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Glarus and Scranton: Benefits and Costs of Industrialization

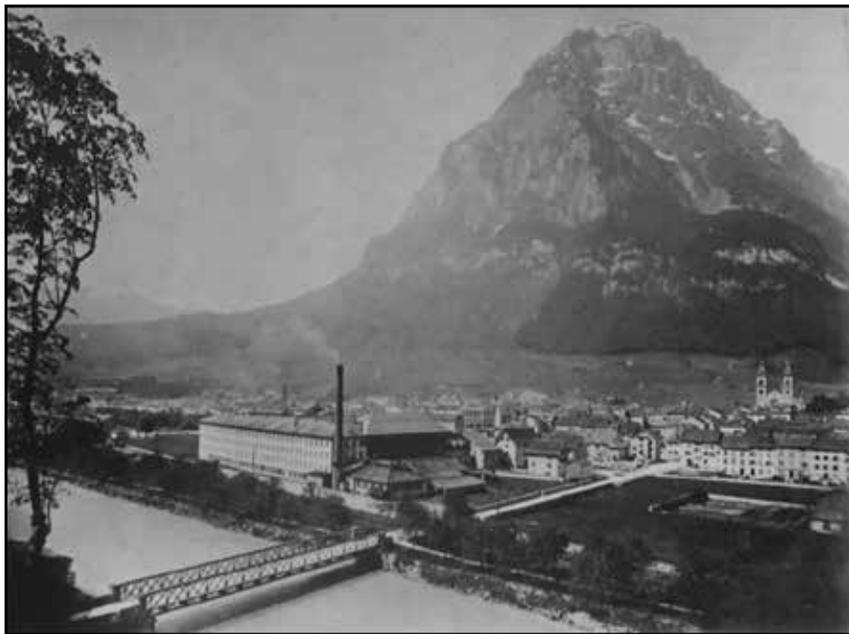
by Jürg K. Siegenthaler¹

This article is based on my book, *Konflikte der Industrialisierung: Industrie, Raum und Gesellschaft in Glarus und Scranton 1840-1914*,² a study which examines and compares the industrialization process in its path of success as well as the social costs it entails. The two cases of comparison concern different industries, but resemble each other regarding region (a valley), the time period, and the massive environmental transformations during their histories of industrialization.

This research was inspired by the concept of social costs of economic enterprise: each production process creates not only profit and wealth, but also burdens society in the form of specific social costs. In this perspective, the dramatic industrialization processes of the Swiss region of Glarus and the Scranton, Pennsylvania, region represent exemplary cases, especially concerning the considerable social costs of environmental change.

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²This book is available from: <http://www.amazon.com/dp/3261040122>



Glarus 1890 (Zeugdruckerei Schuler & Heer). Credit: https://commons.wikimedia.org/wiki/File:Schuler_%26_Heer_Glarus_1890.jpg

In the following, we present the two industrialization experiences by major themes, not by the chapters of the book. These themes represent the dramatically new realities that industrialization implied for traditional populations within only 75 years.

Water, Factories, Coal Mines

The canton of Glarus created its industrial power only slightly later than the earliest regions of Zurich, and distinguished itself by the restructuring of its main production sector from agriculture to textile industry by means of abundantly available water power and wood.

The city of Scranton in the Lackawanna Valley of northeastern Pennsylvania was situated directly above a basin of anthracite coal which, mined underground, served a strong demand for the fuel on the part of railroads and the close-by city of New York.



Birdseye view map of Scranton, Pennsylvania, 1890 (T. M. Fowler). Credit: <https://www.vintagecitymaps.com/wp-content/uploads/2016/03/Scranton-PA-1890.jpg>

Whereas most industrialization processes show similar traits with regard to entrepreneurship, labor forces, and essential production sites, Glarus and Scranton stand out by massive environmental impacts. More than elsewhere, in Glarus the use of the Linth River's water and the harvesting of the forests for the construction of dams and canals, factory buildings, and workers' housing were concentrated in a narrow, pre-alpine valley. In Scranton, the city grew directly above the mine shafts, which over a short period of time led to an accumulation of mine waste, air pollution, and subsidence of streets and houses.

Who Pays?

Viewed socio-economically, the changes in production and living spaces imply the accumulation of additional costs (after the expenses for raw materials, production sites and workers' wages). The economic concepts related to these costs were pointedly analyzed

in the book *The Social Costs of Private Enterprise*³ which inspired my research. These “social costs” were borne in large part by society, not the entrepreneurs, namely by the state and by local residents directly. This means that, for a full account, the wealth created by industrialization must be reduced by the amount of social costs. The interesting question then becomes: by how much? Of course, we did not assume that the social costs of the Glarus and Scranton industrialization were so massive that the whole process was “not actually worth it;” obviously both regions gained a significant wealth increase compared with the previous growth of the agrarian economy. But would not a reduction of social costs or a more optimal distribution of them have been possible? It will be shown that the comparison of our two cases will provide us with some answers.

Before we progress toward a socio-economic valuation as just outlined, it is necessary to briefly sketch the social and political differences between Glarus and Scranton. This comparison is critical for our final calculations.

Population and Responsibilities of the State

Industrialization massively changes societal structures, from the family to the class system.

Farmers become factory workers, and merchants turn into industrial entrepreneurs. Without describing these transformations in detail here, we limit ourselves to the contrasts: the Glarus population, despite restructuring, remained essentially native-born; whereas Scranton, situated in a sparsely populated valley, because of coal mining, inevitably had to welcome waves of immigrants. Also hardly surprising, its entrepreneurs were originally not local and the ownership of the mines ended up increasingly in the hands of large external corporations in the course of our study period.

³K. William Kapp, *The Social Costs of Private Enterprise* (New York, 1971).

Whereas certain social costs had to be absorbed by the population directly, others fell into the realm of the public, i.e., the state. At the time of our study, one could scarcely talk about a comprehensive “industrial policy” in which a government’s promotion and guidance of industrialization and the coping with its consequences could have played a coordinating role. This was, in both regions, the age of economic *laissez-faire*. However, we encounter substantial differences in the prevalence of this economic doctrine. In Scranton, there were barely any limits to the decision powers of entrepreneurs. For example, under their concessions, mining companies were fully entitled to extract underground coal, in disregard of private and public installations on the surface. In Glarus, the control of the riverbanks of the Linth, thus part of the use of water power, always remained in the hands of the state.

Whereas in Scranton the authority of the state stayed limited to rudimentary safety regulations for the mines, Glarus distinguished itself by progressive social legislation (see below). In Scranton, any state interventions were dependent on the dynamic of the United States and State of Pennsylvania two-party system. In Glarus, there existed the singular political institution of the *Landsgemeinde* (a public, open-air, non-secret ballot voting system operating by majority rule, which constitutes one of the oldest forms of direct democracy), through which the workers could exert a countervailing influence directly.

In such basic realms as the school systems, a considerable difference prevailed. Scranton received its first school in 1856, whereas Glarus’ original design for popular education dated back to the 1820s and 1830, and was established in all of its towns by the middle of the century.

Thus, in an abbreviated manner, we can state that in Scranton the public institutions of industrial capitalism—or their gaps—were steered almost completely by the entrepreneurs, whereas Glarus’ industrial capitalism was shot through with several strains of paternalism.

Evaluation: Attempt of a Calculation of Social Benefits and Social Costs of Industrialization

After sketching the main characteristics of our two cases of comparison, we are now ready to determine the order of magnitude of the respective social costs. A complete presentation of the process of calculation we used in our full study is not possible here. In the following, we cast light above all on:

- (1) economic and social trends between about 1850 and 1910, our research period;
- (2) the direct social costs such as deficits of education, industrial accidents, and the subsidizing of emigration;
- (3) the indirect social costs caused by industry via environmental transformations (land subsidence, forest and water damages, impairment of living space, etc.).

We did not conduct calculation and estimation for the latter two factors for the whole period, but for only one select year, 1891. This point in time is pertinent because certain consequences of the early phases of industrialization were strongly felt only after several decades, and because after 1891, production started to flatten.

Trend Analysis

As background for our select-year calculation, it is necessary to gain an overview of the trends of change between about 1870 and 1891. In our study, we attempted this through a compilation of various statistical indicators in the realms of economy and society and the impacts on the environment. During these two decades, the Glarus region experienced the strongest spatial crowding by industrial establishments and buildings in general; living space became more and more scarce. After the earlier calmer decades, the 1880s began with more and heavier incidents of heavy flood-water damages. Workers' real wages rose until 1880, but employment declined, which increased the pressure for out-mobility and emigration abroad. Schools experienced an improvement.

Much more massive social costs had accrued before 1880, but in reaction to abuses in the course of the early years of the factory system, the state of Glarus endowed itself with social legislation that stood out in the industrial world as a pioneering effort: poor laws in 1840, 1864, and 1878; laws on child labor in 1848, 1856, and 1858; as well as the comprehensive factory law of 1864 (in total, nine measures between 1837 and 1865).

In Scranton, coal output and population growth rapidly increased, and for long periods in parallel, until the flattening of coal production around 1890. Inevitably, settlement space became increasingly filled with mines, factories, coal waste deposits, residential and commercial buildings and street networks; practically all previous public land was absorbed privately. Air pollution and surface subsidences increased; the latter grew into a real disaster only in the twentieth century. Whereas coal output rose by 61% between 1870 and 1890, income of mine workers increased by only 35%. However, their cost of living increases, considering price developments between 1870 and 1890, were relatively lower than before and after these dates. Accident and death figures in mining increased approximately parallel to coal production. In the 1880s, we finally encounter long overdue urban ordinances pertaining to drinking water and construction, as well as four state laws regulating mining (mostly related to technical security). But regrettably, the number of children in schooling increased less than the population at large between 1880 and 1910.

Calculation for 1891

This quantitative step of our study is followed most easily by inspecting two tables which we reproduce here in full detail, as in the book. They convey the categories and orders of magnitude, but we cannot describe here the detailed calculations of individual posts. The calculations render the most significant components of the benefits and

costs in our two cases of comparison. In the end, the figures will allow some general conclusions.

Table 1—Calculation of Social Benefits and Costs of the Textile Industry, Glarus, 1891

<i>Social Benefits (Swiss Francs)</i>		<i>Social Costs (Swiss Francs)</i>	
B.0 “Via Environment”		C.0 “Via Environment”	
B.1 Living Quarters/ Settlements	7,500.-	C.1 Forests and Water	117,000.-
B.2 Water and Gas Supply	4,738.-	C.2 Legal Disputes	3,000.-
B.3 Varia	10,000.-	C.3 Road Subsidy Linthal	4,560.-
		C.4 Various Environmental Impairments	10,000.-
B.10 <i>Direct</i>		C.10 <i>Direct</i>	
B.11 Private Charity	18,500.-	C.11 Poor Relief	62,333.-
		C.12 Emigration Promotion	158,645.-
		C.13 Unemployment Benefits	51,950.-
		C.14 Continuing Education Support	3,847.-
		C.15 Public Charity	10,000.-
		C.16 Uncovered Work Accident Costs	36,350.-
Total Social Benefits	50,738.-	Total Social Costs	457,685.-
		Minus Total Social Benefits	50,738.-
		Net Social Costs	406,947.-
		Value Added of the Textile Industry	9,907,000.-
		Share of Net Social Costs of Value Added	4.1%
Of the total social benefits 63.5% were environmentally conditioned 36.5% were directly conditioned		Of the total social costs 33.2% were environmentally conditioned 66.8% were directly conditioned	

Table 2—Calculation of Social Benefits and Costs of Coal Mining, Scranton, 1891

<i>Social Benefits (U.S. \$)</i>		<i>Social Costs (U.S. \$)</i>	
B.0 “Via Environment”		C.0 “Via Environment”	
B.1 Living Quarters/ Settlements	29,600	C.1 Subsidences	20,900
B.2 Water Supply	18,000	C.2 Crowding	16,920
B.3 Recreational Opportunities	500	C.3 Displacement	22,500
		C.4 Air and Water Pollution	42,180
		C.5 Damages to Water Supply	18,000
		C.6 Aesthetic Impairments	32,000
B.10 <i>Direct</i>		C.10 <i>Direct</i>	
B.11 Employment (excluding benefits inherent in value added	7,182	C.11 Layoffs	32,000
B.12 Urban Amenities	32,000	C.12 Absence of Alternative Employment Opportunities	144,590
B.13 Communication and Transportation Opportunities	32,000	C.13 Missed Schooling pp.:1	707,813
B.14 Political Influence in Wider Context	32,000	C.14 Work Accidents	253,270
		C.15 Political Corruption	32,000
Total Social Benefits	151,282	Total Social Costs	1,322,173
		Minus Total Social Benefits	151,282
		Net Social Costs	1,170,891
		Value Added of Coal Production	6,900,000
		Share of Net Social Costs in Value Added	17%
Of total social benefits		Of total social costs	
31.8% were environmentally conditioned		11.2% were environmentally conditioned	
68.2% were directly conditioned		88.8% were directly conditioned	

On the side of social benefits in the Glarus case stand environmentally relevant improvements in the year 1891 at the rate of nearly one-third: settlement and living improvements as well as upgrading of water and gas supplies. We also take into account that entrepreneurs voluntarily contributed certain charitable expenses. On the side of social costs, we register mainly the damages to forests and waters and—as direct costs—the state expenses on emigration support (in addition to poor relief). As evident, two-thirds of social costs accrued directly and only one-third via environmental impairments.

In Scranton, the results looked quite different. Here, too, certain improvements concerning settlement space could be registered in 1891. But the largest social benefit increase was felt directly, at that point in time above all regarding urban and transportation-related amenities as well the increased political weight of the industrial city exerted within the state of Pennsylvania. The ratio of environmentally conditioned to direct social benefits amounted to one to two, in contrast to Glarus. On Scranton's social cost side, the environmentally conditioned changes manifested themselves mainly in the form of air and water impairments. The surface subsidences, as mentioned earlier, cost a lot of money in the twentieth century. But it was the direct costs that comprised, with almost 90%, the main part and heaviest weight on Scranton's industrialization: virtually no alternative employment opportunities (especially for women), uncovered costs of accidents and deaths in the mines, and finally the deprivation of public schooling of the population because of child labor.

The summary result of our calculations is expressed in percentage rates of social costs. For Glarus, they amounted to 4.1% of the produced value added of its industry, for Scranton, 17%. Of course, one would need further macroeconomic discussions and comparisons within the countries to assess these weights definitively. But we can state, comparatively, that the Glarus experience was “bearable,” whereas Scranton suffered from social costs that were too high, costs that accrued above all directly, and that could have been absorbed

by the public authorities directly as well. Also, Glarus flourished economically in the long run, whereas the Scranton Valley was pulled into the deindustrialization process of the northeastern United States in the twentieth century.