THE FORCE SECOND ONLY TO GRAVITY

Economies of Scale and Scope

A paper presented

to the

Indianapolis Literary Club

on

May 2, 2022

by

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If **gravity** is the most powerful force on Earth, most would say **procreation** must be second. All life, from the smallest microbe to the largest creature known to Steven Spielberg, seeks to sustain and increase those of its own kind.

Yes, God did say unto Abraham, [Genesis 22:17] *I will surely bless you, and I will multiply your descendants like the stars in the sky and the sand on the seashore.*

Yet, the Lord did not specify **how** nor **why** this multiplication of descendants was to occur. He, with omni-vision, recognized the "how" had been well-established by Abraham's time and was widely evident. But what was the "why?" That question is answered in this paper.

Multiplication is desirable because it fulfills His will for mankind to be happy. His prescient understanding was that More is Good. Thus did we acquire hormones (not mentioned in Genesis) and the imperative to procreate. Beyond that, Free Will was granted to humans. How much happiness we were to have was unregulated.

Yet did the Lord, in His wisdom, whisper unto Isaac (although not mentioned in Genesis) *Some is preferred to None, More is preferred to Less, Until it is Too Much.* Thus did He pronounce the concept of limitation, of moderation.

And **I**saac passed these words unto his son Jacob, the first financial planner, who did his brother Esau out of his inheritance. And Jacob passed these words to his son, Joseph, who in Egypt became the first economic planner. Thus did this wisdom become the foundation of economic reasoning, inscribed in the DNA that guides some to become economists.

Now, friends, chant with me these sacred words:
SOME is preferred to NONE,
MORE is preferred to LESS,
UNTIL it is TOO MUCH.

In capital after capital of ancient lands, these words were heard, and great empires grew until it was TOO MUCH. The great Khans swept the plains of Eurasia to have MORE, retreating when it became TOO MUCH. The crown heads of Western Europe sent fleets to colonize the world, at first seeking SOME, then pursuing MORE, until it was TOO MUCH.

The satisfaction vouchsafed by SOME, was transformed into a persistent quest for MORE, predicated on the belief great benefits accrued to those who had MORE. Economists studied this phenomenon and codified the conditions which justified this behavior. It became known as *Economies of Scale* and worked like this:

The King, Sultan, Emperor, or Ruler by whatever title, had successfully acquired SOME. This was a great comfort, a source of pride and revenue, the result of great energy applied by many. The residue of success was often a capitol, an administration and an army. These elements of government were basically fixed costs of possession and safety for the monarch. Rulers discovered only minor marginal costs added as more land and peoples were taken into the empire.

Under these conditions, the average cost of government per person or per acre of land would continuously decline while the total revenue increased, yielding even greater “profits” to the throne. In addition, expansion kept the administration and the army busy, less likely to cause trouble at home.

This “macro” organization of activity was itself founded on primitive households operating on this same principle. The earliest hunter-gatherers and agriculturalists found safety and productivity in numbers. We would call them families, then tribes formed by the aggregation of households.

Those households themselves were also characterized by economies of scale. Some children were found to be useful in production and could be accommodated in caves or other forms of the early suburbs about Eden.

Given advantages found in developing pottery technology, bigger pots for cooking and storage of food supported still more offspring. These “More” children would, in turn, become workers producing food and defending their aging progenitors. They were insurance against the loss of children and added utility in the various tasks of the household, including daily laundry service and skinning wooly mammoths..

And so, over lo these many millennia, have economies of scale been understood as a benefit to humankind, not merely an adjunct to the procreation imperative, but the tribal (religious) rationale for that imperative. Indeed, the Right to Life movement is a deeply held confirmation of Economies of Scale. As output increases, unit or average total costs of household production decrease when significant fixed costs are present.

“Two can live as cheaply as one.” This often-used bromide justifies marriage in response to an unexpected pregnancy. In addition, the clothes, toys, and furniture of the first child are satisfactory for additions to the brood. Thus there exist economies of scale in procreation.

But there is a kicker here. As the children grow in number, size, and talents, new costs are encountered. A larger domicile is required, if the quality of life is to be sustained. Competition for bathrooms endangers domestic tranquility. More facilities for transportation are necessitated to deliver the little darlings to their after-school activities. Musical instruments and protective athletic gear must be included in the family budget. Funding for music lessons and traveling teams becomes part of household expenses.

However, with complementary advances in medical knowledge, sanitary technology, and cell phones, more children often became too many without territorial expansion. Not just a larger house is desired, but for the tribe, the nation, a larger kingdom. This objective too has its costs as learned by Napoleon, Hitler, and Putin.

> **Scale** refers to size, the number of units produced, or customers served. **Scope** refers to the variety of items produced or sold. The supermarket served more customers than the local fish market and sold products other than fish.

Rising costs, responding to the increasing number and diversity of activities, are D*iseconomies of Scale* and Scope. They are present at the household level, the enterprise level, and the macro level. Because Diseconomies are preceded by the joys and growth in profits attendant to Economies of Scale and Scope, they are often neglected in planning….. until growth is Too Much.

However, some Diseconomies are not internalized by the producer (the household, the firm, or the government) and instead are foisted onto society.

When households produce too many children, the costs of shelter, entertainment, and laundry may exceed the value of their separate and joint contributions to the harmony and prosperity of the family. Those children may over run the parks, disturb the peace of the neighborhood, and diminish the quality of education. These latter costs are borne by and imposed on society at large.

The firm, as it grows and diversifies, may find it is developing stifling internal regulations and a costly administration. Soon it has a personnel or human resources office and a payroll office where it once had a single employee handling those functions. The multiplicity of administrators increases the need for conference rooms, coffee machines, donuts, and consultants.

However, the firm may also generate environmental and economic costs for its community and those many miles away. As the firm increases its output, it may send many more trucks and commuters out onto local roads causing congestion and pollution of the waters, air and earth of its host and neighboring communities.

In our competitive enterprise ethos, a new firm may reduce the business of other firms which, in turn, may reduce wages and employment at still other businesses. Amazon is accused of "stealing" customers from many local businesses. The jobs it offers in return may be compensated at lower levels than the pre-Amazon jobs. The buildings used by the new firm may not pay rents or taxes comparable to those older structures that remain vacant.

Our economic religion teaches the unemployed will find other jobs, here or elsewhere. The expanding firm is not asked to compensate the owners of buildings vacated, nor compensate remaining business and governments whose revenues are reduced.

Nor are new and expanding business asked or willing to compensate local governments for the added capital and operational costs they impose upon a community.

If employment rises and population grows what happens to existing services?

Conventional wisdom tells us new barber shops and nail salons will open to serve the new employees. The shops abandoned by customers going to Walmart in another town will be occupied by trendy sports bars. New lanes will be opened to accommodate new traffic, new schools will be built, and existing schools will be upgraded with better air conditioning and athletic facilities.

Additionally, firms may leave behind congestion, frustration, unemployment, increased alcohol consumption, domestic friction, dissolution of marriages, juvenile delinquency, and other evils.

Economies of scale, which produce lower average costs for firms, most often benefit consumers with lower prices, greater selection, and noticeable convenience. Think about Walmart, Amazon, and Chase, successors to other giant firms that eliminated or squeezed out earlier, often smaller competitors.

Go back to the era of the Great Atlantic and Pacific Tea Company (A&P), Sears Roebuck, Montgomery Ward, Woolworth, Kresge, Standard Oil, AT&T, the railroads, the banks, the steel and auto companies.

Their growth was facilitated by economies of scale. Their growth, often part of a great expansion in output, paralleled a decline in the output of other firms. The net result was beneficial for many consumers, sometimes hard on employees, and often destructive to previously successful entrepreneurs and their communities.

In Plymouth (IN) the appliance store found K-Mart selling refrigerators and washing machines at prices below at which the Plymouth store could buy them from the manufacturers. K-Mart could buy advertising at a cheaper rate from newspaper syndicates than the local dealer could buy from the local paper. Plus K-Mart could reach more customers buying from TV and radio stations in bulk. The local dealer could not afford the TV media rates once TV signals reached households that would not ever be among his customers.

Meanwhile, customers absorbed some of the costs normally assumed by the vendor. They had to travel from Plymouth to South Bend and pay more for delivery than if they bought locally. But in South Bend they also had a greater range of choice than they had locally. Often, repair services by Plymouth retailers were not as rapidly provided nor as inexpensively as from the big city, big volume seller.

The full aggregate effects of Economies and Diseconomies of Scale and Scope are unknown. Studies have demonstrated that Walmart and similar ventures have adverse effects on small town trade. It is likely, in the larger picture, the decline of small towns is due to the effect of lower transportation costs for households (more households own more cars) and lower information costs (radio and TV advertising reached more shoppers at less cost to the retailer than local media outlets).

As towns grow in population, the number of auto dealerships increase as well as the number of competing groceries. Now Internet shopping is changing previous buying patterns. Autos and groceries alike are now finding less need for expensive locations as they serve wider geographic markets populated with Internet buyers who delight in the expansion of choices open to them.

Let's remember disruptors --- those beneficiaries of scale and scope economies --- rarely have infinite lives. Even if they are granted monopoly power by government, they tend to disappear. What's happened to the three big TV networks? AT&T no longer owns your telephone and constricts technological change. IPALCO, swallowed by AES, is now challenged by wind and solar power generation.

Electric, gas, water and sewer services survive as franchised monopolies. Their initial capital investments are immense, and duplication of facilities were considered outrageous impositions on the serenity of the town. How could we have competing telephone and electric companies stringing wire through our streets? Aren't certain industries, with extraordinarily high fixed costs and immense Economies of Scale, **natural** monopolies?

Each monopoly is subject to growing competition from technological or managerial innovation. Solar panels, home generators, bottled water and soft drinks reduce monopoly powers.

Managerial and/or technological innovation often overcome seemingly impossible barriers. Someone comes along with a variation or a meaningful alternative which can crush an entire segment of an industry or a craft.

Take lumber yards and hardware stores, for example. Until the 1960s, they were two separate entities. Lumber yards were located close to rail lines to minimize the distance wood was transported through the city or town.

Over time, selective tools and accessories necessary for construction workers and craftsmen were added to the inventory.

Hardware stores located close to the commercial center of a town or neighborhood. They carried tools and supplies for the handyman, the do-it- adventurer doing minor repairs. Over time, selected appliances and cooking utensils were offered to broaden their appeal to households. In both cases, Economies of Scale were joined with Economies of Scope, that is, diversification of products.

And then came the big box stores. Goodbye most lumber yards and many hardware stores. They were combined into highly diversified entities with extensive advertising capabilities and vast inventories that, in some case, included snack foods and gardening supplies, even pet food. Aren't those potato chips and pruning shears … . natural complementary items?

Economies of Scale and Scope reshape society. The unimaginable today becomes commonplace tomorrow. Long distance phone calls at no extra cost, on the same instrument from your pocket as your calendar, alarm clock and camera. Applications on your home computer that allow you to do in minutes what it took hundreds to do in hours. Applications so simple your grandchildren are needed to explain them to you.

Unprepared for the future, betrayed by a past that was disinclined to let change occur, many feel trapped in Excess. Too Much variety is in the stores and on-line. Are the costs of More are outweighing the benefits of More?

Where is it all headed? Advanced technology wedded to sophisticated management is seen destroying jobs, the environment and common values. While economic dynamics open opportunities, they undermine the stability of our lives by fragmenting experience.

Thus far, we don't know what we lose and what we gain from the Economies and Diseconomies of Scale and Scope. Nor are we inclined to examine them as such. Instead we trot along, complaining rather than reexamining alternatives.

In our passivity, we become Goldilocks --- we want some imagined optimum, not too big, not too small, just right. And we want that optimum simultaneously in all aspects of our lives.

We are addicted to growth, to expansion, enjoying the rewards of More. We suffer emotionally, politically, and economically when we experience decline in scale or scope. One of my Deans in the Kelley School of Business told me, when I complained about a budget held constant, "Morton, your job is to learn how to play an accordion, making music as you expand and as you contract."