Structuring Dynamic Growth Through Inherited Urban Form: Case Study from Chiang Mai, Thailand

ABSTRACT

The aim of this paper is to expose the mismatch between the dynamic urban growth taking place in Chiang Mai, Thailand, and the Comprehensive Plan conceived to control this phenomenon. Contemporary planning strategies in Chiang Mai, despite the evidence of an increasingly diffused and mixed urban condition, persist in focusing on abstract models that conceptually and politically separate urban from rural without paying attention to the region's fine-grained and hybrid existing structure. Four decades of comprehensive planning have not acknowledged indigenous settlement patterns of an urbanized countryside consisting of intricate community based and self-reliant organizational systems built around shared water management, dense rice cultivation and craft production, that still strongly structures the regional territory. Nor has planning kept pace with the constantly evolving forms and increasing scale of contemporary real estate development. The paper explores instead the extent to which Chiang Mai's rapid growth could be effectively structured through development of design and planning models that recognize the resilience of its inherited urban form and its capacity to balance diverse demands at multiple scales. Possible alternative pathways will be discussed.

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KEYWORDS

Chiang Mai, urban growth, land use, comprehensive planning, ecology, *muang fai, desakota, campagna urbanizzata,* isotropy, resilience, metacommunity

DYNAMIC URBAN GROWTH

Before the 1950s, Chiang Mai, Thailand was a compact city, with a small population, limited communication or land use specialization. Like Angkor Thom, Ayutthaya and Sukhothai, the royal, walled city was an administrative and ceremonial center, with commercial markets located by the river outside the city walls, and dense peasant villages spread throughout the

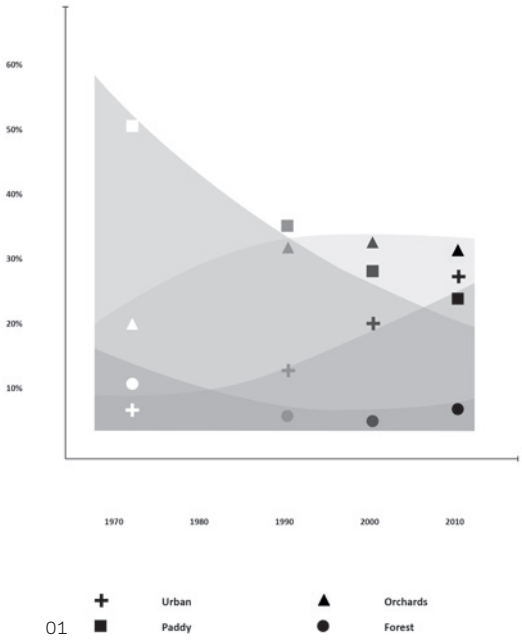

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Figure 1: Land-use change in Chiang Mai, 1973-2009.

fertile plain. In 1796, when the city was reoccupied following Burmese invasion, the three major daily markets, Warorot, Tonlamyai and Nawarat, where moved outside the city walls and away from the administrative center to form a modern commercial zone.[1] This long history changed dramatically after World War II when Thailand began a policy of national development, with Chiang Mai as an important regional center.

Thai scholar Sanyay Yarnasarn made the first detailed study of Chiang Mai's modern urban growth since the 1950sduring his doctoral studies at Columbia University in the early 1980s. His dissertation "Land-use pattern and land-use change in Chiang Mai, Northern Thailand" compared the built area of Chiang Mai in the years 1954, 1969 and 1980. The city's built area dramatically accelerated resulting from rampant speculation with little land use control.[2]

Starting from the late 1950's, national government policies drove the formation of two new growth centers in the city: Chiang Mai University (1964) to the west and the relocated Provincial Administrative Center (late 1970's) to the north. In the same years new facilities such as bus terminals and additional educational institutions also started to become important nuclei of urban expansion, overshadowing traditional growth centers such as the daily markets.[3]

Analysis of land use change patterns between 1973 and 2009 reveals a notable increase in the speed of development. While urban land increased from 7½% in 1973 to 26% in 2009, paddy fields decreased from nearly 50% to 20½%.[4] This phenomenon wasn't related only to urbanization, but also reflected new market-based agricultural practices as is evident in the development of orchard land. The most significant outcome of these emerging dynamics was a reinforcement of what has always been present in the intermountain valleys of Northern Thailand, a territory characterized by strongly intertwined agricultural and urban land use.

In recent years global real estate developers joined the influx of capital from Bangkok to take advantage of the natural and cultural resources of the ancient Kingdom of Lanna, historically a buffer state between Laos, Burma and Siam. National Development Plans led to the construction of superb tourist infrastructure and a pro-growth climate that triggered highway construction and multiple "mega-projects" such as sports and convention centers, a night safari and a floral exhibition park. Western technologies and Anglo-American planning models have been employed to position Chiang Mai as an important center in the Greater Mekong Sub-region and to exploit renewed international connections to Yunnan, China, Laos and Myanmar.

The scenic and cultural value of Chiang Mai has made it an extremely desirable destination for international resort travelers, cultural tourists, golfers, ex-pats, international retirees and weekenders from Bangkok, Hong Kong and Singapore. The superhighway to Bangkok and the two ring roads constructed since the 1980's have spawned real estate speculation in widely dispersed gated suburban subdivisions and new resort style shopping

centers creating a diffuse city that connects mountain retreats to older valley agricultural towns.

MODERN PLANNING IN CHIANG MAI

In Thailand, the central government's Ministry of the Interior through the Department of Public Works and Town and Country Planning (DPWCP) administers Comprehensive Plans in support of five-year National Economic and Social Development Plans. The major objectives of conducting the comprehensive plan are: (1) to formulate Chiang Mai province as the city of "life and prosperity that possesses Lanna identity with strong communities"; (2) to promote Chiang Mai province as the economic and transportation center connecting the cluster of the Mekong Sub-region and South Asia; (3) to promote efficient agricultural industry that maintain diversity and modern management systems and (4) to support the province as an exceptional tourist destination.[5]

The first Comprehensive Plan in Chiang Mai was started in 1965 and projected 25 years into the future (1965-1990), but was not completed until 1969. The introduction of Western planning strategies, technology and methods fed by central government investments in modernization, led to the inevitable adaptation of Chiang Mai to Western ideas and patterns to which, at that time, the inhabitants offered little resistance.

Thailand administrative system is highly centralized. All planning policies are set-up by bureaucrats in Bangkok. Decentralization is poor and characterized by a top down approach. Job opportunities and quality schools in rural areas are not sufficient. Following the Bangkok model, Chiang Mai city has become a primate city in the northern region where all economic activities are concentrated, while other areas remain economically underdeveloped.[6]

In his dissertation, Yarnasarn created the first land use plan for Chiang Mai which formed the basis for modern town planning, and introduced three theoretical city models from North American urban geography: concentric zoning, radiating sectors, and multiple nuclei satellites, through which he attempted to analyze the existing land-use pattern and project the future urban growth of Chiang Mai following standard practice in the U.S..[7] Despite the Western conceptions embedded in these models, tools and plans, Chiang Mai's urban-agricultural hybrid nature resisted all these rigid and abstract classifications.

The 1984 Comprehensive Plan imagines an ideal concentric city model with a central business district surrounded by high, medium and low-density residential areas within a preserved agricultural periphery. Exceptions to the rigid concentric scheme include large governmental and institutional areas including Chiang Mai University and the non-American presence of a square royal enclave occupying the geographical center of the plan, but not functioning as a central business district. The superimposition of the 1980 land use map with the 1984 Comprehensive Plan highlights a clear inconsistency between the uniformity of the plan and the mixed pattern of dense residential patches interspersed with substantial areas under cultivation

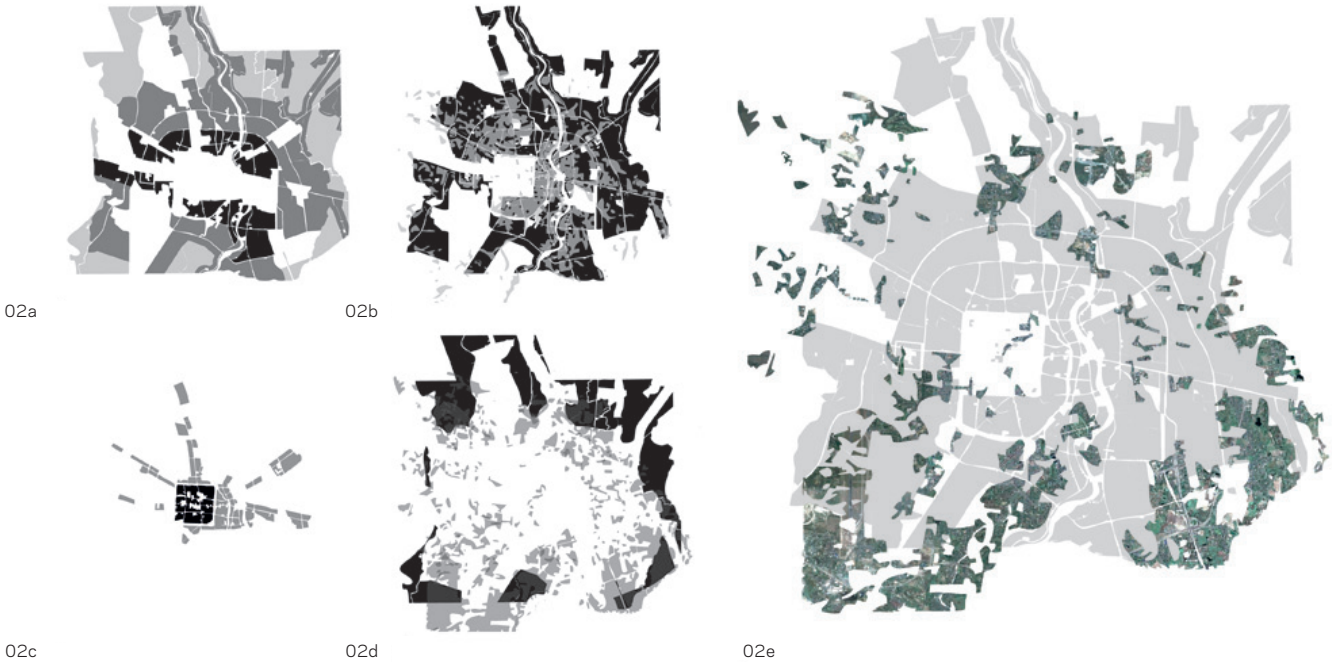


Figure 2: Analysis of 1984 Chiang Mai Comprehensive Plan (CMCP) showing the mismatch between centralized plan and a mixed reality on the ground.

a. 1984 CMCP concentric zones.

b. Superimposition of 1984 CMCP *residential land* with *residential areas* from 1980 land use/land cover map.

c. 1984 CMCP radial sectors.

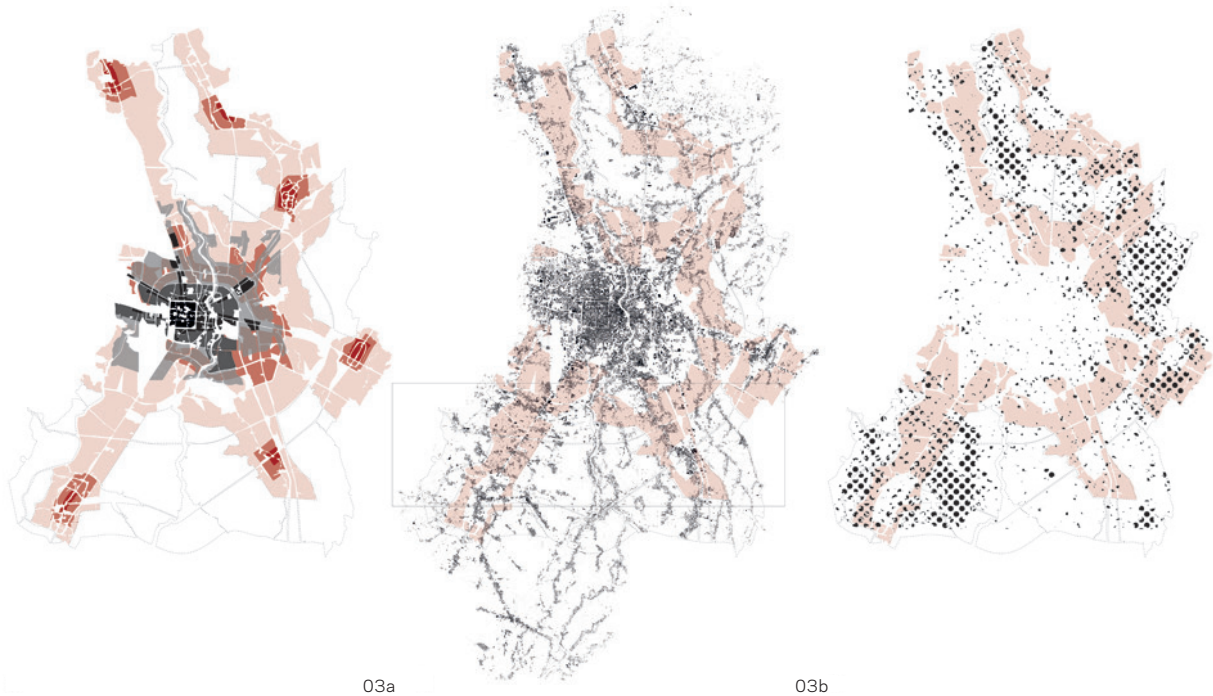
d. Superimposition of 1984 CMCP *rural and agricultural land* with *cropland and orchards* from 1980 land use/land cover map.

e. Superimposition of 1984 CMCP area with *cropland and orchards outlines* from 1980 land use/land cover map and 2009 Google map.

or in transition. The city's commercial/residential and urban/agricultural mixtures were both ignored by the Plan.

The first revision of the Chiang Mai Comprehensive Plan (1989) extended the plan area over four times to about 430 square kilometers, encompassing seven districts and forty-nine sub-districts of Chiang Mai Province. This new plan was based on a satellite development scheme that attempted to develop secondary growth centers in addition to the formerly bounded municipality. As a result, satellite centers were developed including one municipality and seven new sanitary districts. The middle and outer ring roads were constructed as a road network for facilitating transport between rural communities and peri-urban areas. The second revision of the plan (1999) was validated for five years (1999-2004) with an extension for two more years until 2006. The third revision (2007-2012) was conducted to meet the Chiang Mai provincial vision and the strategic plan to designate Chiang Mai as a regional center of economic growth and transportation, linking with countries in the Greater Mekong Sub-region (GMS) and South Asia.[8]

Land use surveys conducted by Department of Town and Country Planning between 1973 and 2009 demonstrate the conceptual gap between the concentric logic of the plan and the diffused and mixed reality on the ground. The decision to expand the boundary of the municipality to include satellite towns in the revisions only enlarges the misfit between an imagined concentric and radial sectoral city within an agricultural province and the extremely complex urban/rural mixed condition on the ground. The ineffectiveness of the plan is made clear by the fact that modern hyper commercial centers are not built within the zoned satellite centers and subdivisions continue to be built within agricultural zones.



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The Comprehensive Plan both at city and provincial levels has also been inconsistent in implementation. The Town Planning Act of 1975 defines the comprehensive plan as "the outlines for urban-rural development in property benefits, transportation, public facilities, service and environmental status,"[9] which implies enforcement at the city level, not at the provincial level. Although the Chiang Mai DPWCP regional office acts as a representative of the central government, it does not have the legal authority to enforce the Comprehensive Plan. In fact the Chiang Mai Municipality and the Provincial Administration Office, the implementing agencies at the local level, should conduct enforcement. However the Municipal and Provincial officers are reluctant to take full responsibility in implementing the plan because the regulations provided by the plan may discourage or obstruct the investment from entrepreneurs.

A building boom is expanding the urban footprint of Chiang Mai even in the midst of a global economic decline. Every week signs and sales offices for new residential developments go up along one of the radiating highways or ring roads circulating the city. New business centers vie for commercial tenants, and several new resort style shopping complexes will be completed in the next few years. The upcoming developing pressures ask for a complete rethinking of traditional planning strategies that are clearly unable to deal in concert with the fertile agricultural planes, national development priorities and global real estate speculation.

An era of speculative development is pressing ahead which will require strategic thinking at a regional scale in a far-seeing and comprehensive manner. Instead of the impossible task of forcing a dynamic territory to conform to an idealized plan, it would be more desirable to devise a plan that better reflected the complex condition of the reality on the ground.

Figure 3: 2009 CMCP revision of the 1984 CMCP showing mismatch between CMCP satellite city and reality on the ground.

a. Superimposition of 1984 CMCP (black/dark) and greatly enlarged 2009 CMCP (red/light).
b. Superimposition of 2009 CMCP prescription for low density residential area (light red), 2009 CMCP prescription for rural and agricultural land (dotted outline) and built environment (2005). Black rectangle localizes figure 3.
c. Superimposition of 2009 CMCP prescription for low residential area (light red), 2009 CMCP prescription for rural and agricultural land (dotted outline) and paddy fields (2005) in black.

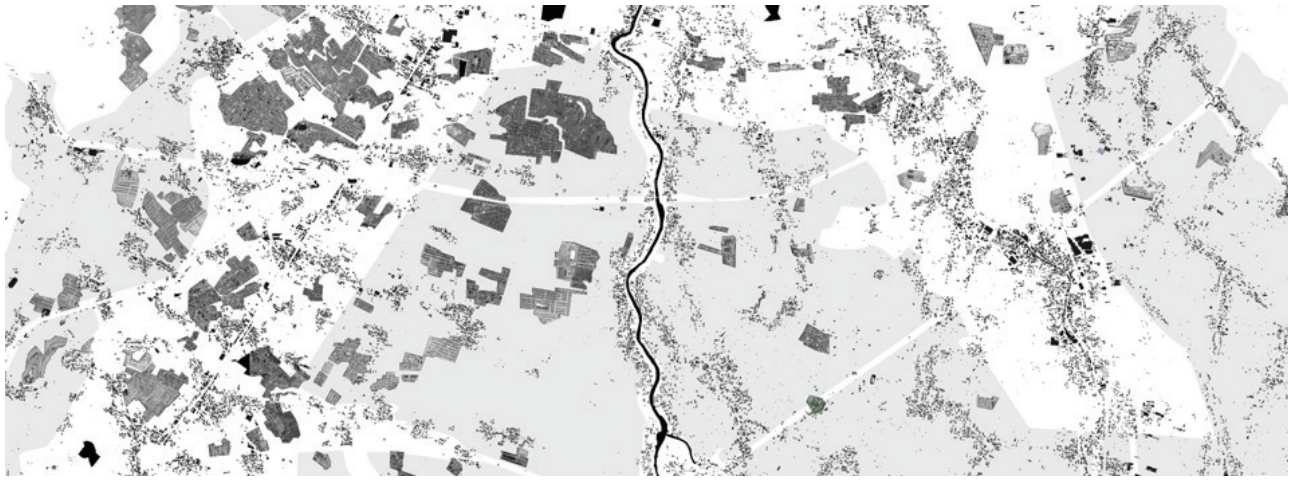

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Figure 4: Detail of municipality edge (localized in figure 2-b) showing mismatch between 2009 CMCP Plan and reality on the ground. Built environment (2005), new subdivisions (2009) and 2009 CMCP prescription for agricultural land in light grey.

DESAKOTA AND CAMPAGNA URBANIZZATA

With the proliferation of new forms of inexpensive transportation and communication devices, such as the two-stroke motorbike and the cell phone, the route to development for many rural people worldwide is not migration to big cities, but the in-situ urbanization of secondary cities, towns and agricultural villages. Our research indicates that the mismatch between rapid growth and Comprehensive Planning in Chiang Mai has not been the result of a gap between Eastern and Western conceptions of the city, but the persistence in the conceptual separation of urban and rural. Two models, which look beyond the urban/rural divide, can form the basis of a more critical understanding of the complex land use dynamics in Chiang Mai: T. G. McGee's desakota pattern of mixed agricultural and non agricultural activities adjacent to and between urban cores in Indonesia[10] and Giuseppe Samonà's vision of campagna urbanizzata, the urbanized countryside of the Veneto region of North Eastern Italy.[11]

McGee has forcefully advocated for a reevaluation of the accepted policy distinction between rural and urban in Asia. He does not see urbanization following a pattern of spatial separation between agricultural and non-agricultural economies, nor does he see an inevitable outcome of population concentration in linked urban places with low-density suburbs separated by agriculture and leisure space as Jean Gottmann identified in the Northeast U.S. In contrast to Gottman's megalopolis, McGee identifies "heavily populated regions of intensive, mostly wet-rice agriculture based on a mixture of 'skill oriented' and 'mechanical' technology inputs."[12] These areas next to and between urban cores in Asia contain population densities that are frequently much higher than in the suburban areas of the North America. This juxtaposition of urbanized agricultural land and core cities "permits demographic densities similar to urban areas over extended zones of intensely cultivated rural areas located adjacent to urban cores."[13] This complex interaction poses a challenge to sectoral approaches to development planning.

McGee's description of the emergence of desakota type urbanization matches the reality of the Chiang Mai region: densely populated

small-holder (wet rice) cultivation that involves careful water management and agronomic practice; the pronounced seasonality of the monsoon; uneven seasonal demands for labor; off season search for non-farm employment where farm is never separated from non-farm labor; well developed road infrastructure conducts considerable interaction through accessible transportation routes; increase in nonagricultural activities; extreme fluidity and mobility of population through easy, cheap transportation; intense land use mix of agriculture, cottage industry, industrial estates, suburban developments, and other uses side by side; female participation in non-agricultural economy; invisible or grey economies shielded from state authority; rural not urban cheap labor; highly integrated "transactive" environments; symbiotic raise in agricultural and nonagricultural activity; global economy and international division of labor - in the case of Chiang Mai structured around leisure, tourism and retirement.[14]

In the late 1960's during the making of the first Plan for the Veneto Region, its coordinator Giuseppe Samonà, proposed the idea of campagna urbanizzata (urbanized countryside), a "system of service locations technologically and culturally advanced, that makes living in the rural areas similar to living in a town".[15] This concept represented the first Italian attempt to manage growth at the regional scale and proved to be a lucid reading of what was happening at the local level when the urban pattern of città diffusa (diffused city)[16] was first emerging. Samonà refused to use simplifying and leveling terms such as "suburban system" or "city-region" and proposed instead the idea of a "region-city", or an "isotropic territory" equally open to urbanization. In his vision for the Region, Samonà combined a truly polycentric model of a network of cities, towns and villages within the hierarchical system of the main transportation routes. The coarse grain isotropy aimed to balance economic resources and thus the built environment. In fact, what he had in mind was not a mere spatial configuration but also a social "distribution of opportunities"[17]. Today, in this territory, the widespread construction of disparate, yet highly urban elements onto a predominantly rural social fabric deeply muddles the traditional categories of town and countryside. As in the desakota model the outcome is a lattice of closely interlinked, co-penetrating rural/urban livelihood, communication, transport and economic systems where multifunctional production (food, energy and ecological networks) is coupled with multifunctional use. "Farmland, for example, has a role as space for leisure and for living"[18]).

Unfortunately Samonà was part of that enlightened intellectual milieu that, due to a lack of communication with the political and bureaucratic establishment never completely managed to carry out its purposes. The 1969 Plan was never adopted and planning regulations continued, for many years, to work on pre-established and often obsolete concepts. Urban Planning however was forced into a long-term "trial and error" process that in the end proved the strength of Samonà's legacy, collected in recent years by the work of important scholars such as Bernardo Secchi and Paola Vigano. The project of isotropy, as a deep "acknowledgement of territorial specificity"[19] could be a solid foundation to build effective and smart design hypothesis also in other diffuse water-based territories that contain a comparable

social overhead capital. The mixed and rural-based urban system emerging in Chiang Mai Valley is certainly one of those.

EMBEDDED KNOWLEDGE IN CHIANG MAI

Most references to the urban inheritance of Chiang Mai refers to the 700 year old walled and moated city founded as the "new" capital of the Kingdom of Lanna by King Mangrai in 1296.[20] The royal city sits in an intermountain valley, a long narrow channel along the Mae Ping that balloons into a fertile plane southeast of the old city as the river swings to the southwest. The Ping Valley was once dominated by subsistence wet paddy rice farming consisting of small landholdings, socially knit together by a network of community based water management called muang fai. This system probably predates its first historical recording in the Mangrai's 13th century Chronicles as part of a royally conscripted irrigation project for state paddy production. While many scholars have championed the importance of the muang fai system as a social or cultural ecology, here we examine its importance in structuring the inheritance of Chiang Mai's urban form at a regional scale, much as the desakota and campagna urbanizzata mentioned above.

For centuries, rice cultivation in the alluvial plane and surrounding foothills of Chiang Mai has been skillfully irrigated to capture monsoon rainwater in a complex weir and canal system with a remarkable social organization. Those who constructed the first weirs established authority over subsequent branching of the system downstream as well as new upstream constructions. The technique evolved into a remarkable social and cultural ecology that included a complex system of self-governance. The amounts of water where distributed in relation to land holdings, labor inputs as well as through rituals honoring the spirit of the weir and canal system.[21] This community based self-sufficient system proved to be remarkably flexible over the centuries that saw the rise and fall of the Lanna Kings in relation to Burmese and Siamese dominance. In times of economic growth, the system could expand through added branches and the creation of new paddy, while in times of contraction of royal power it was able to maintain its autonomous self-reliance at the village level.

During the shift from subsistence to market economies with the centralization of the Siamese state in the second half of the 20th century, the muang fai network accommodated a proliferation of orchard and vegetable production. The flexible labor pools and fair-usage decision-making are still a robust system for both unexpected environmental and economic emergencies.[22] Muang fai, when considered as inherited urban form, has effectively structured contemporary development in a silent and unrepresented way, in contrast to the ineffectiveness of modern planning in Chiang Mai.

After World War II, in parallel with efforts to introduce modern city planning rules from Bangkok, the Royal Irrigation Department began a major restructuring of water management in the Chiang Mai Valley in the service of commercial agricultural production. The construction of large scale reservoirs and diversion canals, new technologies and centralized management, unfortunately was not conceived to be systemically connected to the locally

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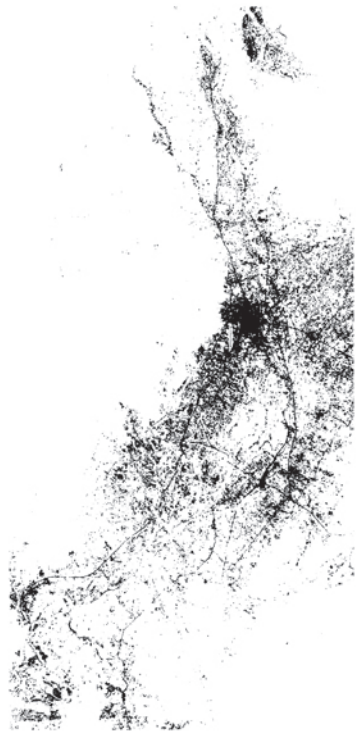

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managed dispersed and prolific muang fai system, but rather overlaid onto a autonomous territory and centrally managed technocratic mechanism.

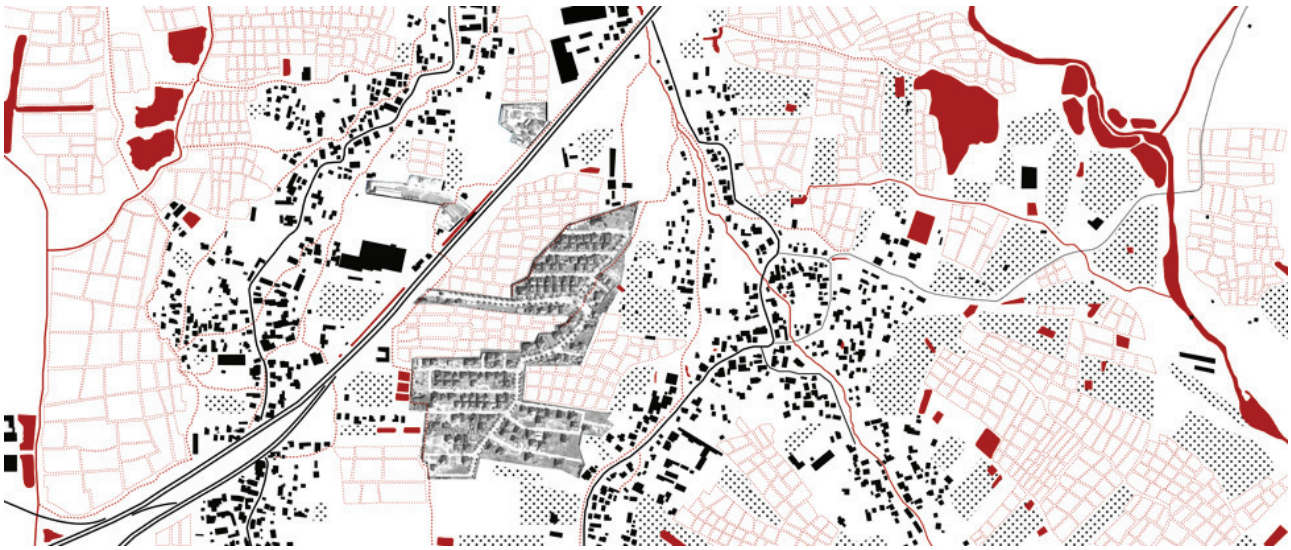
MUANG FAI AS METACOMMUNITY

While Chiang Mai City Planning dreamed of an imaginary bounded and centralized satellite city of land use controls, the territory was given over to the Royal Irrigation Department's commercial farming and flood control technologies. The Department of Public Works Town and Country Planning on one side and the Royal Irrigation Department on the other, divided the territory into urban and rural administrative sectors, while persistent local ingenuity, holding onto a robust body of comprehensive territorial knowledge was often kept at a distance. Large swathes of land comprised of a juxtaposition of paddies, villages and orchards still help mitigate the impact of recent development by maintaining a strong mixture and porosity of uses throughout the territory.

Beyond mitigation, the muang fai territorial practice comprises resilient and adaptable participatory methods of addressing the challenges of rapid urbanization and climate change by instilling self-reliance. Community based territorial management in Chiang Mai is well equipped not only to rise to future challenges confronting the city, but to be a model for other rapidly developing cities without clear divisions between urban and rural.

How can Chiang Mai continue to balance local autonomy, national level decision-making and global commercial development? Metacommunity theory, borrowed from ecology, is relevant to our purpose to structure

Figure 5: Polycentric built environment in
a. Veneto Central Plain and
b. Ping River Valley



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jointly managed systems, since it aspires to build integration across multiple scales and within highly varied cultural and economic environments. The theory challenges the view that communities are localized and isolated. Instead, it provides a spatial understanding that distinguishes between localities based on environmental constraints and interactions, and regional dispersal.[23] An effective urban plan should be structured on the polycentric, locally self-determined, resilient logic embodied in the muang fai culture that pays attention to the spatial heterogeneity and dynamism of local neighborhood patches while connecting these with regional fluxes that affect ecosystem dynamics. Rather than maintaining a hierarchically centralized region that attempts to control the separation between urban and rural, the territory should be organized around locally managed patches with a clear understanding of regional capacity and limits to support urbanization in all its diverse future and inherited forms.[24] ◆

Figure 6: Detail of local mixed land use in Chiang Mai. Juxtaposition of rice paddies, villages, orchards and recent developments (2009).

FIGURE REFERENCES

Figure 1: Table produced by the authors. Sources: Sanay Yarnasarn, 1984

Figure 2: Map produced by the authors. Sources: 1980 land use/land cover map, Sanay Yarnasarn; 1984 CMCP, 2009 Google map.

Figure 3: Map produced by the authors. Sources: 1984 CMCP; 2005 land use map, Somporn Sangawongse; 2005 built environment map, Chiang Mai Town and Country Planning; 2009 CMCP.

Figure 4: Map produced by the authors. Sources: 2005 built environment map, Chiang Mai Town and Country Planning; 2009 Google maps; 2009 CMCP.

Figure 5: Map produced by the authors. Sources: Provincial Veneto Ctr map, 2005-land use map, Somporn Sangawongse.

Figure 6: Map produced by the authors. Sources: 2009 Google maps.

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