Shifting Geographies?
The New International Division of Labour in Architecture

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ARCHITECTURE AND THE COLONIAL METAPHOR

The word *nègre* has a long history in architecture. In the XIX century, it was used at the Ecole des Beaux-Arts in Paris to indicate younger students at work on the submission drawings of their older colleagues.[1] The term transferred over to Beaux-Arts-influenced institutions around the world, where *niggering* - as Denise Scott Brown (1978:32) recounts - became synonymous with working for a senior (and thus more powerful) student.[2] The colonial undertones of such an expression were real and yet metaphorical. Niggering implied a sharp division of responsibilities between 'visible' designers (or design coordinators) and 'invisible', remotely harnessed, labour; but it reflected seniority levels more than social disparities or geo-political subordinations.

In reality, a critical difference always existed between the spatialization of production in architecture and the spatialization of production in manufacture. Whilst the industrializing world could organize its processes by deciding which factors to play with — land, capital or labour — thus bringing workers to central cities or moving factories to distant colonies, architectural practice could never follow these patterns: drawings bound it to its work-place.[3]

This condition was intrinsic to the nature of the task: the building process requires architects to produce, submit and review design information constantly; each design step must be formalized, discussed and agreed upon with a panoply of project participants coming from different directions. The lack of operative autonomy always made it difficult for architectural firms to operate beyond the territorial limits of physical transactions (essentially the space allowing drawings to be exchanged in a reasonable time). Almost invariably, limits were expanded by establishing a satellite office or associating to a 'local' firm in charge of documentation and site administration.

The difficulty to divide *plant* (the design office), *process* (the drawings) and *product* (the building project) meant that, historically, cost minimization strategies had to be organizational rather than geographical: architectural practice was a local industry, the employment base of which coincided with the area of operation. While manufacturing could be moved to low-wage regions, architecture kept its overheads under control through low capital investment and employment mobility, indeed the traditional balance-wheel of professional practice.[4]

THE ROLE OF INFORMATION TECHNOLOGY

In the last 15 years, things have changed significantly. Mostly thanks to new communication and information-exchange technologies, distance is being erased from the table of architectural constraints. CAD equipment is used in over 90% of Australian, North-American and European offices, and by sharply increasing numbers of firms in Asia. Fiber-optic network connections have not only reached every industrial labour region in the world, but are rapidly expanding in developing countries, where government agencies are being set up to address, specifically, technological barriers to trade.[5] International telephone costs and satellite utilization charges have fallen tenfold between 1970 and 1990 - year by which the price of fax machines had dropped to 25% of what it was in 1980.[6]

Whilst computers allow for better standardization and more efficient production of drawing information, electronic communication links enable the immediate transfer of this information across space. This very same element enables the extension of the workday: the product of daytime activity in St. Louis can be transferred - at night - to India's mornings, and so forth in a theoretically endless loop. As William Mitchell (1999:102) aptly points out: "The combination of rapid electronic delivery with convenient time zone differences allows an effective new form of twenty-four-hour shift work. International architectural and engineering design firms can, for example, establish offices in cities approximately eight hours apart, then electronically hand off CAD files from one to the other in a continual circle around the globe."[7]

Within this context, it is not surprising to read that the percentage of US firms transferring drawings electronically has risen dramatically, going from 35% in 1996 to 83% in 1999.[8] At least in theory, the old need for physical contiguity between areas of drawing production and areas of drawing definition-and-use has been obliterated.

In practice, numerous examples exist of firms relocating all or part of their architectural production facilities in developing countries. These include US architectural firms opening design documentation shops in India, Indonesia and Mexico; US engineering firms using draftspersons in the Philippines and South Korea; the Californian university outsourcing structural consolidation drawings to Czech office locations, the Singaporean firm farming construction tender packages out to Manila, and more recently - in light of favourable currency fluctuations - Australian offices being contracted by Californian firms for the production of working documents.

But are these isolated cases, or should they be considered the harbingers of a new, emerging structure of architectural production? Are there advantages to be gained from the acquisition of geographic mobility, which could make the organization of professional practice different from what it has been like for a long time, and perhaps closer to the international division of labour that characterizes many other industries and service sectors? And if the latter is true, what could the consequences of this situation be? Could the globalization of design workforce weaken and eventually replace regional professional traditions? Could it alter or displace the traditionally local structure of employment in architecture by making cheaper workforce available? Could it lead to a new kind of professional internationalism, with building design increasing its technical homogeneity around the world, or could

it rather engender new forms of techno-economic colonialism, with richer countries determining the profile of the architectural workforce in poorer ones?

THE COST OF ARCHITECTURAL LABOUR

Responding to these questions requires some familiarity with the overheads of professional practice. According to the figures provided by the Royal Australian Institute of Architects, wages and other labour costs account for over 50% of the annual operating budget of Australia's most efficient architectural firms.[9] Trading margins, in this context, amount to approximately one-fifth of overall office costs.[10] This makes the potential advantage of relocation clearer. All other things remaining equal, moving practice from a higher-wage to a lower-wage region would result in substantial savings: a 20% reduction in wages, for example, could yield a 40% increase in gross revenues.

Reality is that professional wage differentials between locales can be much sharper than that. Empirical information gathered with the help of Melbourne University students indicates that, at current exchange rates, an experienced Indonesian architect working in a large firm in Jakarta is expected to earn up to five Australian dollars per hour. This can go up to six dollars per hour in the Sri Lankan capital of Colombo (where, however, an experienced draftsperson in practice for many years is not going to earn more than 40% of that amount). By comparison, the average starting salary for an Australian graduate in 1997 was eleven dollars per hour, senior architects earned up to over twenty-six dollars per hour, while documentation specialists commanded over eighteen.[11] In the United States, the starting salary for an architectural graduate was over ten US dollars per hour in 1993;[12] this translates to about fourteen Australian dollars at the time, and over nineteen dollars at current exchange rates.[13] In 1997, the American Salary Survey administered by the American Institute of Architects showed that, on average, experienced and senior architects were expected to earn between sixteen and twenty-two US dollars per hour - at least six times more than their Indonesian and Sri Lankan colleagues when considered vis-a-vis present currency values.[14]

Relocating the most labour-consuming tasks of architectural practice - design development and documentation - to the areas indicated would allow Australian or US firms to produce drawings at a fraction of their current cost and obtain multifold gains in net revenues. The colonial terminology of past academies could become a reality of future architecture, with places such as Philippines, China, India, and Indonesia, pressured by high demographic growth and labour oversupply, ready to play the part of the new *nègres*.

If this were the case, however, a place like Australia could suffer a significant reduction in internal professional employment. If one applied the figures provided by the Australian Bureau of Statistics to the structure of practice delineated by the national Institute of Architects and the rates of remuneration reported by the professional union association, APESMA, the country could experience the relocation of up to 6,000 jobs between architects and drafts-persons, and a loss of 280 million Australian dollars per year in local salaries.[15]

ELEMENTS OF RELOCATION: PREMISES, EQUIPMENT AND TRANSACTIONS

Labor costs, of course, cannot be regarded in isolation. The hypothetical relocation of professional tasks to lower-wage areas implies rent of premises, purchase of equipment and increase of transactional activity, all of which carry their own cost. According to some practitioners, when these are factored in, the economic advantages of relocation are drastically reduced.

A detailed analysis of these marginal costs is beyond the scope of this paper. But one can still provide indicative figures that may help assess the situation.

Rent of premises in Australian practice accounts for seven-to-fifteen percent of office costs. At the end of 1997, prime office rental values in Jakarta were approximately one-third of those in Sydney, resulting in a difference of twenty-four US dollars per square metre per month between the two real estate markets.[16] Labour savings, in this case, could be integrated with significant savings in capital costs. (Rent, on the other side, does not always follow labour advantages. According to the same information source used for Jakarta and Sydney, office rents in Hanoi, Bombay, Ho Chi Minh City and Shanghai were comparable to Sydney, while Beijing and New Delhi were higher.)

Equipment, by contrast, does not entail geographical comparisons: it requires additional capital. A Melbourne University colleague calculated that, at current Australian prices, the establishment of a remote workstation in South-East Asia requires approximately 22,000 Australian dollars per seat in initial costs and 3,500 in ongoing costs. The installation of shared office facilities such as scanning, printing, plotting and tele-conferencing equipment, back-up power supply, network/license servers, and dedicated connections could require over twice as much the 'per-seat' investment. Operating costs would add other 25,000 Australian dollars per year. In the labour scenario described earlier, these expenses could be absorbed by the difference in local annual salaries between three Sri Lankan architects and three Australian ones.

The weight of the salary item in this equation is reinforced by the fact that, in the average budget of Australian firms as calculated by the local institute of architects, 'equipment, travel and communication' expenses make up only one-sixth of labour costs.[17] This means that even the doubling of such expenses would be absorbed by a mere twenty-percent reduction in wage levels.

If the rent of additional premises and equipment does not offset the advantage of wage differentials, the critical factor in determining the viability of regional relocation becomes 'productivity'. And for many professionals, productivity is related to the cost of transactional activity.

According to the definition provided by Oliver Williamson (1985:1), a transaction occurs when 'goods or services are transferred across a technologically separable interface.'[18] The theory of the firm developed by Williamson assumes that transactions carry costs which ultimately determine the organizational form of production. These costs result from the activities that firms must undertake in order to acquire knowledge, services or products that are external to their sphere of governance: price discovery and negotiation, physical exchange of documents, monitoring of performance, etc. The higher the degree of technical or physical correlation between functions, or the need of coordination between labor processes, the higher are the costs involved in recomposing separated functions.[19]

In principle, the design process is the perfect embodiment of this theory. Its nature, densely defined by uncertainty, interpersonal exchanges and subjective decisions, makes it difficult to spread it geographically and culturally: too many resources would be wasted in interpreting, developing and correcting unexpected or unfamiliar information, especially across different socio-technical milieux.

On the other hand, the decentralization of the design process is not automatically linked to a decrease in the quality of the service, the product or the workforce. While it is true that the international division of design labour has been associated to firms with a strong commercial emphasis, ready to favour the low cost of project delivery over the quality of design, it may also well be that resorting to cheaper labour markets allows firms to apply higher standards in selecting technical workforce (as far as entry experience, for one), and to offer conditions of employment that are more stable (and thus professionally more qualified) than those offered within advanced capitalist societies such as

the United States, where the average rate of annual turnover amongst architectural firms in the last fifteen years has been between 15% and 20%.

In addition, there may no longer be any significant difference between intellectual or high-skilled workers across the world. While several Asean universities have grown into first-class institutions, North-American and Australian universities and practitioners are also training the future workforce of competitive regions in massive numbers. At the moment, some of the top students in design and technology at Melbourne University are from Sri Lanka and Malaysia. In a few years, when the same university will be preparing (as per plan) equal numbers of aspiring architects from Australia and South-East Asia, it will be difficult to hold out education (and technical knowledge in general) as the exclusive asset of certain regions.

At that point, the position articulated by Robert Reich in *The Work of Nations* (1991), that 'symbolic analysts' from industrially advanced societies have a comparative advantage over their colleagues from developing regions due to their superior educational background and job-training opportunities, may no longer be true. The services of this very work category, which Reich defines as those "who simplify reality into abstract images that can be rearranged, jiggled, experimented with, communicated to other specialists, and then, eventually, transformed back into reality" (Reich 1991:178), could indeed be procured and traded worldwide.[20]

As Michael Lind states in *The Next American Nation*:

"Within a generation, the burgeoning Third World population will contain not only billions of unskilled workers, but hundreds of millions of scientists, engineers, architects, and other professionals willing and able to do world-class work for a fraction of the payment their (North) American counterparts expect. (...) In these circumstances, neither better worker training nor investment in US infrastructure will suffice..."(p. 203)[21]

CONCLUSION

The bottom line of this discussion is that, regardless of its current, relatively limited dimensions, the geographic subdivision of the design process may become a defining element of future architectural practice: it contains the seed of a fundamental restructuring of professional work and does not present structural barriers to its further implementation. And given that it seems to hinge on the use of specific technologies - linked to digital information and naturally inclined to lighten the burden of geographic distance - there is no reason to believe that it will not develop alongside the development of such technologies.

For this reason, the architectural debate should start addressing the issue of globalization seriously in its various components. Trying to understand, for one, which social and disciplinary objections can be raised at the structure of work outlined; what questions the geographic division of labour produces in relation to design development, from a technical as well as a linguistic standpoint; what standards should be upheld, not only graphically but also in terms of labour practices; what procedures, if any, can or should be adopted to control the work carried out under such conditions; whether educational institutions should adapt their curriculum to regional collaborations. What, in the end, 'technology transfer' means, and what elements it is possible, or advisable, to transfer.

NOTES

[1]David Van Zanten, *Designing Paris: the architecture of Duban, Labrouste, Duc, and Vaudoyer* (MIT Press, Cambridge, Mass, 1978).

[2]Denise Scott Brown, "Learning the wrong lessons from the Beaux-Arts," *The Beaux-Arts. Architectural Design*, 48 (1978): 11-12.

[3]The idea of XIX-century students completing their submissions on the *charrette* collecting their work around Paris perhaps best epitomizes the spatial link between 'work' and 'place' which has long characterized building design.

[4]See: Thomas Fisher, "Can this profession be saved?" *Progressive Architecture*, February (1994); Thomas Fisher, "The Intern Trap. How the Profession Exploits its Young," *Progressive Architecture*, July (1994): 69-73. Philip Langdon, "Faces of a Downsized Profession," *Progressive Architecture*, June (1995).

[5]See: Industry Commission, *Telecommunications, Equipment, Systems and Services*. Final inquiry report (Canberra: AusInfo, 1998); and Productivity Commission, *Review of Legislation Regulating the Architectural Profession*. Draft Report (Melbourne: May 2000).

[6]The World Bank, *World Development Report 1995 —Workers in an integrating world* (New York: Oxford University Press, 1995): 51.

[7]William Mitchell, *E-topia:"Urban life, Jim — but not as we know it"* (MIT Press, 1999).

[8]P. Dalal, "Internet use at firms accelerates," *AIArchitect* (June 2000).

[9]Sandra Draganich, *Architectural Office Profile and Benchmarking* (Melbourne: The Royal Australian Institute of Architects, 1999).

[10]Trading margin is defined as "the proportion of practice revenue earned after all overheads are paid but before principals' salaries and other remuneration are paid". (Draganich, 1999:11) When these salaries are accounted for, the impact of labour savings on the firm's actual profit is even higher.

[11]APESMA, *Architects Remuneration Survey Report 1997* (Melbourne: APESMA Architects Branch, 1997).

[12]Center for the Study of the Practice of Architecture, 1994. *More jobs for architecture graduates this year*, Press release (Cincinnati: CSPA, May 1994).

[13]This investigation was developed as part of the author's Melbourne University Research Development Grant Scheme 2001 program: "Foreseeable exodus? Australia's architectural employment in the digital information age". Findings and discussion are being published.

[14]AIA, *American Salary Survey 1997*. Washington: AIA Press, 1998). The gap indicated opens further when considering differences in the application of labour standards. Five years ago, Czech and Polish engineers with many years of experience were producing complex technical drawings remunerated by piecework for North-American clients, at one-tenth the cost of the same information, if produced and paid at official wages and work hours in the United States.

[15]See: Australian Bureau of Statistics, *Selected Technical Services Australia, 1992-93*. Cat. no. 8676.0 (Canberra: ABS, 1993); Sandra Draganich, *1998 Profile of the Architectural Profession*, Melbourne: The Royal Australian Institute of Architects, 1998); APESMA, *Architects Remuneration Survey Report 1998/99* (Melbourne: APESMA Architects Branch, 1998). The estimate provided is only indicative and possibly overdimensioned; it includes non-principal qualified architects and non-qualified fee-earners from a technical population of approximately 20,000, working in firms with more than five employees and with over 80% of their revenues coming from non-residential work

[16]Brooke International Real Estate Advisors Worldwide, *Asian Property Market Survey* (Hong Kong: Brooke International, April 1998).

[17]See: Sandra Draganich, 1999.

[18]Oliver Williamson, *The Economic Institutions of Capitalism: Firms, Markets, and Relational Contracting* (New York: The Free Press, 1985).

[19]Williamson's work builds on Ronald Coase's definition of the 'firm' (for which his author was awarded the Nobel Prize in Economics in 1991); this rose to prominence in the late 1930s with the publication of the essay "The Nature of the Firm," *Economica* (1937, 4): 386-405. Coase's point was that transaction costs can be reduced by giving one party authority over the terms of trade. Authority is what eventually defines a firm: 'a form of coordination of economic activity by administration, rather than by contract on an exchange market.' Williamson built on Coase's insights on the cost of price discovery and negotiation to broaden the spectrum of transactions that should be considered in the theory, but also clarified the centrality of behavioral patterns to the discussion.

[20]See Robert Reich, *The Work of Nations* (New York: Alfred A. Knopf, 1991). In describing the type of workers affected by such relocation, Robert Reich distinguishes between three work categories: routine production services, in-person services, and symbolic-analytic services. Routine production services entail repetitive tasks, such as data processing, and are not place-specific. They can thus be moved. In-person services are similarly repetitive but involve person-to-person contact, a characteristic which makes them regional. Symbolic-analytic services include all the problem-solving, problem-identifying, and strategic-brokering activities. They do not enter world commerce as standardized things. (...) Symbolic analysts solve, identify, and broker problems by manipulating symbols. (...) The manipulations are done with analytical tools, sharpened by experience. (...) Like routine producers, symbolic analysts rarely come into direct contact with the ultimate beneficiaries of their work" (p.178). Reich's model fits global architectural practice well: in-person operators on site and with clients, symbolic analysts in the design studio, and data processors in the drafting room. The problem is to see what percentages of the two last categories can be affected, in reality, by the geographic reorganization of labour.

[21]Michael Lind, *The Next American Nation: The New Nationalism and the Fourth American Revolution* (New York: Free Press, 1995).