

Caloric Sovereignty

The Grain-Oilseed Complex, Glycaemic Architecture and
Pedological Rupture

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*“My paradigm is not a paradigm of the Truth; it is a
paradigm of Reality.”*

— Hakki Tan

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Abstract

This article proposes a sociological framework for analysing the modern food regime not merely through production and consumption, but through the relations between the body, metabolism, soil and global infrastructures of circulation. Its central concept is **caloric sovereignty**. This concept refers to the ways in which societies' basic sources of energy - maize, wheat, rice, soya, oil, flour, starch, syrup and animal feed - are shaped less by production alone than by circulation, processing, pricing and accessibility. Under this primary framework, the article develops four analytical dimensions: **circulatory sovereignty**, **glycaemic architecture**, **pedological rupture** and **metabolic vulnerability**. Circulatory sovereignty describes the concentration of trade, storage, logistics, finance and processing infrastructures within the grain-oilseed complex. Glycaemic architecture refers to the structural food environment through which refined carbohydrates and processed food forms shape metabolic risk. Pedological rupture describes the tendency to treat soil not as a living ecosystem, but as a high-input production surface. Metabolic vulnerability is proposed as a hypothesis for examining the relationship between food regimes and bodily cycles of energy, attention, hunger, pleasure and fatigue. The article does not argue for a direct causal relation between glycaemic load and political behaviour. Rather, it argues that the modern food regime conditions the body's energy rhythms, patterns of consumption, metabolic risk environment and forms of soil use.

Keywords: caloric sovereignty; grain-oilseed complex; glycaemic architecture; insulin resistance; metabolic vulnerability; pedological rupture; food regime; agribusiness concentration.

1. Introduction: Metabolic Governability and the Weakened Subject

The analysis of the modern food regime should not begin at the widest scale, but at the smallest and most ordinary site: **the body**. Contemporary human beings do not live only within ideological, economic or technological arrangements. They also live within bodily rhythms: blood glucose fluctuations, sudden hunger, fatigue, sleepiness, irritability, loss of attention and the search for rapid pleasure. These rhythms are often interpreted as matters of individual will, character, laziness, lack of discipline or psychological fragility. Yet a significant part of them cannot be separated from the metabolic conditions produced by modern dietary patterns.

Across different countries, class positions and degrees of economic autonomy, a shared pre-threshold problem has become increasingly visible: **insulin resistance**. The concept is well established in the health sciences; yet in everyday clinical perception it often does not function as visibly, decisively or centrally as diabetes. When people enter the health system, they are commonly assessed through fasting plasma glucose, HbA1c as a three-month average of blood glucose, oral glucose tolerance testing or symptom reports. The American Diabetes Association states that A1c, fasting plasma glucose and oral glucose tolerance tests are used in the diagnosis of prediabetes and diabetes; for instance, an A1c range of 5.7-6.4% is classified as prediabetes, while 6.5% and above is classified as diabetes (American Diabetes Association Professional Practice Committee, 2026).

Yet the problem often begins before this visible diagnostic threshold. Prediabetes may continue for years without clear symptoms. The Centers for Disease Control and Prevention notes that prediabetes may remain unnoticed for years and may not be recognised until serious health problems, including type 2 diabetes, appear (CDC, 2024). Thus, the individual

may not yet be a “diabetic patient”, while the body may already have been under metabolic pressure for a long time. The absence of diagnosis does not mean that nothing is taking place in the body. Modern medicine often names illness from visible thresholds onwards; the body, however, may begin to produce signs of disturbance much earlier.

This metabolic burden does not necessarily appear through a single disease image. A person with eye problems may go to an ophthalmologist; with kidney or urinary problems to nephrology or urology; with cardiovascular complaints to cardiology; with fatigue and weakness to internal medicine; with sleep disturbance and irritability to psychiatry or neurology. Each specialism focuses on its own symptom, organ and field of measurement. The individual may therefore receive three or four different clinical labels, while the common metabolic ground behind these problems remains insufficiently visible.

A careful distinction is necessary here. The argument is not that every problem of the eye, kidney, heart, nervous system or mood is caused by insulin resistance. Such a claim would be medically crude and easily refuted. The more accurate formulation is that metabolic disruption, especially long-term blood glucose dysregulation and insulin resistance, may constitute a broader risk ground capable of affecting multiple organ systems. The CDC describes prediabetes as a serious health condition that increases the risk of type 2 diabetes, heart disease and stroke (CDC, 2024). This indicates that metabolic disruption is not merely a matter of “sugar”; it is a wider process involving vascular, neural, energetic, visual, excretory and circulatory systems.

From this point, the discussion may move towards a broader sociological question. Metabolic disruption is not only a medical problem. It may also form a background condition affecting everyday endurance, attention span, tolerance, emotional regulation and sustained judgement. Causality, however, must be established carefully. To say that insulin resistance necessarily makes a person easy to deceive would be scientifically unsustainable. A more defensible proposition is that metabolic fluctuation, chronic fatigue, energy decline, sudden hunger, irritability and sleepiness may make sustained attention and judgement more difficult. This difficulty may render the individual’s relation to media, consumption, persuasion and political communication more fragile. This is not a settled conclusion, but a hypothesis requiring further research.

For this reason, the question of the “persuadable subject” cannot be explained only through ideology. Human beings participate in the world not only through ideas, but also through bodies. A tired, sleepy and irritable body, whose energy levels fluctuate and which frequently seeks rapid calories, may find it harder to engage with long texts, complex arguments, patient discussion and processes requiring critical endurance. Yet this does not automatically produce political passivity. Hunger, fatigue and deprivation have historically produced not only obedience, but also revolt and collective action. Therefore, no one-directional or mechanical link can be established between metabolic vulnerability and political behaviour. What must be examined is how metabolic conditions intersect with the subject’s rhythms of attention, pleasure, anger, fatigue and decision-making.

At this point, the concept of **metabolic governability** becomes significant. The term is not used here in a strictly Foucauldian sense of governmentality, although it resonates with that tradition. Rather, it indicates the conditions under which bodily rhythms may become more susceptible to external organisation, modulation and capture. Metabolic governability does not mean that individuals necessarily become obedient, passive or easy to deceive. More carefully defined, it refers to the possibility that the body, through cycles of energy, attention, hunger, pleasure, fatigue and emotion, enters into a more fragile relation with media, consumption, labour and political communication environments. The concept shows that modern power is concerned not only with what people think, but also with how they feel, when they become tired, how much attention they can sustain, which pleasures they pursue

and through which foods they calm themselves.

The modern food regime is one of the principal structures that deepens this field of vulnerability. People often encounter added sugar, refined carbohydrates, intense sweeteners and ultra-processed foods through products they perceive as healthy. Food labels are therefore not merely technical information; they are part of the hidden language of the modern dietary regime. The FDA states that the separate listing of added sugars on nutrition labels is important for enabling consumers to make informed choices (FDA, 2026). Added sugars may appear under many different names in ingredient lists; UCSF SugarScience identifies at least 61 names for sugar (UCSF SugarScience, n.d.). This shows that sugar circulates through the food system not only as white table sugar, but also as syrup, concentrate, dextrose, maltodextrin, fructose, glucose and similar forms.

For this reason, sugar is not merely a matter of calories. Sugary and ultra-processed foods may affect the brain's reward system; in particular, the dopamine system is associated with pleasure, repeated consumption and behavioural reinforcement. The Max Planck Institute for Metabolism Research discusses the relation between sugary foods, dopaminergic activation and reward-motivation circuits (Max Planck Institute for Metabolism Research, n.d.). Yet caution is again necessary. The fact that sugar affects reward mechanisms in the brain does not mean that it is directly "the same as a drug". A more accurate formulation is that high-sugar and ultra-processed foods may trigger addiction-like consumption cycles in some individuals. Gearhardt et al. (2023) argue that ultra-processed foods high in refined carbohydrates and fats may be considered in relation to addiction-like behaviours, while also requiring careful clinical and policy discussion.

The result is this: the modern subject is shaped not only through media, ideology, surveillance and propaganda, but also through dietary regimes, energy fluctuation and economies of pleasure. A sugary, rapid, cheap, heavily processed and constantly available food environment may affect hunger-satiety cycles, attention span, energy rhythms and the tendency towards repeated consumption. This effect does not emerge in the same way in every individual. Metabolism, genetics, class position, working conditions, sleep, stress, physical activity and cultural dietary habits all alter the outcome. Yet on a societal scale, the modern food regime appears as a powerful structure that expands the metabolic risk environment.

Research on glycaemic load and cognitive performance also demands caution. A meta-analysis by Gaylor et al. (2022), examining the effect of breakfast glycaemic load on cognitive performance, found no general cognitive effect within the first 119 minutes after consumption, although it reported a limited advantage of low glycaemic load for immediate episodic memory after 120 minutes. These findings suggest that the relation between glycaemic load, attention and memory is researchable. They do not allow a mechanical causal inference from glycaemic load to political behaviour.

Insulin resistance should therefore not be treated merely as an individual health problem. Medical diagnosis, monitoring and treatment naturally belong to medical professionals. Yet sociologically, insulin resistance carries a wider significance. It is one of the biological grounds upon which relations between metabolic vulnerability, sustained attention, emotional fluctuation, consumption cycles and everyday decision-making practices may be studied. The claim is not that all political problems are caused by insulin resistance. That would be weak and easily refutable. The stronger and more measured claim is that, in metabolically vulnerable societies, the relations between body, consumption and attention cannot be thought outside political, economic and cultural processes.

This introduction establishes the central question of the article. If the modern body is shaped not only by individual choices but also by the structural organisation of the food system, then

the following questions also become sociological: which products are made cheap, which calories are made abundant, which carbohydrates are refined, and which seeds, fertilisers and forms of processing are supported? In other words, metabolic governability does not begin only on the individual's plate. It emerges within a larger architecture of circulation established in the field, the seed, the port, the silo, the ship, the exchange, the factory and the supermarket shelf.

2. Method, Scope and Limitations

This study is not an empirical field study, but a **conceptual and critical review**. Drawing on literatures concerning food regimes, agricultural trade, metabolic health, glycaemic response and soil degradation, it proposes an interdisciplinary framework. Its aim is not to offer clinical diagnosis, individual health advice or direct political conclusions from glycaemic values. On the contrary, the article recognises that such direct causal claims are problematic.

The principal limitation of the study is that “metabolic governability” is not yet an empirically established concept. In this article, it is used as a theoretical proposal for opening inquiry into the relations between modern food regimes and bodily cycles of energy, attention, pleasure and fatigue. Similarly, “caloric sovereignty” is not sovereignty in a legal sense. It is a sociological concept for analysing which calories the food system makes cheap, abundant, processable and accessible.

3. The Grain-Oilseed Complex: The Global Circulation of Strategic Calories

It is insufficient here to use the term “grain” in a narrow sense. In global agricultural trade, this field is often organised through grains, oilseeds and protein crops together. For this reason, alongside wheat, maize, rice, barley and sorghum, soya bean also stands at the centre of the analysis. Soya is not technically a grain; nevertheless, through animal feed, vegetable oil, protein inputs and the industrial food chain, it functions as an inseparable part of the grain system. The structure analysed here should therefore be more accurately called the **grain-oilseed complex**.

According to the FAO's *Cereal Supply and Demand Brief*, world cereal trade in the 2025/26 season is estimated at 508.6 million tonnes. The same assessment estimates world cereal stocks at around 954.6 million tonnes and indicates that the stock-to-use ratio remains at a high level (FAO, 2026). This does not support a panic narrative that the world is about to run out of grain. It does show, however, that import-dependent countries may remain strategically vulnerable through price shocks, war, export restrictions, currency crises, freight costs and fertiliser prices.

The OECD-FAO *Agricultural Outlook 2025-2034* also projects that global cereal trade will remain slightly above the base-period share, at around 17% of production, while many countries in Africa and Asia are expected to remain net cereal importers or become more dependent on imports (OECD/FAO, 2025). The issue cannot therefore be dismissed on the grounds that most grain is not internationally traded. Strategic vulnerability emerges particularly in societies that cover their deficit from abroad.

The backbone of this structure consists of several key products: **maize, wheat, rice, soya bean, barley and sorghum**. Maize is not only a human food; it is transformed into animal feed, starch, glucose/fructose syrup, ethanol and industrial additives. Wheat is the basis of flour, bread, pasta, biscuits and packaged foods. Rice is a basic calorie source, particularly for Asia and Africa. Soya shapes the system less through its direct glycaemic effect than through animal feed, vegetable oil and the industrial protein chain. Barley and sorghum are

strategically important as feed, malt, beverage inputs and, in some regions, human food.

The shared feature of these products is that they are not merely agricultural commodities. They are strategic substances that build the infrastructure of modern calories, feed, oil, starch, syrup, flour, biofuel and industrial food. The grain-oilseed complex must therefore be analysed not only through the question of what farmers produce, but also through the question of which calories enter society, in which form, at what cost and through which corporatised flows.

4. Circulatory Sovereignty: Controlling Flow Rather than Production

Within the global grain-oilseed complex, millions of farmers produce; yet the global movement of their products is organised by a much narrower set of actors. These actors are classically referred to as the **ABCD** companies: **ADM, Bunge, Cargill and Louis Dreyfus Company**. In recent years, China-linked **COFCO International** and **Viterra**, now merged with Bunge, must also be included in this picture.

Careful language is necessary here. Claims such as “ABCD controls 70-90% of global grain trade” are now too crude and in need of updating. A European Parliament study estimates the ABCD companies’ share of trade in key cereals, oilseeds and protein crops at approximately **50-60%** in 2022. When COFCO International and Viterra are included, the estimate rises to **70-80%** (European Parliament, 2024). This does not mean absolute control over the entire food system or all grain categories. It refers to trader concentration in certain strategic commodity groups. The same study also notes the limited transparency of company disclosures concerning trade volumes and stocks.

The Bunge-Viterra merger is a recent example of this concentration. Bunge announced the completion of the merger in July 2025 and presented it as the creation of a global agribusiness company for “food, feed and fuel” (Reuters, 2025a). This phrase matters: the modern agricultural trading company is no longer simply a food company. It operates simultaneously in feed, biofuel, logistics, storage, processing, finance and risk management.

Nor can this merger be viewed merely as a technical expansion of corporate scale. China’s competition authority granted conditional approval while imposing requirements such as sales-volume reporting and continuity of supply, due to concerns that the combined company could reduce competition in China’s imported soya, barley and rapeseed markets (Reuters, 2025c). Canada also approved the merger with conditions, including the divestiture of six grain elevators in Western Canada, a commitment by Bunge to invest at least CAD 520 million in Canada over five years, and safeguards ensuring that Bunge’s minority stake in G3 would not influence pricing or investment decisions (Reuters, 2025b).

For this reason, the structure should be read not as a classical monopoly held by a single company, but as **circulatory sovereignty**. Large companies do not need to own every field. Their power is established through buying centres, silos, ports, ships, insurance networks, financing channels, futures markets and processing facilities. The farmer produces the crop; yet the price at which it is purchased, the port to which it is sent, the country to which it flows and the processed form it becomes are largely determined by this architecture of circulation.

Circulatory sovereignty is not simply the transport of a product leaving the field. It includes when the product is sold, where it is stored, according to which quality standard it is classified, through which futures contracts it is priced, from which port it departs, in which country it is processed and into which industrial input it is transformed. The modern grain-oilseed complex is therefore not merely the power of production, but the power of **flow**.

5. Caloric Sovereignty: Which Calories Are Made Cheap?

The central concept of this article is **caloric sovereignty**.

Caloric sovereignty refers to the shaping of societies' basic energy sources - maize, wheat, rice, soya, oil, flour, starch, syrup and feed - through circulation, processing and pricing rather than through production alone.

This power does not directly say "eat this". It operates more indirectly. It makes certain calories cheap, abundant, shelf-stable, transportable and industrially processable. Thus maize becomes starch, syrup, ethanol and feed; wheat becomes white flour, bread, pasta, biscuits and packaged products; soya becomes feed, oil and protein input; rice becomes cheap satiety; barley becomes malt and feed; sorghum becomes alternative feed and flour.

The important point is not to claim that companies consciously act with the aim of governing society. Such a claim would be unnecessary and weak. The stronger argument is that mechanisms such as global logistics, economies of scale, shelf life, standardised product forms, low cost and financial profitability render some products and forms of processing more advantageous than others. The resulting food environment precedes individual preference. More often than not, individuals choose from options that have already been cheapened, standardised and made constantly available.

In this sense, caloric sovereignty names the infrastructure of hunger and satiety. Which calories become cheap or expensive; which are continuously accessible or limited; which are everyday and which are luxurious - these are not determined only by individual taste. The field of choice is shaped less by agricultural production alone than by trade, processing, storage, pricing and retail chains.

At this point, the political meaning of the food regime becomes clearer. What a society eats cannot be reduced to cultural taste. Cheapened wheat flour, maize derivatives, soya oil, the feed economy, packaged foods and shelf-stable products establish the infrastructure that pre-forms everyday consumer choice. Individuals may believe that they are choosing freely; yet more often than not, they are choosing from options that have already been cheapened, made accessible, standardised and constantly presented.

6. Glycaemic Architecture: The Form in Which Calories Enter the Body

Caloric sovereignty concerns not only the quantity of calories, but also the **speed and form** in which calories enter the body. For this reason, rather than using the stronger concept of "glycaemic sovereignty", this article uses the more cautious sub-concept of **glycaemic architecture**.

The glycaemic index measures how rapidly a carbohydrate-containing food raises blood glucose. In the standard classification, **55 and below is low, 56-69 is medium, and 70 and above is high** glycaemic index. Glycaemic load also takes into account the amount of carbohydrate in a portion; therefore, in actual consumption situations it is often more explanatory. The Linus Pauling Institute notes that GI values are affected by many factors, including food variety, processing, cooking method and meal composition, and that GI values calculated from individual foods may not always accurately reflect the glycaemic response to mixed meals (Linus Pauling Institute, n.d.).

The argument is therefore not that societies consuming high-glycaemic foods automatically become politically governable. Such a claim cannot be scientifically sustained. The more defensible claim is that the industrial food system, by making low-cost, high-volume, refined and rapidly digestible carbohydrates widespread, shapes the metabolic risk environment of

societies.

Whole wheat and white-flour bread are not the same metabolic object. The outcome of rice depends on variety, whitening, portion size and what it is consumed with. Whole maize, cornflakes, corn starch and glucose/fructose syrup are not the same thing. Tables of selected foods from the Linus Pauling Institute show that what matters is not only the name of the product, but its form of processing and portion size. For example, cooked brown rice is listed with a GI of 50, whereas high-GI foods are associated with more rapid rises in blood glucose (Linus Pauling Institute, n.d.).

Accordingly, glycaemic architecture may be defined as follows:

Glycaemic architecture is the structural food environment produced by the refining, processing, portioning and circulation of carbohydrates, and by their effects on metabolic responses.

This concept is not an explanation of political behaviour. Its proper analytical field is the body's energy rhythm, hunger-satiety fluctuation, tendency towards repeated consumption and metabolic risk environment. Glycaemic architecture should therefore be used not as the cause of political behaviour, but as an intermediary concept showing the nutritional conditions under which the modern body lives.

This distinction matters. Grain itself and the industrial form of grain are not the same. In whole form, with fibre, chewing time, cooking method and the presence of protein, fat and vegetables, grain may produce a different metabolic effect. When the same grain is transformed into white flour, cereal, syrup, starch or long-shelf-life packaged products, it enters the body in a faster and different form. Grain thereby ceases to be merely food and becomes an industrial caloric instrument that regulates bodily rhythm.

7. Metabolic Vulnerability: Not a Settled Conclusion, but a Research Hypothesis

Insulin resistance and prediabetes must be treated carefully. A person may not yet be a "diabetic patient", while the body may already be situated within a long-standing metabolic risk environment. However, direct conclusions about political behaviour cannot be drawn from this. The most risky move would be to proceed too quickly from metabolic fluctuation to political governability. This connection need not be abandoned, but it must be framed not as established causality but as **a hypothesis requiring further investigation**.

The concept of metabolic governability should therefore be defined as follows:

Metabolic governability does not mean that the individual necessarily becomes obedient or easy to deceive; it refers to the possibility that the body, through cycles of energy, attention, hunger, anger, pleasure and fatigue, enters into a more fragile relation with media, consumption and political communication environments.

This definition is more cautious. Hunger, fatigue and bodily crisis do not always produce passivity. Historically, hungry, exhausted and impoverished societies have sometimes produced not obedience, but revolt and collective action. Therefore, no simple equation can be drawn between **metabolic vulnerability** and **political passivity**.

The more accurate proposition is that the modern refined food environment may be associated with fatigue, sudden hunger, weakened continuity of attention, the search for short-term relief and cycles of repeated consumption. Yet how this relation is translated into political behaviour must be investigated separately. At this point, the article proposes not a

proven conclusion, but an interdisciplinary research question.

For this reason, metabolic governability is not the final conclusion of the article, but a weak yet productive concept opened for further research. It reminds us that the modern subject is formed not only under mental-ideological conditions, but also under bodily-metabolic ones. Human beings live not only through ideas, but also through hunger, fatigue, pleasure, energy decline and cycles of repeated consumption. The political significance of the modern food regime appears precisely here: a system that alters bodily rhythm may also affect the subject's mode of relating to the world.

8. Pedological Rupture: Reducing Soil from Living Ecosystem to Production Surface

The same process operates not only in the body, but also in the soil. In discussing soil, the language must be sharp but nuanced. The statement “industrial agriculture kills soil” is too general. At industrial scale, crop rotation, reduced tillage, cover crops, precision agriculture and soil-health-oriented practices are possible. The target, therefore, should not be all forms of industrial agriculture, but the production model in which **monoculture, high chemical input, intensive mechanisation, standardised seed and short-term yield pressure** operate together.

This critique does not deny the yield increases and reduction of famine risk associated with industrial agriculture, especially the Green Revolution, in the twentieth century. Pingali's assessment in *Proceedings of the National Academy of Sciences* notes that while population more than doubled, cereal production roughly tripled and the increase in cultivated land remained far more limited (Pingali, 2012). The issue, therefore, is not to ignore this historical gain, but to analyse the accumulated problems of the same model today in relation to soil health, input dependency, ecological costs and metabolic consequences.

The concept proposed here is **pedological rupture**. Pedology is the science of soil. Pedological rupture refers to the tendency to treat soil not as a living, diverse, organic and local ecosystem, but as a production surface tied to chemical, mechanical, digital and corporatised production processes.

The FAO's assessment of global soil resources states that around **33%** of the world's soils are moderately or highly degraded due to erosion, salinisation, compaction, acidification and chemical pollution (FAO, 2015). This figure shows that soil is now a critical field of vulnerability not only for agricultural yield, but also for ecological sustainability, water retention, carbon cycling, biodiversity and food security.

Pedological rupture is not the necessary outcome of all agricultural modernisation. It is a tendency strengthened by particular incentive structures. Short-term yield, standardised products, long shelf life, global logistics, low cost and financial scale may make monoculture, high-input production and the secondary status of soil biology economically advantageous.

Concentration in seeds and pesticides strengthens this tendency. According to a 2025 assessment by ETC Group and GRAIN, Bayer, Corteva, Syngenta and BASF control **56%** of the global commercial seed market and **61%** of the pesticide market (ETC Group, 2025). These figures refer to commercial market concentration; they do not include the entire world of farmer-saved seeds or public seed provision.

This concentration means that the farmer often encounters not only seed, but a broader production package: specially bred or patented seed, compatible herbicide/pesticide, fertiliser advice, digital monitoring, yield maps, purchase standards and contract farming arrangements. This model does not entirely erase the local characteristics of soil. However, it tends to place local diversity and farmer knowledge beneath the logic of standardised

production.

The more accurate formulation is therefore this:

Pedological rupture is not the destruction of soil everywhere and under all circumstances; it is the subordination of the complexity of soil as a living ecosystem to short-term yield and standardised production pressures.

This formulation is both critical and defensible.

9. Conceptual Hierarchy: One Main Framework, Four Dimensions

The central concept of this article is **caloric sovereignty**. The other concepts should be understood as its sub-dimensions.

Circulatory sovereignty refers to the concentration of trade, storage, logistics and processing infrastructures within the grain-oilseed complex.

Glycaemic architecture refers to the way refined carbohydrates and processed food forms shape the metabolic risk environment.

Pedological rupture refers to the tendency to treat soil not as a living ecosystem, but as a high-input production surface.

Metabolic vulnerability is a hypothesis for investigating the relation between food regimes and cycles of energy, attention, hunger, pleasure and fatigue.

This hierarchy matters. When the concepts are used as independent and equally weighted terms, terminological congestion emerges. Caloric sovereignty provides the primary framework; the others identify the fields in which this framework operates.

This hierarchical structure protects the argument from two extremes. On the one hand, it prevents the food system from being reduced to individual dietary choice. On the other hand, it avoids a reductive biological explanation that links all political and social problems to metabolic processes. The central issue is the connection of body, soil and global circulation within the same structural food regime.

10. Conclusion: Food Does Not Merely Nourish; It Conditions

The modern food regime does not merely feed people. It also shapes the body's energy rhythm, hunger-satiety cycles, consumption desires, forms of soil use and fields of social vulnerability. Yet this shaping is not direct, one-directional or mechanical. Glycaemic load does not automatically produce political obedience. Insulin resistance does not directly mean political manipulation. Industrial agriculture does not kill soil in every case. The ABCD companies do not own the entire grain system.

The stronger and more accurate reading is this: the grain-oilseed complex is one of the central infrastructures of the contemporary capitalist food regime. This infrastructure renders certain products, forms of processing, trade routes, seed-chemical packages and consumption patterns economically advantageous. As a result, some societies may become more dependent on import channels, some farmers on corporate inputs, some bodies on refined-calorie cycles and some soils on high-input production pressures.

For this reason, the grain-oilseed complex is not merely an agricultural issue. Because it affects population energy intake, the metabolic risk environment, the animal feed chain,

agricultural land use and the vulnerabilities of global food trade, it is also a bodily, ecological and political object of analysis.

The central thesis may be stated as follows:

The global grain-oilseed complex operates less through production alone than through infrastructures of circulation, storage, processing and pricing. This structure may contribute to making certain calories cheap, abundant, standardised and processable, while also supporting the spread of refined carbohydrate forms, the expansion of metabolic risk environments and the subordination of soil as a living ecosystem. The modern food regime should therefore be analysed not only as nutrition, but also through the relations between body, attention, labour, soil and social vulnerability.

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