porate private sector. The corporations were able to overcome social and bureaucratic apathy, to mobilize community support for urban development, and to obtain some public funds thanks to favorable financial conditions and public investment in infrastructure.

This book is a useful one for anyone wishing to find out about recent trends in urban politics. It is of major value in analysing the contemporary political culture in American and British cities, and raises many questions about the relationship between entrepreneurial capitalism, city politics and community organizations at the end of the 20th century.

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HIGH TECH FANTASIES, SCIENCE PARKS IN SOCIETY, SCIENCE AND SPACE by Doreen Massey, Paul Quintas and David Wield. London and New York: Routledge, 1992.

This book presents a critical appraisal of science parks, which have become prominent elements in current strategies of industrial development. Although focused on British science parks linked with universities or research institutions, the scope of the book's arguments is much broader. A previous seminal work by one of the authors (Massey 1984) evaluated the association of industry, society and space, emphasizing the relation of industrial geography to wider social, economic and political structures. The present book follows a similar path and assesses the connection between science, society and space.

The book presents a portrait which is all too familiar also to the non-British reader. The euphoria concerning science-based industry has subsided in recent years. It is well established that the idealized models of Silicon Valley and Route 128 can not be reproduced simply by a defined policy mix. Downturns in science-based industry have indicated that it does not guarantee economic growth. However, while much of the evidence presented in the book has already been noted elsewhere, the book does present a new and broader perspective on a well researched phenomenon, and provides an innovative, clear and well-developed argument.

The study begins with a conventional evaluation of science parks according to their stated objectives: promote the formation of new firms, facilitate links and technology transfer between host academic institutions and park firms, create employment opportunities, and replace a 'sunset' existing local economy by 'sunrise' industries that enjoy a 'leading technological edge'. The results of the evaluation are mixed, although the authors tend somewhat to emphasize the empty part of the glass. This is done by comparing reality in the science parks with an utopian model, which does appear in promotional material but could hardly be expected to fully materialize.

The second chapter examines the basic model of science and technology as envisioned by promoters of science-parks. This model assumes a linear chain of successive activities, beginning with basic scientific research leading to applied and developmental research activities, followed by the development of new products and process ideas, evolution and testing of prototypes, and finally commercial production. Science-parks are intended to improve the link between basic scientific research, in which Britain performs well, and industrial technological innovation, in which the British performance is less strong. The book demonstrates convincingly that this linear model is over-simplistic. New ideas are generated and developed at all stages, and there is far more interaction between what the linear model views as separate stages of the innovation process. Hence, the idea of science parks is based on a model which does not apply in reality.

The authors then proceed to a critical evaluation of the social implications of science-parks, addressing broad issues related to the growth of high-technology industries and to the recent transformations in Western economies. Science parks assume a clear division of labor and are hierarchical and elitist in their social implications. Hence, they reinforce tendencies towards occupational and social polarization and, according to the authors, they are not sources of jobs for manual workers, women or ethnic minorities. While the status of academic workers and basic researchers in Britain has declined, science-parks represent the emergence of a new technological elite. The previous spatial-societal break between the basic science of academe and the commercial world of production is being replaced by a new separation within the world of production, between the shop floor and R&D. This separation reduces possibilities of innovation. The flexibility of the high tech workforce is also criticized. The flexibility in the lives of these employees, which is more perceived than real, imposes constraints on the lives of others—those who service them. This is not necessarily a new, desirable model of work relations, although it is frequently promoted as such in order to legitimize undermining unionized labor.

The next chapter evaluates the impact of science parks on local economies, and is based primarily on the case studies of the Cambridge and Aston science parks. While Cambridge Science Park has carried along on the area's general growth, the Aston Science Park initiative has attempted to escape from Birmingham's previous eras. The evidence suggests that this is not easy to accomplish. Finally, the book examines the role of the public purse in the development of science parks. Science-parks are in one way or another dependent on the state and, according to the authors, the fantasy of areas of 'success' being entirely dependent on private enterprise is indeed a fantasy. The book distinguishes three models: (1) The 'sunbelt' model where science parks tend to be private-sector funded, and are profitable as property investment. (2) The public-private mix where public sector intervention attempts to make the initiative attractive to private sector financing. (3) Exclusive public funding with the prime objective of regenerating the local economy. Where private sector investment is involved, the

problem is that profits from land may outweigh those from production, and conflicts can emerge between the objectives of science parks as property investment and as part of local economic strategy. In deprived regions, where public funding predominates, the provision of land is not a sufficient factor for industrial regeneration.

While recognizing that some science-parks have succeeded, the authors conclude that the basic assumptions underlying these initiatives are incorrect. Their policy recommendations stress the need to form a national technology strategy which promotes a more egalitarian approach and broadens the social base of scientific innovation. Investment in improved research facilities, improved funding and skill levels within the industry itself, should receive priority, rather than property investment in science parks. The authors stress that the unique local-historical circumstances which led to the success of Silicon Valley cannot be duplicated. Furthermore, the real need for the clustering of high technology operations strengthens the argument against proliferation of numerous small local attempts, rather than concentrating efforts in a few growth centers.

Taken as a whole, the treatise is a well written contribution to the field, successfully integrating original research with extant literature on the subject. The authors demonstrate extensive knowledge of the various approaches to the topic. The analysis is mainly qualitative and is supported by descriptive statistical data. Because its arguments are set clearly and forcefully, the book inspires discussion and critique.

I was not convinced that expectations from science parks are indeed fantasies, as the title of the book suggests. It is clear that the parks cannot fulfil all of their stated goals, and their impact on local economies may be marginal in most cases. However, public policies rarely lead exactly to the anticipated results. Despite the criticism, the reader gets the impression that science-parks are an experiment that has not failed, and indeed has some promise as a local development effort. Social polarization has much broader origins than the science park phenomenon, as the authors themselves acknowledge. In particular, the role of gender should be further investigated. A casual observation of bio-technology industries seems to hint that the role of women in these industries is greater than the authors suggest. Even the convincing critique of the linear model of innovation, which shows that the importance of proximity to academe is more myth than reality, may not persuade the policy maker, as long as the myth helps in accomplishing something. The authors' policy recommendations are quite conventional, particularly those dealing with a national technology policy, concentration of efforts in a few growth centers and direct encouragement of production. Some of these ideas have been tried in the past, and have suffered from their own problems and distortions.

The critique of the linear model of innovation, as well as the detailed social critique of the science park phenomenon, are perhaps the most important contributions of this book. Nevertheless, the strength of the book is primarily in its

broad, integrative perspective. The book is most useful for students, researchers and policy makers alike. It provides a reliable and highly readable text which does not only review the literature but inspires rethinking of some common assumptions on the impact of science parks in general, and the continuing decline of British industry in particular.

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GEOGRAPHIC INFORMATION SYSTEMS AND THEIR SOCIOECONOMIC APPLICATIONS by David Martin. New York: Routledge, 1991.

The function of a Geographic Information System (GIS) is to combine spatial images with topological information. It is designed to handle information regarding the spatial distribution of properties. It facilitates the collection of data regarding the spatial distribution of the activities of an organized society. The system includes a computerized visual map display for accessing, processing and analyzing data from a wide variety of sources. The system then integrates the data in a common location system.

Since the '80s, literature about GIS has appeared in the published proceedings of professional conferences, technical reports and several chapters of books that focus on other issues (e.g., remote sensing). In recent years we find more monographs that are dedicated completely to GIS. This book attempts to provide a concise and non-technical introduction to GIS, as well as a review of the developments and applications of such a system in socioeconomic studies.

This book is one of the first of a growing number of books that discuss the application of GIS technology to a particular field and discipline. While various general textbooks about GIS are now available and can serve as an introduction to the field at the graduate and undergraduate levels, very few books have answered the question 'what can GIS do and what is its value for a particular area of specialization'.

In the first chapters, David Martin provides a review of GIS history and applications and then moves on to a non-technical and rather simplified presentation of the main features of the System. The book discusses at some length issues regarding the database of the GIS, such as data processing and handling techniques. These are an important feature of GIS that can facilitate some of the preprocessing tasks in socioeconomic applications. To demonstrate this point, Martin gives an example of solving some data aggregation problems relating to the size of the basic area units.