed in harbor seals and propose an explanation that may account for the behavior

According to the passage, until recently zoologists believed which of the following about all phocids mothers?

- A.  
Their fasting periods after giving birth were typically shorter than those of otariids.
- B.  
Their lactation periods were generally as long as those of comparably sized otariids.
- C.  
They acquired only moderate energy stores in the form of blubber before arriving at breeding sites.
- D.  
They depleted less than a third of their stored body fat during lactation.
- E.  
They replenished their fat stores only after their lactation period ended.

12.

Anthropologists studying the Hopi people of the southwestern United States often characterize Hopi society between 1680 and 1880 as surprisingly stable, considering that it was a period of diminution in population and pressure from contact with outside groups, factors that might be expected to cause significant changes in Hopi social arrangements.

The Hopis' retention of their distinctive sociocultural system has been attributed to the Hopi religious elite's determined efforts to preserve their religion and way of life, and also to a geographical isolation greater than that of many other Native American groups, an isolation that limited both cultural contact and exposure to European diseases. But equally important to Hopi cultural persistence may have been an inherent flexibility in their social system that may have allowed preservation of traditions even as the Hopis accommodated themselves to change. For example, the system of matrilineal clans was maintained throughout this period, even though some clans merged to form larger groups while others divided into smaller descent groups. Furthermore, although traditionally members of particular Hopi clans appear to have exclusively controlled particular ceremonies, a clan's control of a ceremony might shift to another clan if the first became too small to manage the responsibility. Village leadership positions traditionally restricted to members of one clan might be similarly extended to members of other clans, and women might assume such positions under certain unusual conditions.

13.

In *American Genesis*, which covers the century of technological innovation in the United States beginning in 1876, Thomas Hughes assigns special prominence to Thomas Edison as archetype of the independent nineteenth-century inventor. However, Hughes virtually ignores Edison's famous contemporary and notorious adversary in the field of electric light and power, George Westinghouse. This comparative neglect of Westinghouse is consistent with other recent historians' works, although it marks an intriguing departure from the prevailing view during the inventors' lifetimes (and for decades afterward) of Edison and Westinghouse as the two "pioneer innovators" of the electrical industry.

My recent reevaluation of Westinghouse, facilitated by materials found in railroad archives,

suggests that while Westinghouse and Edison shared important traits as inventors, they differed markedly in their approach to the business aspects of innovation. For Edison as an inventor, novelty was always paramount: the overriding goal of the business of innovation was simply to generate funding for new inventions. Edison therefore undertook just enough sales, product development, and manufacturing to accomplish this. Westinghouse, however, shared the attitudes of the railroads and other industries for whom he developed innovations: product development standardization, system and order were top priorities. Westinghouse thus better exemplifies the systematic approach to technological development that would become a hallmark of modern corporate research and development.

According to the passage, Edison's chief concern as an inventor was the

- A.  
availability of a commercial market
- B.  
costs of developing a prototype
- C.  
originality of his inventions
- D.  
maintenance of high standards throughout production
- E.  
generation of enough profits to pay for continued marketing

14.

Ecoefficiency (measures to minimize environmental impact through the reduction or elimination of waste from production processes) has become a goal for companies worldwide, with many realizing significant cost savings from such innovations. Peter Senge and Goran Carstedt see this development as laudable but suggest that simply adopting ecoefficiency innovations could actually worsen environmental stresses in the future. Such innovations reduce production waste but do not alter the number of products manufactured nor the waste generated from their use and discard; indeed, most companies invest in ecoefficiency improvements in order to increase profits and growth. Moreover, there is no guarantee that increased economic growth from ecoefficiency will come in similarly ecoefficient ways, since in today's global markets, greater profits may be turned into investment capital that could easily be reinvested in old-style eco-inefficient industries. Even a vastly more ecoefficient industrial system could, were it to grow much larger, generate more total waste and destroy more habitat and species than would a smaller, less ecoefficient economy. Senge and Carstedt argue that to preserve the global environment and sustain economic growth, businesses must develop a new systemic approach that reduces total material use and total accumulated waste. Focusing exclusively on ecoefficiency, which offers a compelling business case according to established thinking, may distract companies from pursuing radically different products and business models.

According to the passage, an exclusive pursuit of ecoefficiency may cause companies to

- A.  
neglect the development of alternative business models and products
- B.  
keep the number of products that they manufacture unchanged
- C.  
invest capital from increased profits primarily in inefficient and outmoded industries that may prove unprofitable
- D.  
overemphasize the production process as the key to increasing profits and growth
- E.  
focus more on reducing costs than on reducing the environmental impact of production processes

15.

A small number of the forest species of lepidoptera (moths and butterflies, which exist as caterpillars during most of their life cycle) exhibit regularly recurring patterns of population growth and decline—such fluctuations in population are known as population cycles. Although many different variables influence population levels, a regular pattern such as a population cycle seems to imply a dominant, driving force. Identification of that driving force, however, has proved surprisingly elusive despite considerable research. The common approach of studying causes of population cycles by measuring the mortality caused by different agents, such as predatory birds or parasites, has been unproductive in the case of lepidoptera. Moreover, population ecologists' attempts to alter cycles by changing the caterpillars' habitat and by reducing caterpillar populations have not succeeded. In short, the evidence implies that these insect populations, if not self-regulating, may at least be regulated by an agent more intimately connected with the insect than are predatory birds or parasites.

Recent work suggests that this agent may be a virus. For many years, viral disease had been reported in declining populations of caterpillars, but population ecologists had usually considered viral disease to have contributed to the decline once it was underway rather than to have initiated it. The recent work has been made possible by new techniques of molecular biology that allow viral DNA to be detected at low concentrations in the environment. Nuclear polyhedrosis viruses are hypothesized to be the driving force behind population cycles in lepidoptera in part because the viruses themselves follow an infectious cycle in which, if protected from direct sun light, they may remain virulent for many years in the environment, embedded in durable crystals of polyhedrin protein. Once ingested by a caterpillar, the crystals dissolve, releasing the virus to infect the insect's cells. Late in the course of the infection, millions of new virus particles are formed and enclosed in polyhedron crystals. These crystals reenter the environment after the insect dies and decomposes, thus becoming available to infect other caterpillars.

One of the attractions of this hypothesis is its broad applicability. Remarkably, despite significant differences in habitat and behavior, many species of lepidoptera have population

cycles of similar length, between eight and eleven years. Nuclear polyhedrosis viral infection is one factor these disparate species share.

16.

For many years, historians thought that the development of capitalism had not faced serious challenges in the United States. Writing in the early twentieth century, **Progressive historians sympathized** with the battles waged by farmers and small producers against large capitalists in the late nineteenth century, but they did not question the widespread acceptance of laissez-faire (unregulated) capitalism throughout American history. Similarly, Louis Hartz, who sometimes disagreed with the Progressives, argued that Americans accepted laissez-faire capitalism without challenge because they lacked a feudal, precapitalist past. Recently, however, **some scholars have argued** that even though laissez-faire became the prevailing ethos in nineteenth-century America, it was not accepted without struggle. Laissez-faire capitalism, they suggest, clashed with existing religious and communitarian **norms** that imposed moral constraints on acquisitiveness to protect the weak from the predatory, the strong from corruption, and the entire culture from materialist excess. Buttressed by mercantilist notions that government should be both regulator and promoter of economic activity, these norms persisted long after the American Revolution helped unleash the economic forces that produced capitalism. These scholars argue that even in the late nineteenth century, with the government's role in the economy considerably diminished, laissez-faire had not triumphed completely. Hard times continued to revive popular demands for regulating business and softening the harsh edges of laissez-faire capitalism.

According to the passage, the Progressive historians mentioned in line 5 and the scholars mentioned in line 17 disagree with regard to which of the following?

A.

Whether laissez-faire became the predominant ethos in the nineteenth-century United States

B.

Whether moral restraints on acquisitiveness were necessary in the nineteenth-century United States

C.

The economic utility of mercantilist notions of government

D.

The nature of the historical conditions necessary for the development of laissez-faire capitalism in the nineteenth-century United States

E.

The existence of significant opposition to the development of laissez-faire capitalism in the nineteenth-century United States

17.

In 1938, at the government-convened National Health Conference, organized labor emerged as a major proponent of legislation to guarantee universal health care in the United States. The American Medical Association, representing physicians' interests, argued for preserving

physicians' free-market prerogatives. Labor activists countered these arguments by insisting that health care was a fundamental right that should be guaranteed by government programs.

The labor activists' position represented a departure from the voluntarist view held until 1935 by leaders of the American Federation of labor (AFL), a leading affiliation of labor unions; the voluntarist view stressed workers' right to freedom from government intrusions into their lives and represented national health insurance as a threat to workers' privacy. AFL president Samuel Gompers, presuming to speak for all workers, had positioned the AFL as a leading opponent of the proposals for national health insurance that were advocated beginning in 1915 by the American Association for Labor Legislation (AALL), an organization dedicated to the study and reform of labor laws. Gompers' opposition to national health insurance was partly principled, arising from the premise that governments under capitalism invariably served employers', not workers', interests. Gompers feared the probing of government bureaucrats into workers' lives, as well as the possibility that government-mandated health insurance, financed in part by employers, could permit companies to require employee medical examinations that might be used to discharge disabled workers.

Yet the AFL's voluntarism had accommodated certain exceptions: the AFL had supported government intervention on behalf of injured workers and child laborers. AFL officials drew the line at national health insurance, however, partly out of concern for their own power. The fact that AFL outsiders such as the AALL had taken the most prominent advocacy roles antagonized Gompers. That this reform threatened union-sponsored benefit programs championed by Gompers made national health insurance even more objectionable.

Indeed, the AFL leadership did face serious organizational divisions. Many unionists, recognizing that union-run health programs covered only a small fraction of union members and that unions represented only a fraction of the nation's workforce, worked to enact compulsory health insurance in their state legislatures. This activism and the views underlying it came to prevail in the United States labor movement and in 1935 the AFL unequivocally reversed its position on health legislation.

The passage suggests which of the following about the voluntarist view held by leaders of the AFL regarding health care?

- A.  
It was opposed by the AALL.
- B.  
It was shared by most unionists until 1935.
- C.  
It antagonized the American Medical Association.
- D.  
It maintained that employer-sponsored health care was preferable to union-run health programs.
- E.  
It was based on the premise that the government should protect child laborers but not adult

workers.

The primary purpose of the passage is to

- A.  
account for a labor organization's success in achieving a particular goal
- B.  
discuss how a labor organization came to reverse its position on a particular issue
- C.  
explain how disagreement over a particular issue eroded the power of a labor organization
- D.  
outline the arguments used by a labor organization's leadership in a particular debate
- E.  
question the extent to which a labor organization changed its position on a particular issue

18.

When a large body strikes a planet or moon, material is ejected, thereby creating a hole in the planet and a local deficit of mass. This deficit shows up as a gravity anomaly: the removal of the material that has been ejected to make the hole results in an area of slightly lower gravity than surrounding areas. One would therefore expect that all of the large multi-ring impact basins on the surface of Earth's Moon would show such negative gravity anomalies, since they are, essentially, large holes in the lunar surface. Yet data collected in 1994 by the Clementine spacecraft show that many of these lunar basins have no anomalously low gravity and some even have anomalously high gravity. **Scientists** speculate that early in lunar history, when large impactors struck the Moon's surface, causing millions of cubic kilometers of crustal debris to be ejected, denser material from the Moon's mantle rose up beneath the impactors almost immediately, compensating for the ejected material and thus leaving no low gravity anomaly in the resulting basin. Later, however, as the Moon grew cooler and less elastic, rebound from large impactors would have been only partial and incomplete. Thus today such **gravitational compensation** probably would not occur: the outer layer of the Moon is too cold and stiff.

The passage suggests that if the scientists mentioned in line 19 are correct in their speculations, the large multi-ring impact basins on the Moon with the most significant negative gravity anomalies probably

- A.  
were not formed early in the Moon's history
- B.  
were not formed by the massive ejection of crustal debris
- C.  
are closely surrounded by other impact basins with anomalously low gravity
- D.  
were created by the impact of multiple large impactors
- E.



were formed when the Moon was relatively elastic

19.

Seventeenth-century philosopher John Locke stated that as much as 99 percent of the value of any useful product can be attributed to “the effects of labor.” For Locke’s intellectual heirs it was only a short step to the “labor theory of value,” whose formulators held that 100 percent of the value of any product is generated by labor (the human work needed to produce goods) and that therefore the employer who appropriates any part of the product’s value as profit is practicing theft.

Although human effort is required to produce goods for the consumer market, effort is also invested in making capital goods (tools, machines, etc.), which are used to facilitate the production of consumer goods. In modern economies about one-third of the total output of consumer goods is attributable to the use of capital goods. Approximately two-thirds of the income derived from this total output is paid out to workers as wages and salaries, the remaining third serving as compensation to the owners of the capital goods. Moreover, part of this remaining third is received by workers who are shareholders, pension beneficiaries, and the like. The labor theory of value systematically disregards the productive contribution of capital goods—a failing for which Locke must bear part of the blame.

The author of the passage is primarily concerned with

- A.  
criticizing Locke’s economic theories
- B.  
discounting the contribution of labor in a modern economy
- C.  
questioning the validity of the labor theory of value
- D.  
arguing for a more equitable distribution of business profits
- E.  
contending that employers are overcompensated for capital goods

20.

In her account of unmarried women’s experiences in colonial Philadelphia, Wulf argues that educated young women, particularly Quakers, engaged in resistance to patriarchal marriage by exchanging poetry critical of marriage, copying verse into their commonplace books. Wulf suggests that this critique circulated beyond the daughters of the Quaker elite and middle class, whose commonplace books she mines, proposing that Quaker schools brought it to many poor female students of diverse backgrounds.

Here Wulf probably overstates Quaker schools’ impact. At least three years’ study would be necessary to achieve the literacy competence necessary to grapple with the material she analyzes. In 1765, the year Wulf uses to demonstrate the diversity of Philadelphia’s Quaker

schools, 128 students enrolled in these schools. Refining Wulf's numbers by the information she provides on religious affiliation, gender, and length of study, it appears that only about 17 poor non-Quaker girls were educated in Philadelphia's Quaker schools for three years or longer. While Wulf is correct that a critique of patriarchal marriage circulated broadly, Quaker schools probably cannot be credited with instilling these ideas in the lower classes. Popular literary satires on marriage had already landed on fertile ground in a multiethnic population that embodied a wide range of marital beliefs and practices. These ethnic- and class-based traditions themselves challenged the legitimacy of patriarchal marriage.

21.

To compete effectively in international markets, a nation's businesses must sustain investment in intangible as well as physical assets. Although an enormous pool of investment capital exists in the United States, the country's capital investment practices put United States companies at a competitive disadvantage.

United States capital investment practices, shaped by sporadic and unpredictable changes in tax policy and high federal budget deficits, encourage both underinvestment and overinvestment. For example, United States companies invest at a low rate in internal development projects, such as improving supplier relations, that do not offer immediate profit, and systematically invest at a high rate in external projects, such as corporate takeovers, that yield immediate profit. Also, United States companies make too few linkages among different forms of investments. Such linkages are important because physical assets, such as factories, may not reach their potential level of productivity unless companies make parallel investments in intangible assets such as employee training and product redesign. In general, unlike Japanese and German investment practices, which focus on companies' long-term interests, United States investment practices favor those forms of investment for which financial returns are most readily available. By making minimal investments in intangible assets, United States companies reduce their chances for future competitiveness.

22.

A pressing need in the study of organizations is for more research into how an organization's values (an organization's guiding principles and beliefs as perceived by its members) affect managerial decision-making. Traditional theories have been based on a "rational model," which focuses on the decision-maker and either ignores the organizational value climate or conveniently assumes that the organization's values are consistent or clearly prioritized. In reality, however, decisions are shaped not only by a manager's own values, but also by those of the corporate culture and of organizational superiors. A recent study found that managers' most stressful decisions involved "value contention" (conflicts among any of these sets of values). Furthermore, different types of organizational value systems were associated with different frequencies of contending values as well as with different types of managerial response. Explicit corporate values, for example, produced a greater percentage of decisions that were stressful due to value contention. Hidden values (those that an organization practices but does not acknowledge or which a superior furtively pursues in opposition to the values of the organization) produced a lower level of value contention. Although explicit values

created more value contention, they were nonetheless more likely to produce flexible, well-reasoned decisions. Conversely, managers perplexed by hidden values reported feeling unable to identify an appropriate range of options.

The passage suggests that which of the following has resulted from the influence of the rational model (line 8) ?

- A.  
It has deflected researchers' attention from a critical factor affecting managerial decision-making.
- B.  
It has focused decision-making procedures on managers' presumed ability to prioritize key corporate values.
- C.  
It has diverted attention from the need for orientation of nonsupervisory employees to organizational values.
- D.  
It has hampered communication between academic researchers and managers of organizations.
- E.  
It has produced theories that are practicable for analyzing decision-making processes only in relatively large organizations.

The passage identifies which of the following as a way in which hidden corporate values affect managerial decision-making?

- A.  
They tend to discourage consultation with organizational subordinates and superiors.
- B.  
They tend to undermine managers' confidence in their own ability to determine the available alternatives.
- C.  
They tend to produce a heightened degree of value contention.
- D.  
They tend to produce a heightened degree of conflict among different levels of the organizational structure.
- E.  
They tend to cause greater anxiety among managers than do explicit corporate values.

23.

In a 1984 book, Claire C. Robertson argued that, before colonialism, age was a more important indicator of status and authority than gender in Ghana and in Africa generally. British colonialism imposed European-style male dominant notions upon more egalitarian local situations to the detriment of women generally, and gender became a defining characteristic that weakened women's power and authority.

Subsequent research in Kenya convinced Robertson that she had overgeneralized about Africa. Before colonialism, gender was more salient in central Kenya than it was in Ghana, although age was still crucial in determining authority. In contrast with Ghana, where women had traded for hundreds of years and achieved legal majority (not unrelated phenomena), the evidence regarding central Kenya indicated that women were legal minors and were sometimes treated as male property, as were European women at that time. Factors like strong patrilinearity and patrilocality, as well as women's inferior land rights and lesser involvement in trade, made women more dependent on men than was generally the case in Ghana. However, since age apparently remained the overriding principle of social organization in central Kenya, some senior women had much authority. Thus, Robertson revised her hypothesis somewhat, arguing that in determining authority in precolonial Africa age was a primary principle that superseded gender to varying degrees depending on the situation.

The passage indicates that Robertson's research in Kenya caused her to change her mind regarding which of the following?

- A.  
Whether age was the prevailing principle of social organization in Kenya before colonialism
- B.  
Whether gender was the primary determinant of social authority in Africa generally before colonialism
- C.  
Whether it was only after colonialism that gender became a significant determinant of authority in Kenyan society
- D.  
Whether age was a crucial factor determining authority in Africa after colonialism
- E.  
Whether British colonialism imposed European-style male-dominant notions upon local situations in Ghana

The passage suggests that after conducting the research mentioned in line 18, but not before, Robertson would have agreed with which of the following about women's status and authority in Ghana?

- A. Greater land rights and greater involvement in trade made women in precolonial Ghana less dependent on men than were European women at that time.
- B. Colonialism had a greater impact on the status and authority of Ghanaian women than on Kenyan women.
- C. Colonialism had less of an impact on the status and authority of Ghanaian women than it had on the status and authority of other African women.
- D. The relative independence of Ghanaian women prior to colonialism was unique in Africa.
- E. Before colonialism, the status and authority of Ghanaian women was similar to that of Kenyan women.

24.

Grassland songbirds often nest in the same grassland-wetland complexes as waterfowl, particularly in a certain part of those complexes, namely, upland habitats surrounding wetlands. Although some wildlife management procedures directed at waterfowl, such as habitat enhancement or restoration, may also benefit songbirds, the impact of others, especially the control of waterfowl predators, remains difficult to predict. For example, most predators of waterfowl nests prey opportunistically on songbird nests, and removing these predators could directly increase songbird nesting success. Alternatively, small mammals such as mice and ground squirrels are important in the diet of many waterfowl-nest predators and can themselves be important predators of songbird nests. Thus, Removing waterfowl-nest predators could affect songbird nesting success through subsequent increases in small-mammal populations.

In 1995 and 1996, researchers trapped and removed certain waterfowl-nest predators, primary raccoons and striped skunks, then observed subsequent survival rates for songbird nests. Surprisingly, they observed no significant effect on songbird nesting success. This may be due to several factors. Neither raccoons nor striped skunks consume ground squirrels, which are important predators of songbird nests. Thus, their removal may not have led to significant increases in populations of smaller predators. Additionally, both raccoons and striped skunks prefer wetlands and spend little time in upland habitats; removing these species may not have increased the nesting success of songbirds in the uplands enough to allow detection.

According to the passage, which of the following is true about the role played by ground squirrels in the ecology of grassland-wetland complexes?

A.

While not important in the diet of raccoons or striped skunks, ground squirrels are a significant source of food for other waterfowl-nest predators.

B.

Whereas ground squirrels are typically important as predators of songbird nests, their opportunistic predation on waterfowl nests also has an observable effect on waterfowl nesting success.

C.

Although most waterfowl-nest predators prey on small mammals such as mice and ground squirrels, populations of ground squirrels tend to increase quickly enough to compensate for this level of predation.

D.

Although ground squirrels have been known to prey on songbird nests, a larger portion of their diets is usually provided by predation on waterfowl nests.

E.

Since larger predators tend to prefer small mammals to songbird eggs as a food source, a large population of ground squirrels plays an important role in controlling opportunistic predation on songbird nests.

25.

In mid-February 1917 a women's movement independent of political affiliation erupted in New York City, the stronghold of the Socialist party in the United States. Protesting against the high cost of living, thousands of women refused to buy chickens, fish, and vegetables. The boycott shut down much of the City's foodstuffs marketing for two weeks, riveting public attention on the issue of food prices, which had increased partly as a result of increased exports of food to Europe that had been occurring since the outbreak of the First World War.

By early 1917 the Socialist party had established itself as a major political presence in New York City. New York Socialists, whose customary spheres of struggle were electoral work and trade union organizing, seized the opportunity and quickly organized an extensive series of cost-of-living protests designed to direct the women's movement toward Socialist goals. Underneath the Socialists' brief commitment to cost-of-living organizing lay a basic indifference to the issue itself. While some Socialists did view price protests as a direct step toward socialism, most Socialists ultimately sought to divert the cost-of-living movement into alternative channels of protest. Union organizing, they argued, was the best method through which to combat the high cost of living. For others, cost-of-living or organizing was valuable insofar as it led women into the struggle for suffrage, and similarly, the suffrage struggle was valuable insofar as it moved United States society one step closer to socialism.

Although New York's Socialists saw the cost-of-living issue as, at best, secondary or tertiary to the real task at hand, the boycotters, by sharp contrast, joined the price protest movement out of an urgent and deeply felt commitment to the cost-of-living issue. A shared experience of swiftly declining living standards caused by rising food prices drove these women to protest. Consumer organizing spoke directly to their daily lives and concerns; they saw cheaper food as a valuable end in itself. Food price protests were these women's way of organizing at their own workplace, as workers whose occupation was shopping and preparing food for their families.

Which of the following best states the function of the passage as a whole?

A.

To contrast the views held by the Socialist party and by the boycotting women of New York City on the cost-of-living issue

B.

To analyze the assumptions underlying opposing viewpoints within the New York socialist party of 1917

C.

To provide a historical perspective on different approaches to the resolution of the cost-of-living issue.

D.

To chronicle the sequence of events that led to the New York Socialist party's emergence as a political power

E.

To analyze the motivations behind the socialist party's involvement in the women's suffrage

movement.

26.

Findings from several studies on corporate mergers and acquisitions during the 1970's and 1980's raise questions about why firms initiate and consummate such transactions. One study showed, for example, that acquiring firms were on average unable to maintain acquired firms' pre-merger levels of profitability. A second study concluded that post-acquisition gains to most acquiring firms were not adequate to cover the premiums paid to obtain acquired firms. A third demonstrated that, following the announcement of a prospective merger, the stock of the prospective acquiring firm tends to increase in value much less than does that of the firm for which it bids. Yet mergers and acquisitions remain common, and bidders continue to assert that their objectives are economic ones. Acquisitions may well have the desirable effect of channeling a nation's resources efficiently from less to more efficient sectors of its economy, but the individual acquisitions executives arranging these deals must see them as advancing either their own or their companies' private economic interests. It seems that factors having little to do with corporate economic interests explain acquisitions. These factors may include the incentive compensation of executives, lack of monitoring by boards of directors, and managerial error in estimating the value of firms targeted for acquisition. Alternatively, the acquisition acts of bidders may derive from modeling: a manager does what other managers do.

The author of the passage implies that which of the following is a possible partial explanation for acquisition behavior during the 1970's and 1980's?

A.

Managers wished to imitate other managers primarily because they saw how financially beneficial other firms' acquisitions were.

B.

Managers miscalculated the value of firms that were to be acquired.

C.

Lack of consensus within boards of directors resulted in their imposing conflicting goals on managers.

D.

Total compensation packages for managers increased during that period.

E.

The value of bidding firms' stock increased significantly when prospective mergers were announced.