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### 論文の内容の要旨

The author investigates technopoles from the point of view of the social sciences and, in doing so, takes a fresh approach to the study of technopoles. Her approach is fresh in the sense that conventional studies of technopoles have focused on planning and implementation processes with little concern for aspects of subjective perceptions of inhabitants and users of technopoles. Instead of pursuing well trodden paths of the study of technopoles, the author has penetrated into the ways and means through which inhabitants and users of technopoles have adjusted themselves to the technopole plans and, vice versa, the strategies inhabitants and users of technopoles have developed to modify these plans in pursuit of their own economic and political goals. She has done so through empirical research, including fieldwork in concentration on two cases, Tsukuba Science City and One-North, Singapore.

The cases represent different stages of the development of technopoles, with the planning of Tsukuba Science City starting in the 1960s, while One-North, followed only in the 1990s and not having been completed yet. Hence, the planners of One-North, could draw on the experiences that the planning and implementation of Tsukuba Science City had previously generated. Therefore, the author looks at One-North through the lens of the experiences that are on record from Tsukuba Science City. Despite the difference of the planning and implementation time, both cases present sufficient commonalities so as to warrant the comparison. Both technopoles emerged from the planning activities of the central governments proposing and implementing the plan. Both technopoles feature deeply structured physical and social environments that have been designed to shape the patterns of behaviour of inhabitants and users. There are also significant differences, the most important of them relating to size. While One-North has been designed to comprise, upon completion, three select sections, one focusing on biomedical sciences, the second on product and process development and the third on the media, Tsukuba Science City has been given a broader thematic scope and, by consequence, a larger size than One-North. Further differences follow from this, among them the greater variety of

spatial entities, the greater diversity of inhabitants and users as well as the more complex mix of tasks in Tsukuba Science City over One-North. Last but not least, One-North represents a concise local entity spatially defined mainly in terms of access roads, while Tsukuba Science City has emerged as an urbanized area of its own within Tsukuba City. Hence, the underlying categories of spatial structure differ in both cases warranting the comparative investigation into the impact of these spatial structures on the communities residing in and using either technopole.

The author has investigated these commonalities and differences through intensive fieldwork both in Japan and in Singapore. She has conducted in-depth qualitative interviews with carefully selected residents, users, planners, administrators and policy-makers with regard to both, Tsukuba Science City and One-North. She has also conducted follow-up research both in Tsukuba City and in Singapore to test the conclusions gleaned from the incipient stages of her fieldwork. She has used the approach of Political Economy in a cross-national comparative setting.

The thesis comprises eight chapters. Chapter 1 states the objectives of thesis, specifying the goal of investigating the gap between conceptions of planners of and attitudes of residents and users in the technopoles. The author hypothesizes that this gap is emerging in both cases and seeks to scrutinize its consequences for both planners on the one side and residents as well as users on the other. She thus posits her study at the crossroads of planning measures, cast into spatial structures, and the socio-spatial dynamics resulting from changing patterns of residence and use. On the planning side, she focuses on government agencies in charge of planning and implementing the processes of building the technopoles in both cases, while she carefully distinguishes between several categories of residents and users, differentiated in terms of length of residence, type of professional occupation and area of origin.

Chapter 2 contains the review of the relevant research literature. The author surveys key research work on technopoles, proving her argument that research on technopoles has conventionally been focused on technical issues of planning, implementing and operating technopoles, while being less concerned with social aspects of technopole operation. The chapter also includes a discussion of views concerning the differences and commonalities between technopoles and various types of suburban settlements, demonstrating the existence of technopoles as a distinct type of socio-spatial setting. An in-depth review of descriptions of the several technopoles existing in East and Southeast Asia has been added to complete the chapter.

Chapter 3 explicates the theoretical framework in which the author defends the social-science approach to the socio-spatial dimension of technopole operation. She starts out from the four principled types of connecting technopoles with urban environments. These are the establishment of technopoles as spatial and socially distinct administrative units of their own, without connection to existing municipalities ; the positioning of the technopole as the agency and area interconnecting a variety of neighboring municipalities ; the incorporation of the technopole into an existing municipality ; and the incorporation of one or more municipalities into the technopole. Both cases belong to the third type, with the specification that the municipality in the case of One-North is a city and a state at the same time. Hence, the author' s analytical framework puts emphasis on the implications that the difference in the hierarchical positioning of the agencies involved in planning, implementing and operation processes will have on the construction of the social space which residents and users have at their disposal. Whereas, in the case of Tsukuba Science City, the planning, implementing and operating processes have been scattered across an array of different agencies, ranging from the central government to local authorities, in the case of One-North, planning, implementing and operating processes have

been under the control of the central government and its affiliated agencies.

Chapter 4 provides a general survey of the cases. It scrutinizes the historical evolution of Tsukuba Science City from the origins of the planning process and includes most recent changes, such as the development of new housing districts in proximity to the Tsukuba Express train line. It posits the planning of Tsukuba Science City against established Japanese urbanism and analyzes the significance of the structural differences between the common patterns underlying Japanese cities on the one side and Tsukuba Science City on the other. The same chapter gives an overview of the planning and building of One-North to the extent that the technopole has been completed. It discusses the factors that separate the technopole from other parts of Singapore, while at the same time remaining part of a general master plan for Singapore as a whole.

Chapter 5 proceeds with the presentation of the findings of the empirical research about Tsukuba Science City. It reports on the in-depth interviews the author has conducted among residents and users of the technopole. It analyzes the various perspectives that residents and users have developed on Tsukuba Science City, ranging from long-term residents with roots in the municipalities that existed before the amalgamation of Tsukuba City to short-term visiting scholars and students. It concludes with the finding that still a large number of interviewees perceive Tsukuba Science City as an artificially constructed place. While they show appreciation of the environmental conditions prevailing at Tsukuba, they give low scores to social interactions and the communal integration among residents. Moreover, anxieties are increasing that the Tsukuba Express train line may accelerate the transformation of Tsukuba Science City into a suburban district of Metropolitan Tokyo.

Chapter 6 continues the analysis with the finding of the empirical research on One-North with a report on the in-depth interviews among the inhabitants and users there. It juxtaposes the perceptions of the research-oriented technopole users with the arts and crafts based interests of the residents in a section of the technopole. The author presents convincing evidence that there is a gap between the perspective of the planners, considering this residential area (Wessex Estate) as an integral part of the technopole, and the perspective of residents perceiving their area as separated from the technopole. The author also reports anxieties among these residents that the technopole may transform their community, should interactions between residents and users intensify.

Chapter 7 moves to the perspective of planners and policy-makers and investigates the perception of uniqueness of both technopoles and ends with a summary of the core commonalities and differences of both cases. It shows that uniqueness has been experienced in different ways in either case. Tsukuba Science City has been constructed and operated as an entity of its own, even though in its original design it had been part of planned system of technopoles. One-North is being planned as part of a larger high-tech corridor as envisaged by the central government for Singapore as a whole. While the planners in Singapore seek to brand their technopole with the claim that the combination of science and art should be recognized as One-North's specific feature, planners at Tsukuba are shown to be focused on emphasizing environmental friendliness of both the layout and the operations of the technopole. The gap between planners' conceptions and residents' as well as users' attitudes has emerged more powerful in One-North than in Tsukuba Science City. By contrast, the integration of residents and users of Tsukuba Science City into the municipality of Tsukuba City has emerged as more difficult than in One-North

Chapter 8 wraps up the dissertation with a summary of conclusions. These offer a balanced though critical perspective on the socio-spatial dimensions of technopoles. It has been difficult to forge communities of residents and users through administrative processes of planning, implementing and operating the technopoles. This finding suggests, in the view of the author, that the potential for political influences on community building is limited, specifically in the long term. The socio-spatial dynamics of the use of technopoles modify the functions that planners had originally been addressed to the technopoles. These modifications in turn widen the gap between conceptions of administrators and attitudes of residents and users. New social spaces emerge that stand in contradiction against the views of the planners.

### 審 査 の 結 果 の 要 旨

The study is original and highly innovative in methodological as well as material respects. The author uses fieldwork techniques of inquiry to create rich narratives that give voice to residents and users of technopoles. In doing so, she takes a great step forward beyond conventional technological plan reviewing processes that have often been based on in-house evaluations. She demonstrates the salience and even prime necessity of basing research on the perceptions and experiences of residents, users and other actors involved in the planning and operation of technopoles. Moreover, the author points to the implication that technopoles evolve into communities with resulting changes of their layouts, operational tasks and the socio-political and economic frameworks into which they have come to be placed. She also establishes the distinctness of social change in technopoles as the major factor of transformation. She does so by showing that technopoles as planned urban environments feature community-building processes evolving along lines that run contrary to the ideas and programs of planners. Last but not least, the author presents strong theoretical arguments that technopoles should be investigated from the point of view and with the methods of social sciences, if they are to yield appropriate outputs.

論文審査及び最終試験の結果に基づき、著者は博士（国際政治経済学）の学位を受けるに十分な資格を有するものと認める。