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CHADWICK AND DEMSETZ ON COMPETITION AND REGULATION*

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"I have gone through your proof . . . But I do not well see where your principle is to stop or at what place you would draw the line of demarcation between it and conflicting principles."

J. S. Mill to Edwin Chadwick
Letter of January 26, 1859

INTRODUCTION

IN a much-cited article which appeared in this *Journal,* Harold Demsetz questioned the necessity of regulating industries that have scale economies in production. In an assault on the usual treatment of natural monopoly Demsetz argued, utilizing a principle of "competition" which he attributed to Edwin Chadwick (1800-1890), that "the asserted relationship between market concentration and competition cannot be derived from existing theoretical considerations."[1] Demsetz proposed that formal regulation of utilities would be rendered unnecessary where governments could allow "rivalrous competitors" to bid for the exclusive right to supply the good or service over some indefinite "contract" period. In such a system, as Demsetz shows, the existence of natural monopoly does not *imply* monopoly price and output given (1) an elastic supply of potential bidders; (2) prohibitive collusion costs on the part of potential suppliers.

Though Demsetz names Chadwick as an early sponsor of the principle of "competition for the field" (as opposed to the traditional notion of "competition within the field"), he totally neglects Chadwick's own formulation of the principle, first published in 1859.[2] The present paper analyzes Chadwick's formulation in historical context. Our examination brings to light several interesting and crucial considerations concerning the application of the prin-

* We would like to thank Professors Robert Tollison, Richard Ault and especially Tom Saving for comments on earlier drafts of this paper.

[1] Harold Demsetz, Why Regulate Utilities?, 11 J. Law & Econ. 55 (1968).

[2] *Id.* at 57, refers to Edwin Chadwick, Results of Different Principles of Legislation and Administration in Europe; of Competition for the Field, as Compared with Competition within the Field of Service, 22 Royal Stat. Soc'y J. 381 (1859) [hereinafter referred to as Results of Different Principles].

ciple which Demsetz has rediscovered. First, it will be shown that Chadwick gave the principle a far wider range of application than that contemplated in the modern theory. Indeed, a new political and economic structure might be required to implement the "Chadwick principle" and logically the principle itself gives no indication of where its use ends, as J. S. Mill cunningly indicated. Government ownership and contractual management of all monopolized means of production, for example, can be justified under Chadwick's formulation, whereas the modern theory seems to identify a range of applicability only in certain "natural monopoly" situations. Where, for instance, does the competitive (that is, "rivalrous") principle of "contract management" end and reliance on market functioning in a milieu of competition (situationally defined) begin? Are we forced to identify only those monopolies resulting from scale economies as proper objects of "competition for the field"? Logically, as a careful reading of Chadwick reveals, the principle holds for any monopoly owing to *any* source.

Second, a more complete exposition of Chadwick's notion of competition reveals that the efficiency of the contracting process in obtaining a "competitive" solution, an issue which has received attention in recent literature, is somewhat irrelevant.[3] That is, even if an optimal contract may be specified, the necessity for regulation is not eliminated. Chadwick argued that the principle of contract management *supported* the case for government control in a form which was potentially more intricate and sophisticated than that entailed in traditional cost-price regulation.

[3] Lester Telser's comments on the proposal give us an indication of how Demsetz's contribution has been interpreted thus far. In an initial comment, Telser utilized a model of spacial pricing to demonstrate that the situation envisioned by Demsetz did not lead to an efficient allocation of resources. In effect, Telser argued that with free entry of bidders, the price and output solution to the process would be the familiar Chamberlinian tangency between the demand schedule and average cost. Thus, while the bidding process described by Demsetz eliminates monopoly pricing, it does not result in a marginal cost-pricing solution, which Telser deems the essential criterion. Since underproduction would still be present, Telser concluded that the regulation of some natural monopolies is still necessary. L. G. Telser, On the Regulation of Industry: A Note, 77 J. Pol. Econ. 937 (1969). In a reply to Telser's critique, Demsetz defended and extended his position with a more complete discussion of the bidding-contracting process. He provided several examples whereby the resulting price of the good supplied is equated to its marginal social cost of production. That is, Demsetz demonstrated the possibility of obtaining an efficient (that is, marginal cost-pricing) solution, given the proper contract specification and negotiation procedure. Thus, Demsetz's final argument is that his system may give rise to inefficiency, because of the difficulty of devising suitable contracts, but *not* because of an absence of competition. Harold Demsetz, On the Regulation of Industry: A Reply, 79 J. Pol. Econ. 356 (1971).

Telser, in a final rejoinder, remained unconvinced and found no reason to accept this "merely because according to some vaguely described bidding process it yields no profit to the winning supplier." Lester G. Telser, On the Regulation of Industry: A Rejoinder, 79 J. Pol. Econ. 364 (1971). Hence, the key issue of the Demsetz-Telser debate appears to center around the feasibility of devising a suitable system of contracting which allows the marginal cost solution to be obtained. A more complete exposition of Chadwick's notion of competition, and the nature of the contracting process it entailed, puts this controversy in a new light, making the disagreement over the feasibility of an optimal contract a relatively minor one.

Thus, the issue, as we see it, becomes one of choosing *among* alternative types of regulatory schemes rather than a choice between intervention or *laissez faire*. Indeed, when a consideration of property rights is brought into the discussion, full implementation of the Chadwick-Demsetz principle raises profound questions about the very nature of *laissez faire* and freedom of enterprise.

In the following section, Chadwick's original statement and application of the principle in both natural monopoly and imperfectly competitive situations will be presented and analyzed. Next, we discuss Chadwick's institutional views on the process of contracting and the regulation involved in managing its specifications. The concluding section offers an assessment of the principle, its application, and its importance to economic theory and regulation. While essentially in the domain of the history of economic thought and analysis, the present paper concludes that Chadwick's principle may have stark implications for the role of government in any contemporary social and economic system.

Chadwick and the Principle of Contract Management

Edwin Chadwick, sanitary reformer, lawyer, economist and statistician, was one of the two or three most influential and informed policy makers of nineteenth-century England.[4] A driving force behind the Poor Law revisions of 1834, health and sanitary reforms of the 1840's and 50's and railroad regulation of the 1860's, Chadwick was hated and feared by many but was befriended and even encouraged by J. S. Mill.[5] The latter connection grew

[4] Chadwick's role in the history of public administration is well known. The astonishing range of social causes with which Chadwick involved himself are outlined in his massive vita: see R. A. Lewis, Edwin Chadwick and the Public Health Movement 1832-1854, at 380-95 (1952). Chadwick's involvement in Poor Law reform (and as Secretary to the original Commission) helped make him one of the most hated public figures of his day, and his personality did not help matters. Lewis, in what is clearly a majority opinion, describes him: "He was a bore, a really outstanding specimen of bore in an age when the species flourished. He was too keenly aware of his own merits; while, on the other hand he had no patience with fools, and his definition of a fool was a very wide one, taking in, as it did, nearly everybody who disagreed with him. With a wholesome suspicion of power wielded by others he managed to combine a boundless confidence in the benefits of power in his own strong hands, and every scheme drawn up by Edwin Chadwick seemed to contain a provision at some point for giving more power to Edwin Chadwick. . . . He stirred up a great deal of mud, and it is a tribute not a reproach that so much of it was thrown back at him by his critics." *Id.* at 3-4. Also see Maurice Marston, Sir Edwin Chadwick (1925).

[5] Chadwick was J. S. Mill's life-long friend as the latter's correspondence reveals, and Mill hardly ever missed an opportunity to promote Chadwick and his interests. By 1827, and earlier, Chadwick was on very good terms with a group of younger utilitarians (George Grote, J. Eyton Tooke and others) thanks to Mill's offices; see The Earlier Letters of John Stuart Mill, 1812-1848, in 12 Collected Works of John Stuart Mill, 16-20 (Francis E. Mineka ed. 1963). Mill backed Chadwick for Parliament against another Liberal candidate, occasioning a national controversy; see Pedro Schwartz, The New Political Economy of J. S. Mill 136 (1972). But other aspects of their friendship are interesting. Chadwick as the epitome of fact gatherers attracted Mill, and the latter deferred to Chadwick on any questions Chadwick had researched. Mill, on

out of a common early involvement with Jeremy Bentham. Chadwick was, in fact, Bentham's last secretary and its seems likely that his early reform beliefs received Bentham's *imprimatur* as proper utilitarian policy.

By 1859, Chadwick had turned his attention to an immense number of economic and social policy issues. Out of this policy involvement he had begun, as early as 1838,[6] to evolve a new principle of competition, that is, one based on unorthodox grounds. The pervasive errors in legislation and administration in England were due, in Chadwick's view, to a master defect in economic science and principle,

> . . . or, in other words, public ignorance that there are different conditions of competition—sound and unsound; that whilst there are conditions of competition which ensure to the public the most responsible, the cheapest and best service, and which are requisite to improvements of the greatest magnitude, there are conditions of competition which create inevitable waste and insecurity of property, which raise prices and check improvement, which engender fraud and violence, and subject the public to irresponsible monopolies of the worst sort.[7]

Competition "for the field" means that "the whole field of service should be put up on behalf of the public for competition,—on the only condition on which efficiency, as well as the utmost cheapness, was practicable, namely, the possession, by one capital or by one establishment, of the entire field, which could be most efficiently and economically administered by one, with full securities towards the public for the performance of the requisite service during a given period."[8] But the regrettable fact was that, with the exception of some minor local implementations, his principle had been almost entirely neglected in England.[9] Chadwick believed that utilization of his principle would yield great economies in many areas and he supported this belief with examples from no fewer than ten product and service industries. An interesting and crucial aspect of these "applications" is that more than half of them are drawn from industries which are by no means "natural monopolies" in the traditional sense of declining average cost. Thus, an investigation of

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the other hand, read many of Chadwick's manuscripts supplying much needed corrections on matters of grammar, form and style; see, for example, The Later Letters of John Stuart Mill 1849-1873, in 15 Collected Works of John Stuart Mill 591-92 (Francis E. Mineka & Dwight N. Lindley eds. 1972), from which the epigram of the present paper is quoted.

[6] Results of Different Principles, at 384. In his protracted lobby for the consolidation of the railroads under his principle, Chadwick attributes an early, rudimentary statement of it to the great English engineer, Robert Stephenson: see Edwin Chadwick's Address on Railway Reform 107-09 (National Association for the Promotion of Social Science, 1865); or R. B. Ekelund, Jr. & Edward Price, Edwin Chadwick and Nineteenth Century Railway Economics (unpublished manuscript, Texas A. & M. Univ. 1976).

[7] Results of Different Principles, at 384.

[8] *Id.* at 385.

[9] The principle of contract management, Chadwick constantly reminded his readers, was not being neglected in the rest of Europe and he marshalled cases and statistics—to the point of redundancy—from France, Belgium, the German States, Prussia and other nations to prove his point.

Chadwick's reasoning by *source* of economic inefficiency is central to an understanding of the doctrines' applicability. For convenience, we divide Chadwick's traditional market inefficiencies into two types: (a) those whose likely source is declining average costs, that is, the "natural monopoly" or Demsetz case, and (b) those whose source is some form of imperfect competition due to an inelastic region of the demand schedule.

Natural Monopoly and Contract Management

Chadwick was much concerned, as was Mill,[10] with the conditions of water supply and related public health problems in the city of London. The root of the problem, Chadwick's investigation revealed, was a natural monopoly situation accentuated by competition within the field of service. The field was divided among "seven separate companies and establishments, of which six were originally competing within the field of supply, with two and three sets of pipes down many of the same streets, but which had become multiform monopolies, doling out supplies of water of inferior and often unwholesome quality, insufficient in quantity, although positively nearly three-fifths of it ran to waste during the intermittent periods of service."[11] Though Chadwick had estimated that consolidation under the principle of "contract management" might save a full 100,000 pounds per year, constituting a fund for explorations and development of new sources of supplies, his proposed administration of London water was rejected owing, he claimed, to the protest of vested interests. The result of retaining traditional competition in these markets over the decade of the 1850's, Chadwick concluded, was insufficient improvements in water quality and methods of delivery, higher charges to consumers and unsafe returns to stockholders.

A bold contrast to the London water situation could be observed in the city of Paris where municipal gas companies competed under an almost identical situation of natural monopoly. Chadwick reported that an investigation into the cost and supply conditions of several independent gas companies was directed by the Government "in behalf of the people" and charges were found to be excessive. The municipal government then undertook consolidation on the basis of Chadwick's principle to good effect. Chadwick claimed that

> . . . the service had been, in effect, as far as circumstances permitted, put up to competition for the whole field, and the consolidation of all the establishments had been effected under the best available direction, with the result of a considerable improvement of the quality of the gas supplied, a reduction of 30 per cent. upon the

[10] See J. S. Mill, The Regulation of the London Water Supply (1851) reprinted in Essays on Economics and Society, in 5 Collected Works of John Stuart Mill 431 (J. M. Robson ed. 1967). Though Mill considered use of the Chadwick principle, he rejected it due to a distrust of joint stock companies and recommended, instead, a centralized board of Commissioners. See Pedro Schwartz, John Stuart Mill and Laissez Faire: London Water, 33 Economica 71 (1966).

[11] Results of Different Principles, 387.

previous cost to the private consumers, of 40 per cent to the public consumers, arising from reductions of establishment charges, and an improvement of 24 per cent. in the value of the shareholders' property.[12]

Chadwick also claimed to have evidence of two gas companies in northern England whose prime cost, when competing separately for the whole field of service, was three shillings per 1,000 cubic feet. Implementation of his plan of competition for the whole field resulted in one establishment supplying gas at a prime cost of 1 shilling, 9 pence per 1,000 cubic feet.

Chadwick vigorously applied his principle to the railroad monopoly. In the 1860's he became the leading exponent in England of the nationalization of the railroads. Chadwick's argument, of course, did not support government's *operation* of the railroads. In numerous publications on the matter of nationalization, Chadwick appealed to the success of his principle in other areas of public goods supply noting that "it is a dogma of mine that the fact of a thing being done is cogent evidence of its possibility."[13] Citing the government's successful implementation of a postal system by contract management as a support for nationalization, Chadwick makes clear his objections to the traditional competitive principle in the railway industry:

The chief defaults are first, those against unity of management for efficiency as well as economy;—secondly, exactions on necessities, by means of monopolies, instead of payments, merely for service, without profits;—thirdly, charges in disregard of an economical principle of increasing ratios of consumption with diminishing ratios of price by means of monopolies.[14]

In Chadwick's view, then, railroads were a natural monopoly which were characterized by a disunity of management and wasteful, redundant competition. But he was unwilling to allow a coincidence of ownership and administration. In the best tradition of *laissez faire* Chadwick argued "that the Government is utterly incapable of any direct management of manufactures, or of anything else of an administrative character," while championing public ownership.[15]

[12] *Id.* at 388.

[13] Edwin Chadwick, Comments on the "Proposal that the Railways Should Be Purchased by the Government," 14 Soc'y 198, 201 (1866).

[14] *Id.* at 203.

[15] *Id.* at 202. We believe that characterizations of Chadwick as a rabid opponent of *laissez faire* are wide of the mark. It is the case that Chadwick, in company with Richard Jones, Walter Bagehot and other British historicists, rejected classical *methodology*. His "method" was "empirical" rather than "deductive," and he staunchly opposed doctrinaire Malthusianism and the glib social prescriptions of Ricardianism. But he retained a belief in the efficiency of competition, self-interest and self-reliance when society was provided with additional institutional constraints. (These constraints, as we argue in the conclusion to the present paper, may require a rather curious interpretation of *laissez faire*). Samuel Edward Finer in his excellent biography, The Life and Times of Sir Edwin Chadwick (1952), correctly, we believe, portrays Chadwick's social and economic philosophy as a blend of the Ricardian view of self-interest *cum* a Benthamite-Pigouvian concern that social net product be maximized (in the presence of "exter-

The desired conduct of railway enterprise under contract management seemed to include a proposal for rate uniformity, that is, an anti-discrimination provision. Moreover, Chadwick clearly recommended the implementation of a Dupuit-Hotelling cost-based pricing scheme. Based on a very clear practicial understanding of the law of demand[16] he argued that

> . . . it would be far better for the development of the productive power and prosperity of . . . any . . . country to reduce the charges on the transport of persons and goods to the lowest cost of proper service, and to charge much of that cost as a land or income tax, rather than to exact any surplus of profit from charges on intercommunication. A toll for the maintenance of a road is only justifiable economically under exceptionable circumstances. The common commercial notion that the test of the value of a road is payment by a toll, is a pernicious fallacy. A toll only proves how many can or will pay it. This evidence viewed by itself, and apart from other facts, shuts out of view the numbers whom the toll deprives of the accommodation of the road.[17]

Capitalized land value taxes would pay, in some instances, for railway construction, especially for branch suburban lines. Unregulated railway management, on the other hand, had every incentive to exact discriminatory monopoly charges which severely reduces the utilization of rail transportation. Though the railroads had long exhibited this sort of behavior, Chadwick optimistically believed that the mistakes of the past could be retrieved by government ownership. His program for nationalization and implementation of contract management was set out with clarity:

> Giving the public credit and security for the discharge of the railway debenture debts, by which at public rates from one to two and a-half per cent. might be gained; giving government security for the payment of dividends, by which some third of additional saleable value might be given to the stock without any loss to the public; ensuring the economies available from unity of management, and contract management; freeing the railways from local and other taxation, which would cease to be chargeable if the railways were restored to their proper status, not as a mere trading speculation, for a private and taxable profit, but as public highways; reducing the expenses of future extensions on the same principle. From these economies, which are only practicable by a public amalgamation, but which might be carried out by a special executive commission, a fund would be derivable, which would be available for equitable division between the shareholders and the public;—to the public more safe, comfortable, and speedy travelling, at lower fares, and reduced rates for the conveyance of goods, as well as other services would be secured; to the shareholders some compensation and security from future loss.[18]

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nalities"); see, especially, *id.* at 19-27. Surely Chadwick's insistence that incentives (in the form of workhouse relief for the able-bodied) be inserted into the Poor Laws, as well as the use of self-interested market forces in the principle of contract management supports this characterization.

[16] Edwin Chadwick, *supra* note 13, at 205.

[17] *Id.* at 206.

[18] *Id.* at 207.

Though we reserve discussion of Chadwick's views on the implementation of his principle, it is worth noting that he envisioned a "special executive commission" in all cases of nationalization and service rights expropriation. In the cases thus far considered, *waste* due to natural monopoly was the rationale, moreover, for the proposed new institutional arrangements in water and gas distribution systems, postal service and railroads. (Chadwick's much-extended list of "natural monopolies" was more detailed and included water distribution systems, the installation and conduct of sanitary facilities, etc.). But Chadwick's discussion of the applicability of his principle did not end with the waste engendered by natural monopoly.

Contract Management and Imperfect Competition

An important source of imperfect competition, in Chadwick's incisive view, was in high information and search costs to consumers. More than half of the examples in his classic 1859 paper involved this sort of monopolistic competition[19] and, in all cases, Chadwick justified intervention on the principle of contract management.

Information and search costs are featured, for example, in a comparative analysis of the market for interment of the dead in London and Paris. Chadwick, relying on earlier research into the matter,[20] estimated that in London there were between 600 and 700 undertakers to perform 120 funerals per day with about 6 undertakers competing for each funeral. Though the market situation appeared to be non-collusive and roughly competitive, certain features surrounding the demand side of the market altered the degree of "competitiveness":

[19] Chadwick's theoretical rationale for government intervention in those situations where "excess capacity" existed was not without its faults. His empirical analysis of the London Cabriolet market revealed excess capacity in the sense that capital was not being fully utilized: "It is probably a statement greatly below the fact, that at least one-third of the cabs are, the week through, unemployed; that is to say, one-third of the invested capital is wasted;—a service for two capitals being competed for by three, to the inevitable destruction of one. As in other cases of competition within the field, efforts are made by violent manifestations of discontent at the legal fare, by mendacity and by various modes of extortion, to charge upon the public the expense of the wasted capital . . .," Results of Different Principles at 394. Such a Chamberlinian notion of excess capacity would have certainly been respected for well over a century. However, the recent work of Demsetz, De Vany, and others points out that unoccupied capacity is, indeed, valued by consumers and cannot be considered "wasted" resources, *per se*. For example, unoccupied cabs lower the full cost of service by reducing waiting time and, hence, the time cost to the rider. For a further discussion, see Harold Demsetz, The Nature of Equilibrium in Monopolistic Competition, 67 J. Pol. Econ. 21 (1959); *id.*, The Welfare and Empirical Implications of Monopolistic Competition, 74 Econ. J. 623 (1964); *id.*, Do Competition and Monopolistic Competition Differ? 76 J. Pol. Econ. 146 (1968); and Arthur S. De Vany, Capacity Utilization under Alternative Regulatory Restraints: An Analysis of Taxi Markets, 83 J. Pol. Econ. 83 (1975).

[20] Edwin Chadwick, Supplementary Report on the Results of a Special Inquiry Into the Practice of Interment in Towns (1843); and *id.*, On the Best Modes of Representing Accurately, by Statistical Returns, the Duration of Life, and the Pressure and Progress of the Causes of Mortality Amongst different Classes of the Community, and Amongst the Populations of Different Districts and Countries, 7 Royal Statistical Soc'y J. 1 (1844).

. . . under the circumstances of the occurrence of deaths, there being no time to seek about or to make inquiries to enable the parties to make a selection upon any comparison of charges, the service is practically a monopoly. The expense to the survivors of all classes above the class of pauper, and in particular to the most respectable class of mechanics, form a grievous addition to the evils and inflictions of bereavement by death; and although the charges made are exorbitant, the character of the service rendered is in every respect of a low and objectionable character, and befitting an inferior religious, and social condition.[21]

Beyond these considerations, monopoly charges for funeral services encouraged "home funerals," which led to health and sanitary hazards.

Parliament had ignored Chadwick's proposals, but on the continent, particularly in the cities of Munich, Frankfort, Berlin and Paris, implementation of his principle had gone far in mitigating or eliminating these evils. Regulated charges of interment in Paris (while not an ideal system since the charges included a tax for support of public worship) are illustrative of the benefits he thought to be derived from competition for the field:

In Paris, and also in some other cities of the continent, at intervals of terms of years sufficient for the renewal of carriages, establishments, &c., the entire field of service for the interment of the dead is put up to competition, for contracts to render the funeral service at scales of material, decoration and attendance, conformable to the habits and wishes of different classes of society, divided into nine classes, and the range of expense is from 15s. to 145*l*. English money . . . .

Under this system of competition for the field where it prevails on the Continent, the public have a superior service, and a wider range of choice, as well as much protection to survivors not afforded in this country.[22]

Further, Chadwick estimated the total cost of 28,000 interments in Paris at 80,000 pounds in 1843, while the estimated cost of 45,000 interments in London, under competition within the field was 626,000 pounds. Under the Paris rate system Chadwick estimated that London funerals would have cost 166,000 pounds, a saving of 460,000 pounds which would be directly attributable to the uniform rate. Thus, monopoly power created by high information costs could be eliminated, or at least mitigated, by use of the principle of contract management.

FORMS OF REGULATION AND CONTRACTS

As Demsetz has noted, the institution of contract management may give rise to inefficiencies "because of the difficulty of devising suitable con-

[21] Results of Different Principles at 388.

[22] *Id.* at 389-90. Competition for the field guaranteed deluxe service at minimum cost even in the highest echelons of provisions. "Competition for the field ensures to the first-class Roman Catholics of Paris, the grandest service of their Church, including bearers of crosses, plumes, eighteen mourning coaches and attendants, the attendance of two vicars, besides the cure, and twenty-six priests, and six singers and ten chorister boys, two instrumental performers, grand mass at church, and 120 lbs. of wax tapers, besides an anniversary service, and material of mourning cloth, at a cost of 145 £out of which, be it observed, the competitor for the service, the undertaker, pays more than one-half as tax." *Id.* at 390.

tracts."[23] The nature of the contracting process and of contract specification, then, is at the core of avoiding monopoly rents and allocative inefficiencies. In the present section we look at Chadwick's institutional views on contract specification and on the regulation he thought it engendered. Though his views on this matter are somewhat sketchy (as are Demsetz's), we will show that (1) contrary to Demsetz's belief, a reasonable approach to contract management in practical cases requires some form of *regulation,* and (2) that such institutional arrangements were not limited to natural monopolies.

In many cases Chadwick becomes obscure when facing the question of "proper" contract design, that is, the setting up of contract rules through which "rivalrous competition" could work its wonders. In the case of cabs, for example, Chadwick argued for "superior public administration" to supplant the existing system of licensing and regulation of fares by Parliament while failing to specify the contract terms which would bring desired reforms in cab service about. Presumably he envisioned the role of a public commission in this area to contract with "large capital" firms supplying cab service to all demanders at specified minimum prices. A similar contract design was contemplated for funeral supply such that bids would be taken from competitors who would be willing to supply funerals of various qualities at minimum prices. (Through all these cases Chadwick *assumes* an elastic supply of bidders).

Chadwick's primary emphasis is on minimum price bids for given quantities of goods or services. In the case of a single supplier of the field for improved sewage facilities Chadwick even poses the hypothetical contract: "At what rate will you [competitors] undertake to abolish the cesspools of all sorts . . . ?"[24] Similarly, in discussing the sanitary and health-producing effects, warming and ventilation of hospitals, the emphasis is on minimum price and on contracting for guaranteed results. Chadwick even produced statistics to show that the "Paris system" of contracting for these services produced lower charges and reduced death rates. In this case, "the contracting administrators concern themselves only with these results, leaving the contractor to his own devices as to the means and their management by his own servants."[25]

On the question of retail food manufacture and distribution, the wastes of competition within the field justified entry regulation through contract management. Such a device, Chadwick notes, was being used in the urban areas of Paris, but not in the *banlieu* or suburbs. A study was instituted by the suburban bakers which demonstrated that the quality of bread was lower and the price higher in the unregulated market. The suburban market, moreover, was characterized by a higher average number of bankruptcies

[23] Harold Demsetz, *supra* note 3, at 357.

[24] Results of Different Principles, at 403.

[25] *Id.* at 406-07.

and greater entry to and exit from the market. They were, in short, ready to submit to regulation and maximum price restrictions.[26] Location monopoly and ruinous competition in the London beer market demanded similar remedies.[27] Contractual regulation of beer, bread and funeral markets, of course, generalize the principle's use beyond natural monopoly situations.

Chadwick's contracts, therefore, would contain specifications of quality, quantity, price, or some combination thereof. The form of the contract and the type of monopoly regulated has profound effects upon efficiency, as we shall see. The institutional framework which Chadwick envisioned for contract management is another matter. The only institution which could institute this device in the public interest was government. Nationalization and consolidation were part of Chadwick's proposed solution. The government would be required to fulfill other roles:

> For the application of the principle of competition for the field, to recognised subject matters of administration such as I have described, I presuppose, qualifications of high administrative intelligence and integrity and public zeal, to plot out the most advantageous fields for competition, to conduct with judicial impartiality the competitions for their occupation, and to enforce the rigid performance of the contracts in behalf of the public. I presuppose also the ability to analyse closely the cost of service, so as to guard against concealed emoluments, which are sources of corruption, and firmness to withstand the imputations of vulgar competitors, and to make those direct liberal allowances of due market rates of profits which are preservatives against the use of surreptitious means to obtain them.[28]

Chadwick, then, envisions nothing less than a regulatory commission (in the case Omnibus regulation he calls it a "Council of Surveillance") to act as agent for the public. Regulatory functions would include a wide array of activities including (a) statistical cost estimation (b) enforcement and policing and (c) supervising contract negotiations and terms. Chadwick envisioned an administrative body charged with calculating costs on "socially desired" quantities of goods and services and ensuring that successful bidders covered them with compensatory rates of return. Policing of the rates of successful bidders over the contract period and legal enforcement against surreptitious suppliers would be required of the body. In the case of contracts awarded to multiple companies the body must have the means of calculating the optimum size firm utilizing some cost criterion in order to determine the optimum number of firms. The role of the market, in most cases, is simply to price-compete for the field or for a specified (presumably by contract) portion

[26] Chadwick argues, pertaining to this case, that "it is rare . . . to see two economic systems at work in such close proximity, and with such sharply contrasted results; and it is probably rarer still to find the victims of unregulated economical freedom conscious of its pernicious influence on their own usefulness and happiness, and petitioning for regulated freedom as the only true remedy for their misfortunes." *Id.* at 413-14.

[27] *Id.* at 415-17.

[28] *Id.* at 408.

of the field. When bidding for a portion of the field is conducted, spacial limitations would presumably be built into the contract itself. The latter would require, as in the funeral supply case considered by Chadwick, *prior* estimations of demand as well as costs by location.

The point to be made here is that in Chadwick's view monopoly and natural monopoly justified Commission regulation on every count but rates. The role of the commission form envisioned by Chadwick is very much the same as that of the modern U. S. regulatory commission (I.C.C., F.P.C.) with the exception that the latter sets rates for service.

Conclusion: Application of the Principle

In examining the Chadwick principle of competition for the field of service and contract management, we have attempted to shed some light on the range and application of the notion rediscovered by Demsetz. The principle (as stated by Chadwick) and the discussion of specific cases brings into question Demsetz's conclusion that the use of the principle would make government "regulation" unnecessary. Chadwick anticipated (correctly we believe) an elaborate "contract enforcement" body, composed of civil servants, as a necessary accouterment to this scheme.

In most forms of contract management competitive bidders set rates. But this system does not avoid commission concern for the aggregate earnings problem, legal limitations on entry over the contract period, or policing the rates determined at the awardment of the contract or contracts. That prices are not commission directed but determined by contract competition does not mean that price control is exercised by the enforcement body over the contract period. Demsetz, in short, seems to imply that commission regulation is rendered unnecessary with the institution of competition for the field. Chadwick believed that the efficiencies covered by contract management justifies what can only be termed "commission regulation." Though it may well be, as Demsetz argues, that "the best prices can be secured if reliance is placed on the collection of bids, rather than on cost-plus price regulation by commissions," that fact does not mean that contract management removes the necessity of commission regulation.[29] In any practical example, contract design, specification and enforcement could easily create more subtle and complex difficulties for commissions than cost-plus pricing. From a theoretical point of view, moreover, implementation of Chadwick's principle raises some interesting questions.

Consider, for example, a contractual situation in which community-owned physical facilities are let out for limited production intervals. The workings of a firm producing under such circumstances would roughly correspond in a theoretical sense to conditions characterizing short-run optimality. In particular, private decisions concerning the relative employments of

[29] Harold Demsetz, *supra* note 3, at 361.

capital and labor—given a specified output—would minimize production costs only over the period guaranteed by contract. Should long-run optimality require an adjustment in the capital-labor ratio, a disparity would arise between the production costs obtained under profit maximization and the minimum costs possible to society. One would suspect, given the limited production horizon, that the firm would tend to be biased towards the utilization of labor (creating what might be termed an "inverse" Averch-Johnson effect). Hence in the absence of some commission "responsibility" for long-run investment planning, contract competition could lead to non-optimal costs of production. The requisite body of enforcers and planners necessary to remedy the capital-labor bias would be very similar to the "regulators" which Demsetz believes are made unnecessary by a system of rivalrous and contractual "competition."

We tend to view such a system as an alternative form of regulation, vis-à-vis a means of deregulation, complete with all the danger which Stigler has suggested is inherent to other regulatory schemes. We see no reason to suspect that Stigler's thesis, that regulation is acquired by industry and operated primarily for its benefit, will not be equally applicable to systems relying on contract bidding and management.[30]

The application of the principle of contract management, as a viable alternative to cost-plus regulation, raises important questions for the institutions of an economic system as well, and here a contrast between Chadwick and Mill is interesting. J. S. Mill, in part under the influence of Bentham and Chadwick, was also a supporter of government interventions. As early as 1832, Mill was justifying legislative interventions squarely and clearly on grounds of the "free rider principle."[31] There are crucial differences, however, between Mill and Chadwick. Though Mill lauded Chadwick's efforts at sanitary reform (as in the case of London water), Mill did not support the extent or the form of the interventions proposed by Chadwick. Chadwick saw "externalities" everywhere, but Mill only to a much lesser extent. Chadwick wished to implement interventions with market forces and incentives to industry, as did Mill, but with important alterations in the system uncountenanced by Mill, that is, massive governmentally-enforced consolidation and contractual assignment of exclusive rights to produce and sell. Though Mill was sympathetic with some of Chadwick's proposed interventions (not the consolidation of railroads, however), he was apparently very skeptical about the extent of Chadwick's proposals and of the political and economic effects which would be generated by an implementation of the principle of contract management.[32] As indicated by his vague reply to Mill's skepticism, Chadwick apparently recognized the difficulty of defining the

[30] George J. Stigler, The Theory of Economic Regulation, Bell J. of Econ. Man. Sci. 3 (1971).

[31] J. S. Mill, Employment of Children in Manufactories, The Examiner 67 (1832).

[32] Later Letters of John Stuart Mill 1849-1873, *supra* note 5, at 591.

limits of his principle: "To the questions sometimes put me, where I would stop the application of my principle, I am at present only prepared to answer, 'where waste stops'; . . . ."[33] We have attempted to illustrate that, strictly applied, the principle of contract management would leave few production and distribution activities unregulated. In addition to its application to natural monopoly situations discussed by Demsetz, it becomes relevant to cases in which inefficiencies are the result of numerous other sources as well. Hence, structuring a milieu in which the principle of competition for the field is feasible may involve radical alterations in the existing pattern of property rights assignment throughout society. Extensive government ownership of and responsibility for the means of production has substantial overtones which are difficult to reconcile with orthodox theory of competitive capitalism.[34]

It is one thing to argue, as did Mill and as Milton Friedman has done, that incentives and competition be built into socio-economic governmental interventions. It is another thing to argue, with Chadwick, that the efficacy of a controlled competitive bidding process in monopoly situations justifies the removal of rights to private ownership. Severe abridgments of property rights inure to the latter scheme, which is, in reality, a very radical idea. Chadwick, in sum, seems to have anticipated modern welfare economists who have argued that competitive forces can have salubrious effects under numerous systems of property rights assignment. Under this system *laissez faire* assumes a very curious interpretation indeed. It may be that the Chadwick-Demsetz principle would preserve competition at the expense of free enterprise.

[33] Results of Different Principles, at 408.

[34] It should be clear that much of the modern theory of "competition as a process" is owed to Chadwick's principle of contract management. In this concept the entrepreneur assumes a central role in the groping towards equilibrium. This feature is entirely absent from the orthodox theory of competition which is situationally defined; see Israel M. Kirzner, Competition and Entrepreneurship (1973); and *id.*, Classical Economics and the Entrepreneurial Role (paper presented at the History of Political Economy Conference, Boston, 1975).