

## Unofficial Work

**The Informal Economy.** Studies in Advanced and Less Developed Countries. ALEJANDRO PORTES, MANUEL CASTELLS, and LAUREN A. BENTON, Eds. Johns Hopkins University Press, Baltimore, 1989. viii, 327 pp. \$39.50; paper, \$16.95.

The informal economy, the editors of this collection say, has grown in significance in the last decade. Homework, putting out, and other informal practices are flourishing in Third World cities and expanding throughout the industrialized countries. *The Informal Economy* offers studies of the structure and dynamics of this phenomenon that range over 14 cities and 10 different countries on several continents, including South America, North America, and Europe. The essays show that informal economic activities cut across various social sectors, from street peddlers in Bolivia to successful Cuban entrepreneurs in Miami to black market operators in the Soviet Union.

What is the informal economy? According to Castells and Portes, in their overview chapter, it is "unregulated by the institutions of society, in a legal and social environment in which similar activities are regulated" (p. 12). Most of the book's 14 case studies use definitions that are variations on this theme, though a couple add small scale of production as a criterion.

Among the many factors responsible for the growth of the informal economy in contemporary societies, Castells and Portes suggest, are owners' strategies to assert hegemony in the face of the power of organized labor and the regulation of the economy by the state. Through informalization, business firms seek to undermine union control of the work process and to escape state legislation and tax increases. Because of the growing integration of national economies in the international system, manufacturers everywhere compete to produce cheaper goods by reducing labor costs—through lowering wages, avoiding social benefits and payments to the state, and reducing state- or union-imposed constraints on hiring and dismissal. And the world economic crisis since the mid-1970s has driven countless people, especially in the peripheral countries, to eke out a living in the only way available: at the "margins of rules and organizational arrangements" (p. 29).

The case studies show the processes in

involved in creating, expanding, and strengthening informal economic arrangements in specific contexts. In Bolivia, informal economic activities have always been widespread among poor families trying to survive, but the shift to a cocaine economy has led to their expansion, particularly in the form of urban underground activities related to marketing of imported contraband goods. In an interesting account of Miami's informal sectors, Stepick argues that informalization among Haitians and Cubans is linked to ethnic antagonism and the wider society's rejection of immigrants. Denied entry into construction unions, Cubans created their own non-union firms that relied on informal practices such as paying workers in cash. Haitian refugees, generally unable to find jobs in the formal economy, have survived through casual self-employment in their own ethnic community, setting up small businesses such as dressmaking and restaurants in their homes. Stepick makes the point that Cubans' informal activities are integrated with the broader economy; Cubans work in sectors of the garment, construction, and restaurant industries where informal labor practices maintain low labor costs. The Haitians' informal economic activities, by contrast, are survival strategies that are isolated from the broader economy.

The role of the state in the creation and operation of the informal sector crops up in many of the contributions. Sometimes, the state looks the other way, failing to control—and thereby stimulating the growth of—the informal economy. Fernández-Kelly and Garcia show that inadequate funding for government watchdog agencies and loopholes in labor legislation have provided a favorable climate for informalization in Florida and California. In England, the Thatcher government's supply-side economic strategies have aimed to deregulate the labor market and encourage the use of temporary workers. By 1987, according to Standing, a third of the employed were part-timers, temporary workers, homeworkers, and "self-employed." In the Soviet Union, where the state tries to control the workings of the entire economy tightly and severely limits private income, people add to their incomes in a variety of illicit ways—for example, by charging "rent" for access to scarce socialist-owned goods or services and by plain theft from the state.

The formal and informal economies are linked in many ways. Indeed, as Castells and Portes note, it is precisely because there is a formal economy—an institutional framework of economic activity—that we can speak of an informal one (p. 13). The book includes many examples of subcontracting, where large firms that operate according to official rules send production out to smaller, informal firms as a way to cut costs and increase flexibility. In Mexico City, Beneria argues that intense competition among small subcontractors to obtain work from larger firms gives these large firms an ability to impose their own terms. Individuals themselves may switch back and forth between informal and formal sectors, as Roberts shows in Guadalajara, where participation in the informal economy depends on the individual's life stage. Low-income men, for example, typically start out in informal employment, move on to a formal occupation, and end their working lives as self-employed workers. Roberts emphasizes that working-class households combine informal and formal economic strategies; most have at least one member in the formal sector—with some access to the social security system—as well as others in informal employment.

In considering the consequences of the informal economy, the book clearly weighs in on the negative side. Summing up the empirical results, the editors do note that there are some positive effects. Homework, for instance, allows women to balance income earning and household tasks, and informal enterprises contribute to the viability of ethnic neighborhoods in some American cities. There are also a few exceptional instances of "informal economies of growth"—the Miami Cuban and central Italy cases in the book—although these, as the editors argue, are unlikely to be reproduced elsewhere owing to unique historical and cultural features underlying the success stories. Overall, the informal economy depresses wages, worsens other job conditions, and reduces occupational safeguards for workers. And informalization encourages entire industries to resort to exploitative labor arrangements rather than technological innovation. Given these negative implications, the editors call for policy initiatives that focus on breaking the direct link between social benefits and employment in private firms—by government guarantees of minimum living standards to "people as people and not as workers" (p. 310).

*The Informal Economy* makes clear that the economic arrangements recorded in official statistics are not the only ones worth studying. Given the importance of the subject, it is a shame that many of the essays are ponderous and filled with jargon. The find-

ings presented, and the editors' reviews and generalizations, provide a wealth of useful material and raise significant questions that will undoubtedly stimulate future inquiry and cross-national comparisons on the "fundamental, although elusive, reality" (p. 1) of the informal economy.

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## Paleoichnology

**Dinosaur Tracks and Traces.** DAVID D. GILLETTE and MARTIN G. LOCKLEY, Eds. Cambridge University Press, New York, 1989. xviii, 454 pp., illus. \$54.50. Based on a symposium, Albuquerque, NM, May 1986.

The field of vertebrate paleoichnology is attempting to come of age, and the maturation process has been expressed largely in the form of meetings devoted to new discoveries. This volume, the result of the First International Symposium on Dinosaur Tracks and Traces, is a collection of 50 papers of variable quality, devoted to establishing vertebrate paleoichnology as a field in its own right.

The obvious strength of this volume is in providing a single reference source for vertebrate paleoichnology. A number of papers provide useful overviews of the occurrences of footprints in various parts of the world. Stimulating papers relating functional morphology to gait are presented (for example, by Padian and Olsen). Several other papers provide good descriptive accounts of new track localities or describe old trackways for the first time (for example, Farlow *et al.*). The editors emphasize that the study of footprints is now ready to move from these more traditional topics and make new contributions to our understanding of paleoecology, biostratigraphy, and the behavior of extinct organisms. Reality, however, may argue otherwise.

The consensus is that footprints cannot be assigned to a taxonomic level finer than family. Despite this repeated admission, the editors in the introduction to the section on biostratigraphy (p. 199) insist that vertebrate tracks hold much promise in this field. Since most dinosaur families are long-lived, recognition of tracks at a family level can, at best, provide only a large-scale resolution to stratigraphic questions. For some questions, resolution no more precise than, for example, assignment to the Upper Cretaceous may be sufficient. However, the prospect that a tool limited to such large-scale resolution can make a significant contribution to

biostratigraphic problems seems unlikely.

A few papers include paleoecological conclusions. For example, in explaining the stratigraphic distribution of track types in the Triassic, Demathieu remarks that "the competition between the two groups of reptiles must have been relatively great." Competition is a phenomenon that most ecologists find difficult to detect at any taxonomic level. It seems highly unlikely that footprints, identifiable at best to the family level, can be useful in addressing the complex issue of competition, and such a discussion should be dismissed.

Another questionable point is raised by the discussion of prints attributed to swimming sauropods (for example, by Ishigaki). There exist three distinctly different types of trackways of sauropods that are considered to indicate swimming (see Lockley and Conrad's paper for references). Rather than consider these tracks as representing three different styles of swimming, Lockley and Conrad interpret them as underprints, a feature created in the subsurface beneath the original tracks. This interpretation may be correct, but the authors continue by stating that attribution of the prints to swimming sauropods will contribute to reviving the hypothesis that sauropods were aquatic (p. 124). Humans are certainly not aquatic, yet they can leave marks on lake or stream bottoms when they are in the water. The fact that sauropods may have likewise spent time in the water, swimming or otherwise, does not imply a preferred aquatic mode of life. A useful paleoecological point in the same chapter concerns the distribution of tracks through various depositional environments, drawing attention particularly to the numerous occurrences of tracks within dune facies. The potential of arid dune environments as a source of paleontological information is beginning to be recognized.

Several papers deal descriptively with eggshells. I am not clear why eggs are considered to be only "traces" of dinosaurs. Eggs with embryos certainly cannot be treated as such. If eggs are considered to be traces because they are composed of calcium carbonate rather than apatite as are bones, why should we not consider all of invertebrate paleontology the study of trace fossils? The reader is left with the impression that this book is intended as a bandwagon and the section dealing with eggshells is included to insure the field's popularity.

Overall the layout of the book is good, and there are an acceptably low number of typographical errors, unlisted citations, and poorly reproduced graphics. It may come as a surprise that so many people were able to contribute to a volume on this subject. The editors, however, should have exercised a

heavier hand in selecting papers or at least worked to raise all of them to professional standards. For example, the following blatant sarcasm (Agnew *et al.*) is included: "Field preservation, with the requirements of at least fencing the site and possibly roofing it as well may just be too expensive for busy research scientists to go seeking funds. Who can blame them when it is such a time-consuming activity to protect a site?" Such a tirade is entirely irrelevant.

I consider this a useful book, although I do not share the optimism of the editors that vertebrate paleoichnology is ready to stand on its own. Recognition of the abundance of vertebrate tracks is a different issue from their practical utility for detailed studies. I encourage those dealing with trace fossils and dinosaurs to become familiar with this volume, for it represents the state of the science of fossil footprint studies. I think the field has a long road ahead in determining its potentials and limitations. Perhaps the most appropriate remark within the book concerning this field is, "The journey of a thousand miles begins with a single step" (Lao Tse, p. 3). That is precisely how this volume should be viewed.

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## Quantum Electrodynamics

**Photons and Atoms.** Introduction to Quantum Electrodynamics. CLAUDE COHEN-TANNOUDJI, JACQUES DUPONT-ROC, and GILBERT GRYNBERG. Wiley-Interscience, New York, 1989. xx, 468 pp. \$59.95. Translated from the French edition (Paris, 1987).

Recent years have witnessed a renaissance of interest in atomic physics and its interplay with quantum optics. Laser, maser, and synchrotron sources have revolutionized the study of interactions between matter and radiation. More recently, the invention and perfection of traps for single atoms—honored by the Nobel prize a few months ago—have opened the door to stunning experiments on individual atoms interacting with light. Previously, only large ensembles of atoms could be dealt with, and a number of quantum mechanical effects were thus hidden. The new developments have stimulated a vast amount of research.

This book, which is a translation of a French work, presents the theoretical foundations for the description of atoms and radiation and their interplay. The underlying theory, quantum electrodynamics, is well covered by textbooks, but these text-