considered.[6] His analysis allows an ordering of the roles of local organizations and the State in regulation, advisory services, direct development and operation. Add to this some of the insights to group and individual action provided by sociology, plus the concepts of an organization like those suggested by Boulding,[7] and fairly useful work can result. It may not look much like economics to some but it explains the allocation of water as it actually happens.

[6] M. E. Dimock, *Administrative Vitality,* Harper, New York, esp. pp. 1-2 and part IV.

[7] K. E. Boulding, *The Skills of the Economist,* Howard Allen, Inc., Cleveland, 1958, esp. Chapter III, "Organization and Communication."

DISCUSSION: RURAL-URBAN COMPETITION FOR WATER

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Ten years ago a Presidential Commission created a stir with the statement that water productivity might sometimes be 50 times higher in industry than in agriculture. If this were generally true, and applied to marginal as well as average productivity, it would certainly dominate any discussion of rural-urban competition for water. It is significant that neither paper develops such a theme. Most cities have good access to water. I applaud and second Dr. Smith's point that most water conflicts which are heralded as rural-urban struggles are basically interregional ones.

Thus in the celebrated dessication of Owens Valley it was not the farmers who warred on Los Angeles, which had requited them handsomely. It was the urban landholders of Bishop who demanded compensation for loss of their trade, the secondary benefit of irrigated agriculture, which moved South along with Owens water. Much of the water went to promote farming in Los Angeles' trade territory.

I feel more reservations about Dr. Smith's thesis that "the big shift will center the competition to inter- or intra-agency conflicts." My reservations are:

1. The earliest irrigation districts have included cities from 1887, and have presided over serving their growing needs ever since. Rural-urban water allocations made inside this sort of administrative framework are not a new development.

2. The big interregional transfer agencies are developing only new waters, large in volume but marginal in value F.O.B. their sources. The sacred waters of high location value flow on as of yore under ancient and honorable priorities, unvexed by any administrative control, often unvexed to the sea.

3. The internal decision-making machinery of interregional agencies has little influence on policies, which are set and often applied to individual decisions by ultimate power centers in the State assembly, the courts, the Water Rights Board, and (on Federal projects) the Congress. Basic allocation decisions are interregional compromises battled out in the unreapportioned, gerrymandered legislature. California courts, for their part, seem disposed to treat interregional aqueducts as natural watercourses on which customers establish vested rights on the old pattern.The Water Rights Board shares this viewpoint.

4. Postwar years have witnessed a strong resurgence of localism, with the Bureau of Reclamation sharply chastened and reduced to an agency for administering court orders. The modicum of short-run administrative flexibility achieved along the Friant-Kern Canal is a pale reflection indeed of the Bureau's onetime aspirations. These, in turn, were less ambitious than the State plan of the early 'twenties which envisioned a completely integrated administration of all Central Valley waters including even the untouchable Tuolumne, Kaweah, and Kern Rivers.

With these reservations, Dr. Smith is still correct that the growth of large agencies is an important change. I would emphasize the increased control exercised, not by administrative machinery, but by the legislature and Congress. This change presages a relative weakening of established cities in competing for undeveloped water. Previously the big cities had an effective monopoly of interregional transfers because of the high capital cost and long deferral of benefits, which farm finances could not bear. This made for an aggrandizement of established urban nuclei which imported remote waters to develop their dependent trade territories. But now State and Federal agencies are transferring remote waters to less wealthy fringe and rural areas, which should lead toward some decentralization of economic growth in California.

My third reaction to Dr. Smith's paper is that it accords the *status quo* more sympathy than it merits. He raises the question whether institutions inhibit water transfers, and in several passages registers substantial satisfaction with their performance. Volumes could be written on the diseconomies inherent in our water institutions; here I will mention a few peculiar to rural-urban competition.

Cities grow out scatterwise. They claim water to serve the actual growth *plus* the undeveloped lands within some outer boundary of growth *plus* a comfortable surplus to cover all conceivable safety factors and to signalize their great expectations of destiny and adorn them with conspicuous waste. Thus they preempt water from agriculture and lesser cities long before they can use it. The law smiles on this, authorizing cities to appropriate waters for hopeful future growth and to jump the

unworked claims of farmers who are up to the same game but lack the finances to begin developing factitious "uses" so far ahead of need.

This would be bad enough, but worse, the waters that cities reach for first are not those that social economy would prescribe. Ideally they should use first the waters most convenient to them, and least so to others. But our water law, which grants rights of use free of charge to the first comer, sets up a reverse incentive, a sort of principle of comparative disadvantage. The handier water is to others, the more urgent it is for you to capture it now, preclusively, while the getting is good. Local waters you keep in mothballs for the 21st century. Neither extravagance costs you nearly as much as it does society, for the State grants you the use— or the disuse—of its valuable waters free of any charge.

Meantime urban settlement expands beyond the bounds of established water service agencies so that new agencies arise to develop new waters, again laying claim, if they can, to enough water for ultimate full development.

The result is urban preemption of waters that is premature by whole generations. I offer San Francisco as a horrible example. She reached out early for the Tuolumne River, which is 170 miles from home with a significant vector in the direction of Los Angeles. Her filings date from the first years of the century, but the waters never reached her until 1934. At this point she put many of her local sources on standby, where they remain today. The city's own water use now, some 60 years after the Tuolumne filings, falls short of the mean annual flows of her fully-owned local sources in Alameda and San Mateo Counties, not to speak of untapped sources nearby in Santa Cruz, Marin, Sonoma and Mendocino Counties.

On the Tuolumne San Francisco claims 400 million gallons a day (mgd), of which she has installed capacity for 160 mgd and actually takes about 120 mgd (74 mgd inside the city and 47 mgd outside.) She left valuable power drops unexploited until 1956, and acted then only when faced with their imminent loss. She blocks every move to transfer surplus Tuolumne waters southeast toward areas of shortage. The waters that do flow through her Hetch Hetchy aqueduct run counter to the general Statewide need for southeasterly movement of water and must be offset by costly reverse transfers by other agencies. All in all one finds here precious little net contribution to human welfare.

Turning to the paper of Gertel and Wollman, the authors have already catalogued its shortcomings far beyond my poor power to add or to detract. They present some important and interesting data which I hope they may have future opportunities to synthesize a little more tightly. I suspect that what they very modestly describe as the shambles of their

failure may have greater salvage value than they have yet taken from it, if they would reconcile themselves to the necessity for drawing the most valid inferences one can from unsatisfactory data.

I like the sentiment of their penultimate paragraph wherein they visualize a sort of market for water operating within some framework of public control. My own thoughts are moving in the same direction, and from Dr. Smith's recommendation that we explore the use of flexible contracts and subcontracts I judge that his are also. On this basis I take hope in the thought that our economizing instincts are pushing us all toward compatible conclusions.