

Comparative GDP of the Verdis and the Aurochs

An economic parable

Didier Renard · June 2026 · didierrenard.com

*There are two ways to produce the same wealth.
One replenishes it. The other consumes it.
Statistical tables make no distinction between the two.*

Two tribes, one territory, one number

At a time when men were just beginning to settle, two tribes lived within reasonable distance of one another. Same era. Same surface area: one hundred square kilometres each. Same number of mouths: two hundred members.

The Verdis farmed. The Aurochs hunted.

Working assumption.

In each of the two tribes, the value produced is distributed in strictly equal shares among all members. No chief appropriating the surplus. No caste eating while others fast. What economists would call a **Gini coefficient of zero**. This parable does not compare political models. It compares **production structures**. The question of who receives what is deliberately set aside. What remains is more interesting.

The Verdis

The Verdis had understood something their neighbours did not: that land, properly tended, produces more than it receives.

They grew tomatoes and lettuce, and raised goats. Their forest — maintained with care, never cut to the bone — provided timber for their palisades, for the network of canals that carried fresh water from the river to the most distant plots, and for the kilns where pottery and pizzas were baked, the staple of their diet. The river gave them fish, water, and a natural boundary.

More than half the tribe worked directly in production. Twenty members handled what we would call collective functions today: organising, guarding, teaching children, caring for the sick, administering justice. Their kilns ran below capacity — not through negligence, but because the Verdis' growth was methodical, unhurried.

Every day among the Verdis left the territory a little more ordered than it had found it. The pruned forest grew back denser. The enlarged canal irrigated one more plot. The child who had learned to graft a tree knew something the next morning that he had not known the day before.

In a GDP calculation, you would see: harvests, goat meat, pottery, fish. You would not see the growing forest. You would not see the educated child. You would not see the canal whose value extends over thirty years. These things have no price yet. They exist nonetheless.

III

The Aurochs

The Aurochs had a magnificent herd.

Bison in number, abundant meat-based nourishment, and a mastery of hunting that no one in the region could challenge. Their farming was reduced to the bare minimum — fodder, nothing else. Plant protein interested them only once it had been converted to animal protein, that is, after passing through a bison's belly.

That is where their problem silently began.

Nature does not repay at parity. For a bison to produce one calorie a member of the Aurochs can consume, it must first ingest **between seven and ten from the prairie**. This conversion ratio — the thermodynamics of meat-based nutrition — meant that every meal cost, upstream, a vegetable expenditure that nobody tallied. The territory worked for the herd. The herd worked for the tribe. And somewhere along that chain, a large share of the energy simply vanished.

That alone would be a serious constraint. But the Aurochs had others.

Ten of their members practised what would today be called poaching: raids into neighbouring territories, stolen animals, herds quietly depleted for their own gain. A risky activity. A productive one, in the accounting sense of the word — the animals came back to camp, fed the tribe, existed in the balance sheet.

Thirty members — ten more than the Verdis — were needed to administer the tribe: maintaining order, managing conflicts, delivering justice more frequently demanded than among their neighbours. Hunts and nocturnal raids produced injured men. Injured men required care. Care mobilised time and skills.

A further ten members had specialised in tattoos and war paint — an expertise that had naturally expanded into a general cosmetics service, a sector in full bloom.

Every day among the Aurochs left the territory a little more depleted. The grass thinner. The bison fewer. The order of the world, slightly diminished.

In a GDP calculation, you would see: bison meat, healthcare services, an active administration, a flourishing creative sector. You would not see the prairie retreating. You would not see that poaching transferred value from one tribe to another without creating any. You would not see that the thirty administrators were building nothing — they were absorbing the costs of a system that generated its own damage.

IV

The same number

Now imagine the economist attempting the calculation. With no currency, he values output in units of time, in calorie equivalents — which is, in fact, what specialists in subsistence economies do. Approximations are necessary. They do not change the essential point.

Category	■ The Verdis	■ The Aurochs
Productive members (direct food)	~180 members <i>farming, herding, fishing</i>	~150 members <i>hunting, with ×7-10 conversion loss</i>
Collective functions	20 members <i>education, healthcare, justice</i> → Accumulated human capital	30 members <i>order, justice, conflict management</i> → Defensive spending
Non-food services	—	10 members <i>tattoos, war paint</i>
Poaching / external predation	—	10 members <i>value transferred, not created</i>
Reserve capacity	Under-used kilns <i>latent growth</i>	Herd at maximum density <i>no margin</i>
Estimated GDP	≈ X	≈ X

Both tribes arrive at similar GDPs. Perhaps identical. The statistical table would say: two equivalent economies.

Let us look at what that table does not say.

The twenty "unproductive" members of the Verdis — those who teach, heal, administer justice — are producing **human and social capital**. Invisible in GDP. Real over time. The thirty administrators of the Aurochs, by contrast, create no new value: they manage the externalities of their own model. That is GDP too — but it is **defensive GDP**. It repairs instead of building. It absorbs instead of accumulating.

The Verdis' kilns run below capacity. That is growth in reserve, an option on the future that no one has exercised yet.

The Aurochs' herd grazes across one hundred square kilometres. A bison herd has biological limits. An overgrazed prairie has ecological limits. Poached neighbours have diplomatic limits — and, sooner or later, military ones.

Two identical GDPs.

Only one viable direction.

V

The pizza and the hunger

Then one day, an Auroch knocked at the Verdis' palisade.

He had meat. He wanted pizzas. The exchange seemed simple — two products, two tribes, a neighbourly deal. It was not.

The Verdis had no need for meat. They had goats, a river, ovens. They could refuse and go home to dinner. The Aurochs, on the other hand, were hungry — with a structural hunger, the kind that belongs to a model consuming more than it replenishes. They could not really refuse.

The price of the pizza had nothing to do with its cost of production. It had everything to do with **the buyer's hunger**.

That first exchange — a few pizzas for a great deal of meat, or for a protection service, or for access to a hunting ground — laid the foundations of a lasting commercial relationship. One in which one side negotiated from desire, the other from necessity. Where one party set the terms and the other accepted them, for lack of anything better.

It was no one's fault. It was the logical consequence of two production structures that had diverged long before anyone thought to trade.

This is how, in all eras and at every scale, unequal terms of trade arise between economies that, on paper, carry the same weight.

VI

Twenty years later

Among the Verdis, the trained children had replaced the ageing producers. The forest was denser. The canal network now covered the entire cultivable territory. The kilns were running at full capacity — and discussions were under way to build new ones. Their GDP had grown, not spectacularly, but steadily, solidly, **like something that accumulates rather than something that races ahead**.

Among the Aurochs, the herd had shrunk. Poaching raids now met organised resistance — the neighbours had learned. The administration, already heavy, was managing new tensions. The tattoo-and-war-paint sector was booming — periods of uncertainty create demand for ritual. Their GDP may have continued to grow. Their capacity to sustain it, silently, had eroded.

...

The two tribes had the same GDP.

They did not have the same relationship with time.

FOR THOSE WHO WANT TO GO FURTHER

Three voices converge on what Georgescu-Roegen had opened in 1971.

Nicholas Georgescu-Roegen laid the foundation in *The Entropy Law and the Economic Process* (1971): economic value is fundamentally a question of thermodynamic order. GDP measures a flow. It does not see whether that flow is generated by the accumulation of order or by the dissipation of existing capital.

Eric Beinhocker — research fellow at the Santa Fe Institute and author of *The Origin of Wealth* (2006) — extends the intuition in evolutionary terms: wealth is created to the extent that economic interaction reduces entropy in favour of a "fit order" responding to human needs. In this framework, an economy that accumulates capital — human, natural, infrastructural — creates order. An economy that consumes its capital without replenishing it does exactly the opposite, whatever its current GDP.

Geoffrey West — theoretical physicist, former president of the Santa Fe Institute, and author of *Scale* (2017) — adds the dimension of universal scaling laws: as cities and economies grow, socio-economic activity indicators increase superlinearly according to universal laws — but entropic phenomena (crime, inequality, pollution) follow exactly the same curve. GDP grows. So does entropy. The raw number makes no distinction.

W. Brian Arthur — founder of the complexity economics programme at the Santa Fe Institute — reframes the problem differently: the economy functions more like a perpetually evolving ecology than a mechanical system in equilibrium. What the Verdis are building — social capital, know-how, reserves — is exactly what equilibrium accounting is structurally incapable of seeing.

These three voices do not challenge GDP as a tool for measuring flows. They show, by different paths, that an identical flow can conceal opposite trajectories — depending on whether the underlying economy is accumulating order or dissipating it.

The Verdis and the Aurochs had understood this before them. Without knowing it.