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Abstract

This study was inspired by Piketty's excellent and important book. It arose from the desire to explore the missing aspects of what claims to be a comprehensive analysis of capitalism. By comparison the author of this paper felt important aspects were lacking. The capitalist system has numerous inherent traits and innate tendencies, out of which the paper takes a closer look at three. 1. One basic feature is dynamism, innovation, and creative destruction. No picture of capitalism can be full if this basic aspect is ignored. 2. Capitalism inevitably brings about a high degree of inequality; this must be eased by reforms, but cannot be entirely overcome. 3. The basic characteristics of capitalism – private ownership and the dominance of market coordination – give rise to strong incentive mechanisms that encourage both owners and enterprise executives to innovate and cooperate effectively. One of the main incentives is competition, especially oligopolistic competition. There are strong mutual effects among these three important tendencies. It is impossible to understand well Piketty's main subject, the distribution of income and wealth, if it is divorced from the other two tendencies. The study ends with the author's own value judgements on both the favourable and the harmful, unjust attributes of the capitalist system.

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1. Introduction

Thomas Piketty's *Capital in the Twenty-First Century* is a splendid book, marking an important stage in an exceptionally important research program spanning several decades, whose initiation can be linked primarily with Tony Atkinson, and to which first-rate researchers and research groups in several countries are contributing.[1] This program sets out to reveal the features and long-term trends in the distribution of income and wealth under the capitalist system.

Piketty's book is imbued with the ideas of equality and solidarity; he shows a sense of deep moral obligation to the poor, exploited, and disadvantaged. His beliefs are expressed mainly in the content of the book, but reflected also in its tone. He is no dry academic, but a man who feels the sufferings of millions and is outraged at the abundance of the world's goods that fall into the hands of those with ready-made wealth.

There have been at least a hundred reviews of the book so far—mine will not be the 101st. A review means weighing carefully the merits and shortcomings or errors of a work.[2] I take on a more modest task here. As my subtitle states, I have written some notes on ideas that occurred to me as I read the book.

As Piketty writes in his introduction, "I belong to the generation that turned eighteen in 1989, which was not only the bicentennial of the French Revolution but also the year when the Berlin Wall fell. I belong to a generation that came of age listening to news of the Communist dictatorships and never felt the slightest affection or nostalgia for those regimes or for the Soviet Union" (Piketty 2014, p. 31).

Piketty was born and has lived his life so far in a good place at a good time: to him it is self-evident that he lives in a democracy and a capitalist market economy. I myself cannot say the same thing. I have lived through seven radical transformations that can count as changes of system, insofar as the form of political government or the system of economic institutions—or both—underwent radical change. An eighth has been happening around me since 2010. To me, or my generation, or my colleagues who have had similar careers, the democratic form of political government and the capitalist economy are not self-evident environments. I am wont to consider important matters such as inequality in a conceptual framework that contrasts the capitalist and socialist systems, learns from the transition from capitalism to socialism and from the return journey from socialism to capitalism. In that respect the approach in this study departs essentially from Piketty's. It would not occur to me to assume that Piketty and scholars thinking like him would wish to create a formation resembling the collapsed socialist system. I know that they strive for a more acceptable form of capitalism—and in that we certainly think alike. To me a comparison with socialism as it

[1] See Atkinson (1997). Atkinson and Bourguignon (2015) summarize the economic literature on income distribution in over 2000 pages.

[2] A thorough and careful analysis can be found in the study by Milanovic (2014). The winter 2014 *Journal of Economic Perspectives*, the fall 2015 *CESifo Forum*, and the volume *American Economic Review, Papers and Proceedings* reporting on the January 2015 conference of the American Economic Association cover the debate around Piketty's book, in blocs of separate contributions. Of the reactions in Hungary let me mention the writings of Lajos Bokros, Péter Felcsuti, Péter Mihályi, Iván Szelényi, and István György Tóth, as well as the conversation of Ferenc Vicsek with Gábor Kuncze and György Surányi.

appeared in historical reality is an *instrument of analysis*, recommendable to others. Contrasting the capitalist system to its opposite allows its primary, system-specific features to be sensed more sharply and clearly. Similar aims can be served by studying the transition from socialism to capitalism, because that displays the way the salient features of capitalism occur in reality, *in vivo*, not under artificial laboratory conditions. It is a pity that Piketty, like many other Western researchers, has not made use of these tools of analysis.

While reading Piketty's book I kept asking myself what relation it bore to Marx's *Capital*. "Karl Marx has returned and rewritten *Capital*" was a Hungarian headline that appeared on a prestigious website as I was working on this study (Losoncz 2015). Is this the *Capital* of our time? Readers will inevitably ask themselves this question.[3] Does he add to Marx's work the material that Marx in his time could not have known? Has he resolved the theoretical problems with which Marx struggled in vain? The book contains signs that Marx's *Capital* influenced Piketty's thinking. *Capital's* influence on me was undeniably great: I read it at the age of 19 from the first letter to the last, taking thorough notes: the experience of that book contributed much to my becoming a believer in socialism. Many years later I broke with Marxism and turned against Marx's teachings and practical political proposals, influenced by shattering historical experiences (Kornai 2009). To me a book entitled *Capital in the Twenty-First Century* raises some very timely problems with Marxism and its image of capitalism and socialism.

Nor is it just the title that arouses in readers expectations of a *comprehensive* analysis of capitalism. Its subtitle underscores the fact that Piketty's central concern is distribution: "Putting the Distributional Question Back at the Heart of Economic Analysis" (Piketty 2014, p. 15).[4] The book names certain regularities and relationships "the first basic law" and "the second basic law" of capitalism, and the "basic contradiction" of capitalism.[5] These are strong expressions that promise much. Piketty's book raises excessive expectations and falls far short of meeting them. Pointing to these excessive expectations and the resulting sense of lack will be one of the leitmotifs in what I have to say.

I shrink from reviewers who put their message in terms of why the writer wrote on one particular subject, not on something else, and move on to review their favorite subject. This piece of mine starts from no such formula. I take no issue with the fact that Piketty does not address the problems with which I grapple in my own research. Authors have a sovereign right to narrow their subject-matter, but it befits them to inform readers where

[3] Piketty cannot be said to have wanted to suggest this; the book contains no suggestion of the connection. It may be that the publishers chose the catchy typography of the title for marketing purposes. But neither can any sentence be found in the introduction to dispute it. The word *capital* has a small initial in the title of the original French edition (Piketty 2013). The breakthrough of the book came with the English edition, where the word CAPITAL appears all in capitals. The Hungarian edition (Piketty 2015a) followed suit in writing CAPITAL in capitals in the main title, with the rest"—"in the twenty-first century"—in smaller type.
[4] The journal article (Piketty 2015b) in which the author sums up the ideas in the book underscores the same concept: "putting distribution back at the center of economics".
[5] Marx in *Capital* does not use the expressions "basic law" or "basic contradiction". They arose in the vocabulary of the teaching of a "political economy" designed to popularize Marxism. For a critique of Piketty's "basic law" category see Ray (2015).

they have drawn the boundaries. My objection stems from my taking Piketty's *own* grand undertaking seriously and expecting Piketty to satisfy his own claim.

The distribution of income and wealth is connected in many ways to other aspects of the system: anyone wanting to examine these aspects and take issue with Piketty's vast work would need to do so in a book of similar size. This piece extracts from the set of relations a smaller subset: how the development of productive forces can interact with each other, including primarily technical development, inequality, and the incentives motivating the economic actors. Even examination of that triple interrelation is incomplete in my paper. Some highly important analyses (e. g., the relation between quantitative growth of production and development of the welfare state) are omitted.

2. Development of productive forces; technical progress

Marx, in striving to understand the nature of capitalism saw *production*, not *distribution* as the primary problem, like many other economists before and since. I put myself among them; it seems self-evident to me. Marx as a scientist and a politician was concerned with how *productive forces* develop, and how this development is promoted by *production relations*.[6] He placed very great value on the fact that capitalism had given a huge boost to productive forces, which had hitherto stagnated or developed only slightly. Let me quote the famous lines of the *Communist Manifesto*:

> The bourgeoisie, during its rule of scarce one hundred years, has created more massive and more colossal productive forces than have all preceding generations together. Subjection of Nature's forces to man, machinery, application of chemistry to industry and agriculture, steam-navigation, railways, electric telegraphs, clearing of whole continents for cultivation, canalization of rivers, whole populations conjured out of the ground—what earlier century had even a presentiment that such productive forces slumbered in the lap of social labor?(Marx and Engels 1973 [1848], p. 85)

But Marx was convinced that capitalist production relations (dominance of private ownership and the market, augmented and fortified by the activity of the state representing capitalists' interests) would start to impede the development of productive forces sooner or later. *That* was why capitalism had to be wound up and replaced by social relations more favorable to such development. Many misunderstand Marx. Though he was concerned with moral problems, his rationale for replacing capitalism was not that it was unjust or morally outrageous, but rather that it must be superseded inevitably for *objective reasons*. It would become out of date because it impeded the development of the productive forces.

Marx's assertions have been definitively refuted by history.

Refutation No. 1: productive forces have grown under the capitalist system. Marx's prediction does not stand up if we measure development by the volume of GDP (as Piketty's does). Counting in fifty-year averages, per capital production has grown at a rate un-

[6] I intentionally use here the vocabulary of Marx (productive forces, production relations). These expressions are easily translated into the parlance of other schools of economics.

known under pre-capitalist systems: 1, 2, or 3 percent per annum over a long period. This is modest development, but in the long term, as the sum total of exponential growth, it is substantial. By no measure is it stagnation, much less collapse.

Furthermore, the GDP timeseries mirrors the accomplished development of the productive forces only faintly. To use a Hegelian phrase, it reflects only the *quantitative* change. Piketty deals substantively with the quantity of growth (Piketty 2014, mainly on pp. 93–95). What is lost in this indicator—and in Piketty's whole line of thought—is *qualitative* change. What does GDP growth data tell us about the deep, revolutionary transformation of human experience through technical progress? A simple attempt to describe this transformation in the customary indices of *productivity* presents them too narrowly. What undergoes radical change here is *the way of life*.

We can see huge changes between life in Marx's time and life today. There is no activity or form of interpersonal contact that has not been transformed thoroughly by technical progress. Take the example of *family life*. There were many political, social and cultural factors influencing the division of labor between men and women and relations between family members. But technical progress was certainly one of the strongest of them: innovations such as electrical household appliances and disposable diapers, which eased the demands of running a home; contraception, which altered radically the relations between men and women, fathers and mothers; cellphones and Skype, which put new means of contact in the hands of family members and workers; or computers, which allowed employees in white-collar jobs to work at home. Or take a second example: *leisure* and the *utilization of free time*. Huge changes in these were brought about by mass use of televisions, smartphones and the Internet, cars, and airplanes.

Technical progress is accelerating. The empirical observation known as Moore's Law states that technical development, or certain partial processes within it, can be described by a high exponential growth path (Brock 2006, Kurzweil 2006). The most dynamic area of change is occurring in a sphere variously termed the high tech sector, the computer world, or the sphere of digital technologies. The intense speed of change is best exemplified by the development of the computer. Think back to the earliest central computers. Kurzweil, an outstanding innovator in the hi-tech sector, recalls the type 7094 IBM computer in use in 1967, on which he himself worked as a student at MIT (Kurzweil 2006, p. 102). He compares its parameters with those of a 2004 notebook. (A decade later the comparison can be made with a smartphone.) The "prehistoric" machine occupied a whole room, whereas a smartphone fits in the palm of a hand. The earlier machine sold at an astronomical price, expressed as $11 million at 2003 prices, whereas an outstanding smartphone, again at 2003 prices, cost $400, i. e., less than 0.004 percent of the earlier one. Meanwhile performance underwent incredible development. Processor speed improved more than 73,000-fold and memory 120,000-fold.[7] The steepness of the high tech sector's exponential development can also be conveyed in another form: the average period of performance-doubling—in

[7] Details of the comparison appear in background information provided on my home page: www.kornai-janos.hu/Kornai2015_background.pdf.

many processes over a lengthy period—has been around two years. Processor performance, for instance, doubles every 1.8 years.

The effect of technical development occurring in the information/communications sector is not confined to the two spheres (family life and recreation) given as an illustration. It extends to all dimensions of human activity and inter-human relations. It transforms production, turnover and consumption, the technical processes of income and wealth movements, as well as teaching, scientific research, and health care. New forms of contact are appearing in retail (e-trade). Technical progress and the globalization closely associated with it have vastly accelerated financial transactions and radically transformed the activity of the financial sector. Radical changes have occurred in all social activity: military attack and national defense, crime and law enforcement, acquisition of political power and protest against it, culture and cultural garbage, the spread of noble ideas and of falsehoods—the list goes on.

Refutation No. 2 of Marx's ideas on the braking effect of capitalist production relations appears from examining historically the social milieu of technical progress. My book on capitalism has a table listing 111 of the revolutionary innovations appearing between 1917, the advent of Soviet Russia, and 2010, ranging from transistors to internet search engines, teabags to Velcro, penicillin to MRI, paper towels to DVDs, supermarkets to barcoding (Kornai 2014, pp. 6–9).[8] Only one of the 111 first arose and spread in the Soviet Union. The other 110 were born under the capitalist system.

Refutation No. 3 can be extracted from the timeseries characterizing technical progress during the period of transition timelines from socialism to capitalism. Before the change of system, the countries concerned were slow to adopt (or steal) revolutionary innovations from the capitalist world. After the change of system, the rate of adoption in the region accelerated rapidly. Compare some indicators of the 15 earlier EU members with the 10 new, post-socialist members before the transformation began and in the recent past. The proportions of internet users in the population was 3 percent in the EU15 and 1 percent in the EU10 in 1995, but 79 percent in the EU15 and 70 percent in the EU10 in 2012. Cellphone penetration was 7 percent in the EU15 and 2 percent in the EU10 in 1995, but 127 percent in the EU15 and 134 percent in the EU10 in 2012. High tech exports as a proportion of the whole were 16 percent in the EU15 and 5 percent in the EU10 in 1995, but 13 percent in the EU15 and 11 percent in the EU10 in 2012.[9] The post-socialist countries, initially far behind in their use of modern means of communication, have now more or less overtaken "traditional" capitalist countries in this respect. Indeed there have appeared, albeit sporadically, in parts of the post-socialist region, innovations that count as revolutionary in world terms (e.

[8] The book (Kornai 2014) and this study distinguish in the customary way the discoverer or inventor from the first successful mass introducer. The latter are referred to as the innovators and are seldom the same as the former.

[9] See Kornai 2014, p. 28. The table was updated and augmented by Réka Branyiczki based on World Bank 2015. The background to the data given here and some other data on the technical progress undergone during the post-socialist transformation appear on my home page: www.kornai-janos.hu/Kornai2015_background.pdf.

g., Graphisoft innovations in architectural design or those of Prezi in teaching and business presentations).

Technical progress is a delight and a curse. The achievements make many lives easier and assist in expanding contacts. But there are dire new dangers: terrorists can use the internet to organize, and state security agencies working against terror organizations may watch unrestricted the lives of every citizen, like an Orwellian Big Brother. There is a huge literature on this. Here I would like simply to indicate that in forming our value judgments of capitalism, we should weigh the effects of technical progress in differentiated ways.

Readers seeking an *overall* picture from Piketty's book, a demonstration of the difference between the nineteenth-century capitalism described by Marx and that of the twenty-first century, will feel strongly the relegation to the sidelines of technical progress and the consequent changes in way of life; in fact, readers may notice an almost complete omission. References to technical progress can be found, but its importance is not discussed adequately. Let me give a single example to justify my assertion of omission. Piketty polemicizes about the heads of Google: "Indeed, if a company or individual contributes marginal well-being to the rest of the economy greater than the price it charges for its products, then it is perfectly legitimate for it to pay less in tax or even to receive a subsidy (economists refer to this as a positive externality). The problem, obviously, is that it is in everyone's interest to claim that he or she contributes a large positive externality to the rest of the world. Google has not of course offered the slightest evidence to prove that it actually does make such a contribution" (Piketty 2014, pp. 650–651). Astounding remarks, these. There are some who divide the information side of the history of civilization in recent centuries into a Gutenberg period, in which the innovation of printing appeared and spread, and a Google period, in which information became readily accessible and available on the internet. We are still at the outset of the second, but ever more people are gaining the habit of reaching for their smartphone and "googling" the information they desire instantly. This was a revolutionary leap, with countless spillover effects. Who could express in monetary terms such "externalities" of immeasurable weight?[10] I will not comment on how much the worldwide Google empire pays in taxes in various countries. That will be decided by negotiating lawyers, competition offices, tax authorities, and courts of law. What struck me was the easy shrug of the shoulders in Piketty's assertion that Google's outward influence is substantiated by nothing other than what the company says of itself.

3. The dimensions of inequality; the sources of wealth

The dimensions of inequality

In terms of ethics and political philosophy I stand beside Piketty in endorsing the principles of equality and social justice. I accept his mode of argument for their importance. (On this see Rawls [1971] and Sen [1985]; János Kis [2009 a and b, 2014] explains where the principle

[10] Google provides innumerable services to masses of users free of charge. It generates profits elsewhere, mainly through advertising revenues.

of equality stands in the liberal view of the world.) The remarks that follow discuss the issues of distribution, and within them of equality and inequality, not in the framework of philosophy, but on the plane of the social sciences.

An understanding of distribution under the capitalist system is aided by the comparison of distribution in the socialist system, and by weighing the experiences of the socialist transition. There were many differences between the socialist countries, and in the various practices of each in different periods, but space considerations preclude detailing those here.

Piketty's book concentrates on the uneven distribution of income and wealth. Within this he focuses mainly on income from capital, notably the income from capital of the "top 1 percent," and on part of wealth: its distribution among the wealthiest. Vitally important though this is, we must remember that inequality is a *multidimensional* phenomenon. Let me look at a few of the dimensions, without aiming at completeness or asserting among them any relative importance.

1. Let me begin with the phenomenon to which Piketty pays particular attention: the distribution within a country of monetary *income and wealth*. Establishment of a socialist system begins with the "final hour" striking, "the expropriators are expropriated" (Marx 1906, p. 837). Production companies in private ownership and dwellings above a minimal size are nationalized. The large landed estates are first distributed among the peasantry, then the private property of the peasantry is taken away and placed in collective ownership (*kolkhoz* in the Soviet Union, communes in China, production cooperatives in Hungary). This transformation of property relations is done by force: many millions are killed or deported to concentration camps.

This egalitarian shift takes spectacular forms: the poor move into the spacious mansions and city apartments of the rich. Corporate governance passes from highly paid managers to workers delegated by the communist party. The ultimate in egalitarianism was the sight of the Chinese masses dressed in identical Mao uniforms.

The communist party soon abandoned such literal equality. Pay differentials became not only permissible, but desirable as incentives: those doing harder work or with jobs calling for greater skill, or holding positions of exceptional responsibility (like party secretaries) would be paid more. But despite the differentials, the degree of inequality in monetary income was still dwarfed by the inequalities under capitalism.[11] (See Atkinson and Micklewright 1992.)

Nor do great private riches accumulate under socialism. Party functionaries at upper levels in the hierarchy, managers of large enterprises, or high-ranking officers of the secret police may ride in chauffeur-driven staff cars and live in spacious publicly owned apartments, but these material privileges are lost if they fall from official favor. That is, it is not possible under the socialist system to live out a life on the yield from inherited private wealth. The real barrier, in fact, is not this, but the prohibition voiced in official ideology and legal

[11] Later, as reforms introduced elements of the market mechanism in some socialist countries, monetary income inequalities grew. That was one reason why the New Left in the 1960s looked with suspicion and aversion at the East European efforts at reform.

regulations based upon it. Socialism will not tolerate a "parasitic" way of life. Work is compulsory. Anyone unable, in a police raid, to show a place of work is penalized as a work-shy danger to the public. Nor is it possible to live off alms: begging is legally banned. People *have to* work and all able-bodied people can find jobs. The only exceptions are those incapable of work; they receive benefits from the state.[12]

Those who for ethical reasons attach great importance to reducing radically the differences of monetary income and private wealth may feel drawn to the socialist system *from this point of view*. The basic features of that system (almost total abolition of private ownership and the market) necessarily bring about the tendency to egalitarianism. This tendency was just what inspired the sympathy of many members of the left-wing intelligentsia living west of the Iron Curtain for the way of life in countries under the control of the communist party.

A dramatic alteration in this dimension of inequality emerged with the changes of system that began in 1989–90. Inequality in monetary incomes grew and vast amounts of private wealth were amassed in former socialist countries over a relatively short time. (On the sources of the riches of the wealthiest see Flannery 2014, Hoffman 2002, Kolosi and Szelényi 2010, and Laki and Szalai 2004, 2011, 2013.) Although the historical antecedents, forms of government and relative party-political strengths, and the regulations governing privatization and freeing of the market vary in the countries of the post-socialist region, the gap between the poor and the well-to-do widened in each to varying extents, especially the gap between very poor and very rich. In several it yawned very wide indeed.[13] There soon appeared representatives of a "second generation" of the newly rich, living off the income and wealth acquired by their parents: young people who had not worked themselves for their lavish cars and luxurious dwellings.

As the fundamental attributes—private ownership and dominance of the market—consolidated, there appeared an immanent, innate tendency in the new system: substantial inequality in monetary incomes and wealth expressible in money terms. Post-socialist transformation may well provide the main historical evidence that such a strong tendency is among the main features specific to capitalism. In historical terms the transformation went ahead at lightning speed, and this aspect of capitalism's nature burst forth suddenly. Some post-socialist countries proceeded more cautiously with privatization and market liberalization, yet none could suppress this systemic predisposition to widen inequality in income and wealth. The ugliest of capitalism's many faces appeared everywhere.

2. An important dimension of equality/inequality is *access* to goods and services. One mark of the socialist economy was chronic shortage. Buyers had the money in their

[12] The work assignments, vacation periods, and state benefits for expectant women, mothers of young children, the sick and the disabled varied by country and period. This article does not set out to detail the regulations, simply to express concisely the most important and general principles and practice.

[13] Retrospective analysis of the development of income inequalities in the longer transition period appears in Tóth (2014). He finds heterogeneous growth rates in the inequalities in the post-socialist countries that joined the EU. Inequality hardly grew in the Czech Republic, Slovakia and Slovenia, but grew strongly in Romania and Bulgaria. Some countries (e. g., Hungary, Bulgaria and Lithuania) had periods when inequality shrank (Tóth and Medgyesi 2011). Growth of inequality was conspicuous in Russia and China.

pockets to buy what would meet their demand but the goods or services were not available. Inequality manifested in access, or lack thereof. The biggest difference in the standard of living of a laborer and a party secretary was not in their pay, but in their access to "shortage goods". Those lowest in the hierarchy of state employment lived in very meager, low-rent housing because that is what they were allocated. Many families had to share housing, even if their pay would have allowed them to rent their own. The higher up the power pyramid people were, the more spacious and comfortable housing they were allocated. Politico-socio-economic position, not ability to pay, determined whether a person or family received a telephone line (in the land-line period), whether they could buy an imported good in short supply, or whether they could travel abroad. Some spent years on the waiting list for a private car, but the privileged could jump the queue. There were several grades of *privilege*, depending not on income but relation to the political powers—position held, relations with superiors, willingness to serve, discipline, and servility. Of course professional skill played a part in careers as well, but political loyalty was a bigger factor.

In this dimension the capitalist market economy is the egalitarian one: money has the same purchasing power regardless of whether spenders are poor or rich. This, by my system of values, is an important virtue in the capitalist system. Very soon, the shift from socialism to capitalism brought equality in this dimension: the shortage economy ceased. So did the supply constraints, but in their place came the demand constraints of the buyers' ability to pay, which leads back to point 1: inequality of monetary pay.

3. Among the most important dimensions of equality is a realistic chance for all who seek paid work to find it, with equal pay for equal work. A feature of the socialist system is intensive and chronic market shortages of goods and services, which causes trouble for buyers. Concurrently, and partly for the same reasons, an intensive, chronic labor shortage develops in developed socialist countries. This creates difficulties for employers (the management of firms in public ownership), but strengthens the employees' position. They gain a sense of security from knowing that another job can be found if there happens to be conflict with local bosses.

The labor market, after the change of system, tips over from a state of excess demand to one of excess supply. Mass unemployment appears and the activity rate declines sharply. The first big trauma is felt with the "transformational crisis," but the labor shortage customary under the socialist years does not resume even after the crisis is over. Thereafter there is no escaping the presence of an "industrial reserve army" (to use the phrase in Marx's *Capital*). Never again will the feeling of security gained from labor shortage return. The scale and proportion of unemployment and the potential workforce who abandon or never attempt the search for work varies from country to country. It also varies over time within countries, depending on the business situation and on waves of emigration and immigration. However, it is, to some degree or another, an innate feature of all capitalist economies which brings grave suffering and humiliation not only to those directly affected, but also those who have a job, by awakening in them uncertainty and anxiety about losing it.

The phenomenon is reflected only in part in the statistics on the distribution of monetary incomes central to Piketty's investigations, and especially in his theoretical analyses. It is unfortunate that scant attention to employment should be paid in a book from which readers await a comprehensive survey of the main features of the capitalist system and whose author is deeply imbued with the notion of equality.

4. It is worth considering as a separate dimension of equality/inequality the various manifestations of *discrimination*. It is not possible to discern from statistics on the distribution of income and wealth the frequency or gravity of events in which equal treatment is not given to men and women, to the country's ethnic majority and minorities, to the religious majority and minorities, or to heterosexuals and those with other sexual preferences—and the list of discriminatory criteria could be continued. The discrimination may appear in unequal chances of obtaining a job (which ties in with dimension 3 above) and in many other selection processes. Members of a discriminated group, if they have jobs, may be impeded in their careers, restricted in their studies or prevented from pursuing them, find it harder to obtain housing, be excluded from social contacts, etc.

Much has changed in this dimension since Marx's time. In many countries it has changed for the better, though it is still not adequately resolved anywhere. But vast regions have seen hardly any change; indeed, discrimination may have become stronger.

Piketty's book pays little heed to this important dimension of equality.

5. Although services provided by the state tie in with the distribution of monetary income and wealth in several ways, it is worth treating them as a separate dimension. There are no strict, accepted definitions of a *welfare state*, but the phrase best expresses the combination of phenomena in this dimension. Here again there is strong variation between countries and changes occur at various speeds. There are big differences among political parties, ideologies and schools of economics over the desirable extent of the welfare state and how it should be phased. There is even more debate over the details: the pension system, health service, state contributions to childcare costs, or scale and methods of providing state benefits to the needy. But there can be no denying that there *exists* a welfare-state role everywhere, and this influences greatly the standard of living of various strata and groups in society. It connects in numerous ways with the distribution of monetary income and wealth, reinforcing or dampening its effects, but to use the word "space" in its mathematical sense, the phenomena in points 1 to 5 occur in different spaces along different dimensions, and their effects must be measured in different units. These are mentioned repeatedly in Piketty's book, but in view of their importance, disproportionately less often than monetary distribution.

6. I treat as a separate dimension the distribution of *access to knowledge and information*. The body of knowledge a child or young person brings from home and his or her approach to study correlates strongly with the family's income and wealth. But other factors also contribute: the specific schooling system, including its forms of financing (fees, scholarships, student loans), and also the affirmative action taken to support those starting at a disadvantage.

The socialist system was notably quick to provide universal elementary and secondary education free of charge. Higher education also became free, but the allocation of resources to it were meager compared with other sectors contributing rapidly and spectacularly to economic growth. Only a small proportion of young people could attend universities or colleges. During the initial period of the party-state, there was open discrimination by social background, using a quota system. Preference was given to young people from working-class or peasant families; only exceptionally was higher education available to those from bourgeois or aristocratic families.

Here I would repeat my point about technical progress. The expansion of high tech sent a surge through society that tended to be egalitarian. I am not saying the chances in this dimension for children growing up in an East Hungarian Gypsy ghetto resemble those for children of educated Budapest families. It is also clear that managing directors of big companies have more channels of information open to them than unskilled workers in a factory. But we are far closer to equality of opportunity in this dimension than in others. Nobody is precluded from having an e-mail address and inbox. Sooner or later all young people will have access to a computer and a smartphone, and these technologies will continue to evolve. Increasingly our skill in handling them depends on our own aptitude. A new inequality factor has appeared: age. Older people, even if well-to-do and educated, are less able to handle these devices than their own grandchildren, or even than primary-school children from poor families, who are growing up with the new technologies.

In all likelihood, there will continue to be a positive correlation between the utilization of high technology and the income and wealth of those doing so, but it is not a strong one. The extra power of the "top 1 percent" is much less pronounced in this dimension than in those covered under the previous points.

I have listed six dimensions—or rather, six bundles of dimensions, six groups of phenomena, in each of which several distinct dimensions appear. Clearly, Piketty knows of the literature on them and their importance. Summarizing in a short article (Piketty 2015b) the main message of the book, he affirms that he intended to write a multidimensional history of the capital and inequality, but the proportions in it seem not to reflect his intentions. Most of it concentrates on the first of the dimensions: the central point in the theory the book expounds is the difference between income generated by owning capital and the growth rate. Certain other dimensions are covered, but some are not mentioned. No separate chapters or sub-chapters on any phenomena noted under points 2 to 6 can be found. It is a telltale sign that expressions referring to them are not found in the detailed index either.

Let me reiterate what I wrote in the Introduction: all authors are free to decide what to write and what not to write about. My strong sense of shortcoming arises because I expected to find in the book a *comprehensive* analysis of capitalism, and within it of distribution. The expectation was reinforced by the author's proclaimed system of values, with the noble concept of equality to the fore. How can the *magnum opus* of someone to whom *Égalité* is so important push several key dimensions of equality into the background?

Ways to obtain great wealth

Piketty's book deals far more with richness than with poverty. But having chosen to focus on that, he devotes little attention—if any—to an important, and, I may add, intellectually and morally relevant, question for study: how each rich person's wealth *came about*.

A) Among the richest can be found great figures known for *revolutionary innovations*. The annual "Forbes 400" compiled by *Forbes* magazine is a well-known list of the 400 richest individuals in the United States.[14] A few who are notable for their revolutionary innovations include (with their ranking in the *Forbes* list and in some cases the name of their firm): Bill Gates, #1 (Microsoft), Larry Ellison, #3 (compilation of a large database, Oracle), Michael Bloomberg, #8 (the Bloomberg terminal), Mark Zuckerberg #11 (Facebook), and Larry Page and Sergey Brin, #13 and #14 (Google), Jeffrey Bezos, #15, (Amazon).

Referring back to the second section of this study, I called the production of revolutionary innovations an innate characteristic of capitalists. Many such innovations appear in a market structure known in the literature as oligopolistic (or monopolistic) competition. The innovation appears amidst struggle among rivals and in the first stormy period enjoys almost a monopoly position, usually through patent protection. The consequent high price produces huge profits for the innovating firm, its owners, and in most cases its managers as well. (The two functions often, but not invariably, coincide.) This special situation usually comes to an end when the patent protection runs out. Then other firms begin to use the innovation and the product price no longer produces exceptional profits. Alternatively, other innovations render the firm obsolete.

The stories of great wealth amassed through technical progress may branch off in several ways. A breakthrough may be followed by lesser innovations and developments. All who use the computer or smartphone can follow how the scope of activities of Google, Microsoft and Apple widens step by step, thereby continually increasing the wealth of their owners. Others, following their important contribution to technical progress increase their wealth not by further innovations, but by successful financial investments. Of course some, though they manage to live well for the rest of their lives, cannot keep up with their rivals and drop out of the list of the very wealthiest. Nonetheless there is in their careers at least one moment when their lives, their wealth and technical progress coincided.

I do not wish to paint a one-sided picture of this group. Many of the innovator giants in a near-monopoly position have engaged in legal disputes with rivals, or with national and international competition protection authorities who accuse them, justly or unjustly, of abusing their dominance. Time and again the Schumpeterian process of creative destruction—one of the outstandingly important accompaniments to capitalism—will lift especially productive entrepreneurs out of the competitive mass, while making others fail. (On

[14] The *Forbes* lists were analyzed closely from several angles by Kaplan and Rauh (2013a and 2013b). The few names cited here are taken from their works, from analyses done by editors of *Forbes*, and from notes by my colleague Ádám Kerényi. A summary of the latter appears on my home page (www.kornai-janos.hu/Kornai2015_background.pdf) among the background documents to this study. The numbering is based on the 2014 "Forbes 400" list.

the theory behind the process see Aghion and Howitt 1998, Aghion et al. 2005, and Stiglitz and Greenwald 2014.)

B) Another group of the very rich derives from the high-income *managers of giant corporations*. They have no big events in the history of technical progress linked to their names, but the corporations they head can remain consistently successful only if they develop their products continually. Managing a giant corporation requires a range of capabilities. Increased differentiation of production increases the complexity of life in every respect. The activity of giant corporations in the globalization period crosses national boundaries, which boosts the demand for exceptionally gifted managers. (For the effect of growing complexity on manager earnings, see Hengartner 2006.) In this market, the supply side is the stronger, which pushes up their earnings. We may shake our heads in disgust at the fantastic earnings, but the fact remains: these people are worth a lot in this special segment of the labor market, when the management of a corporation offers them the post of chief executive. In most cases they receive not only fixed income and bonuses based on specific levels of corporate performance, but tranches of free or very low-priced equity in the firm. So they are involved with their corporation not only as employees but as owners as well.

Their work as the heads of giant corporations places them under great stress, and they do it with the knowledge that their posts are not secure. They will be dismissed sooner or later if they do not perform as expected. This can break their lives. Nonetheless, they may by then have amassed a fortune to keep them in the very-rich group for the rest of their lives. Furthermore, their contracts may secure them a "golden handshake" if they leave or are dismissed from such a job in a company of that kind.

There is extensive empirical research taking place on the trends in company managerial earnings. (A broad review of the literature is provided in Kaplan and Rauh 2013 a and b, Mehran 1995, Murphy 1999, and Piketty and Saez 2013.) Nobody claims that these earnings are set exclusively by customary mechanisms of the labor market. They rest on the specific power relations between owners and chief executives, and many other economic and social factors. (I will return to this when discussing incentives.) But it can be said that many in the group saw a period when their enrichment coincided with growth in the productive forces of capitalism and exceptionally efficient utilization of resources.

C) Among the richest appear some major figures in the *financial sector*, e. g., Warren Buffett, #2, and George Soros, #17. Thomas Peterffy, #50, might be listed here or under innovators for his seminal contribution to the introduction of electronic trading in securities. I place finance in a separate group not just because it differs economically and legally from other business sectors, but because the public views the income and wealth of "bankers" differently from those of "producers". Historical figures show that the weight of the financial sector in the economy has grown over a long period. Mounting, indeed leaping, demands are placed on finance by the increasing complexity of business ties, the spread of each participant's ties at home and abroad, and the spectacular surge in transaction speeds—all of which relate strongly to technical progress as well. This ascent takes executive earnings with it as well.

Some in the media term the rich of this group euphemistically as "investors" while others denigrate them as "speculators". Much of their activity clearly meets social needs: individuals and institutions (such as pension funds) need to maintain the purchasing power of their savings; the sector plays an important part in shaping relations between savings and real investments. It is another matter to say how much profit the "investors/speculators" make for themselves and personal clients, and how much harm they do with high-risk financial maneuvers. Where can the line be drawn between desirable or at least permissible and detrimental, even indictable speculation? There is no consensus on this, among financial economists, lawyers, or the politicians approving regulatory legislation and regulations.

It is not my task here to take a position on the question of drawing the line, but I certainly do not join the uproar of those who dismiss investor/speculator activity out of hand and decry it as redundant and harmful—those who would gladly occupy Wall Street and close all its doors. I would disagree because I see the advantages of decentralizing investment decision-making over the centralized mechanism I experienced, whereby a few top people in the communist party could decide on the total proportion of national income available for investment, on the cases of numerous "priority projects," and even on minor details of the allocation of investment resources. Nobody could call them to account for the efficiency of their decisions, because that was not measured or even susceptible to measurement. The wealth of all the super-rich investor/speculators in the capitalist financial sector is dwarfed by the losses stemming from gravely mistaken central decision-making.

D) Among those with very high incomes can be found the *stars*, not of the business world but of other spheres. Among them can be listed George Lucas, #114, and Steven Spielberg, #151, the famous movie directors, Oprah Winfrey, #190, the TV talk show host who founded her own media corporation, and Michael Jordan, the legendary basketball player, not among the top 400, but still #1741 in the Forbes list.

The word "star" has long exceeded the bounds of Hollywood or the sports stadiums. There are star lawyers, star news editors and reporters, star physicians, and even star academics who earn huge sums by their professional activity. Economics has its stars as well, who supplement their university salaries with substantial earnings from bestselling books and textbooks, as well as fees for lectures delivered outside the academic sphere, and as board members or consultants to big corporations.

Looking at this with the eyes of an economist, there is nothing surprising here. A sports club will sell the rights to broadcast a game to certain TV channels, and more viewers (and so more advertising revenue) will be generated if there are world greats in the teams. It is worth the clubs' while to pay huge amounts to such stars. The fantastic growth in the profitability of spectator sports is connected with technical progress: matches can be seen not just in the stadium but by millions on television, the computer, or the smartphone. Star lawyers are freely chosen by certain clients hoping to improve their chances of winning their case. They see the high lawyer's fees as worthwhile and have no trouble paying them. I am not pursuing the question of whether stars deserve their vast incomes. Perhaps with hindsight film historians will establish which were the truly immortal film actors and directors, and that judgment will differ from the list of those who earned most. One can certainly find a good many judges and academic lawyers with greater legal knowledge than the star lawyers. This concerns segments of society where the market mechanisms of the capitalist system operate—and also those where the market mechanisms often become dominant. Where the market operates, the income of providers becomes differentiated and there inevitably develops a "top 5 percent," and within it a "top 1 percent". It was different under the socialist system. The Soviet agencies negotiated huge fees with Western impresarios for appearances by the violinist David Oistrakh or the pianist Sviatoslav Richter, but such sums were seen as "too great" for a Soviet citizen. Most of the money was expropriated by the state—the performers received only a fraction. This brought down their incomes nearer to those of other people with a tertiary education.

So far the discussion has been of great incomes earned fairly (or to put it more cautiously, gained mainly by legal means). It would be foolish to think the same could be said of all great incomes.

E) A high proportion of these great incomes fail to appear in tax returns or surveys of household statistics, as they are earned in the tax-evading "gray" or "black" economies.[15] Some vast fortunes also avoid being counted (through transfers to tax havens, for instance). Tax fraud is a judicial offense, and punished if discovered.

F) Corruption occurs to different extents in different countries. Some entrepreneurs may gain a dishonest advantage in competing for state orders, by bribing politicians and state officials. These are not petty matters, but huge projects, large military procurements, and state decisions on funding the construction of freeways and other huge projects. Those distributing the state monies may themselves join the successful applicant as a bedfellow. Political bias may play a big role: "We support your business and you support us, with contributions to our party and our electoral campaign." Such political bias is not confined to the assignment of state orders, or to a combination of cronyism and bribery. It appears also in the setting of regulated prices, tax rules tailored to certain taxpayers, state subsidies to loss-making enterprises or other organizations, and to decisions on whether to bail out the failures.[16]

Marx wrote indignantly of the process of "primitive" accumulation, of which a curious kind occurred in the post-socialist world in 1989–90, during the process of privatizing most of the state's assets. Some transfers occurred in honest ways: for instance, where the new owner purchased the state asset on fair and square terms at a realistic price. But dishonesty was common, such as when decision-makers slipped vast assets to political or business cronies at knock-down prices. In that way emerged the oligarchs from the mass of unknown

[15] Incidentally, invisible, tax-evading income is quite frequent in middle and lower deciles of income distribution, not just the upper ones. This distorts the figures for distribution.

[16] Bagchi and Svejnar (2015) and Svejnar (2015) show, with the help of extensive statistical data and their thorough econometric analysis, how relevant a role big entrepreneurs' political connections, crony capitalism, and the intertwining of politics and business play in the formation of great wealth.

little men in the Soviet successor states, China, and Central and Eastern Europe, of whom several have joined the ranks of the richest people in the world.

G) For a time the richest may be joined by *promoters of Ponzi schemes*. Although most eventually lose again, this does not deter others from trying.

H) Huge wealth is amassed by *mafia "families"*. Many use brute force and even murder to gain controlling positions in the casino industry or wholly illegal branches of gambling.

I will turn shortly to the question of inherited wealth, but beforehand I would like to add a comment on the above classification of great fortunes. What has been said so far may show readers how far I am from accepting a meritocratic explanation of the inequality in capitalism, from saying the rich merit their riches and the poor deserve no more than they get. Further analysis of great wealth calls for firm distinctions between methods of obtaining it. Piketty rightly asserts that economics is not just a matter of plain calculation, but a moral science as well (Piketty 2015c). In this review I have moved down the list according to my system of value judgments—from respect to disapproval to downright contempt or condemnation. In line with my system of values, I am outraged far more when money passes from taxpayers into private hands through political bias and/or monetary bribes—or when the same political forces cooperate in advancing the oligarchs—than I am when I hear that a chief executive or a sports star has pocketed millions. My ethical code leads me to abstain from *collective* condemnation of groups, classes or strata. This applies to moral judgment of the "wealthiest" as well.

Inheritance

Piketty's data on the rising proportion of income derived from wealth inherited from previous generations deserves close attention. Again, to my mind, micro-level analysis is lacking. There are many possible combinations of wealth gained by personal effort and wealth inherited. The editors of the *Forbes* lists introduced a special measure: a "self-made score," running from 1 to 10 (Fontevecchia 2014). A 1 is for those born "with a silver spoon in their mouths," and a 9 for those who gained for themselves every dollar of their wealth: the dishwasher boy who became a millionaire, so fulfilling the "American dream". A score of 10 differs from 9 in stipulating that they did so while suffering a specific social disadvantage, such as the racial discrimination faced by Oprah Winfrey as a media star of African-American background.

The distribution of "self-made scores" at the top of the *Forbes* list was examined in the richest group of all: those who featured in the top 50 at least once in the period 2012–14. Most had "self-made scores" higher than 6. In 31 cases they were in the highest category of 9–10.

The number of those who did nothing more than put their inherited wealth in their pockets or let it run out was minimal, but it was quite common to find among them inheritors who looked after the family fortune and added to it. The firm of Johnson & Johnson was a truly revolutionary innovator, successfully distributing their easily applied Band-Aid dressings, known initially as Johnson plast, and many other branded products.[17] The main owners and chief executives were drawn from the Johnson family over several generations. The Johnsons rank #46 in the Forbes list of American families by wealth.[18]

It is refreshing to read the literary quotations in Piketty's book: the exploits and ideas of characters in Jane Austen and Balzac novels are a help in understanding the problems. Let me quote Thomas Mann's *Buddenbrooks*. The first two generations of one of North Germany's richest patrician families amassed a large family fortune by honest commercial activities. The story takes a turn with the third generation. One brother, on taking over the fortune and management of the trading house, wants to follow family tradition. The other is incapable of it and makes no attempt to do so. Thus the family history features industrious creators of family wealth and an indolent figure who squanders it. After the creative period come generations that disperse the fortune.

The family goal of the early generation of the Buddenbrooks was to pass on the largest possible fortune to the next generation. This touches on a problem raised several times in Piketty's book: the owners and chief executive of a capitalist joint-stock company are interested only in short-term profit, in raising the price of the stock today. Who then has an interest in the long-term development of society? In democracies, the political forces that happen to be in power want to improve their chances of re-election by taking popular measures. Long-term considerations are relegated in the thinking of politicians.[19] Under these circumstances the one ownership structure that motivates long-term interests is the "*Buddenbrooks* model," concerned with passing on family wealth, business culture, and probity for at least a few generations. I realize this model cannot be expected to spread far, but it is worth considering because it puts an important argument in favor of the desire to bequeath as a beneficial motive at a time when we witness general attacks against inheritance.

Some of the rich devote a part of their life's income or wealth to useful public purposes. These may cover assistance to needy persons or groups, or support for health care, education, the sciences or the arts. It may take several forms, from direct payments to individuals to establishment of charitable foundations. Many bequeath some of their estate to foundations set up by themselves or others. This congenial solution to the inheritance problem respects the sovereign disposal right of the one who amassed the wealth, spreads a spirit of altruism, and—especially important in my view—chips away at the paternalist state monopoly of deciding who benefits from redistribution.

It is worth quoting here a contribution by Bill Gates (2015) to the debate on the Piketty book: "Imagine three types of wealthy people. One guy is putting his capital into

[17] Some Johnson & Johnson products well known worldwide include Bengay, Immodium, Listerine, Nicorette, Nizoral, and Tylenol.

[18] Of course there is no gauging accurately what part in the firm's success was played by wealth inherited by successive generations and how much by each generation's industry, talent, and luck.

[19] When debates on socialism were still theoretical, it was argued that capitalist private ownership serves only short-term interests. Abolishing private ownership opens the way to wise, forward-looking central planning. This hope was belied by experience. Central planning too advanced only short-term aims, e.g., increasing military potential or boosting the rate of growth, which became a fetish. Socialism bequeathed to the new system grave environmental damage and ill-maintained public assets in disrepair.

building his business. Then there's a woman who's giving most of her wealth to charity. A third person is mostly consuming, spending a lot of money on things like a yacht and plane. While it's true that the wealth of all three people is contributing to inequality, I would argue that the first two are delivering more value to society than the third. I wish Piketty had made this distinction…"

4. Incentives

Antecedents in the history of economic thought

Marx was convinced that capitalism obstructed the development of productive forces; communism, freed forever of private ownership and the market and of the obstacles in people's selfish instincts, would remove all hurdles before such development. The Achilles' heel in his work, including his magnum opus, *Capital*, was a false perception of human nature. Capitalism can be understood only by studying the problem of *incentives* thoroughly. Marx's *Capital* ignores this, as does Piketty's book.

A famous debate on the socialist economy took place in the 1930s. It began with a noted study by the Polish economist Oscar Lange, who was then living in the United States (Lange 1968 [1936–37]). Lange's model seemed to show that an economy where enterprises were publicly owned and prices centrally set could balance supply and demand and ensure efficient use of resources. Both Mises and Hayek put forth numerous arguments in defense of capitalism, the key one being that private ownership sets out natural incentives. It is in the owner's *own interest* to utilize available knowledge and information and seize opportunities (Hayek 1935, including the study by Mises [1920]). Schumpeter added to incentive theory by assigning the *entrepreneur* the role of protagonist in capitalist development: the entrepreneur was prompted to discover new combinations of resources, employ new forms of organization, and win new markets (Schumpeter 2008 [1934]). Baumol, Litan and Schramm (2007) created a typology of variations of capitalism, singling out "entrepreneurial capitalism" as the type especially effective in the process of development: "The incentives needed for productive entrepreneurship and security of bonuses and earnings procedures must be maintained and reinforced." (p. 234)

Most recent economic writings narrow the concept of incentive implicitly to the principal/agent relationship: the principal wants to encourage the agent to act in the former's interest. This study takes a broader view of incentive, dealing in the first place with what the inducement is for an individual not at the service or under the influence of a principal. What is the motivation of an individual private owner, an entrepreneur, the initiator of a "start-up" project, or founder of a new firm? What is the driving force for *profit*? Of course this may impel executives paid by the owner as well, and that I will discuss also: the two overlap in part if the manager is receiving stock as an instrument of incentive.

It would be legitimate to include in a discussion of incentive an examination of the effect of *interest rates* on the savings and investment intentions of those with money.

This brings us to the well-known relationships and regularities familiar to economic policymakers and studied by scholars in the field of macroeconomics and growth theory. Growth rate largely depends on the saving and investment rate. The situation of those at the bottom of income distribution may improve if strong redistribution is carried out in a slow-growing economy, or their situation will improve if the pattern of distribution promotes more investment and in turn a rapidly growing economy. Naturally there are several possible combinations of the two main courses of action. Piketty does not deal with this chain of cause and effect, fundamentally important though it is (interest as incentive→savings and investment→growth rate→consumption, including the consumption of strata with low incomes). He places interest in the wider category of all returns of capital earnings and does not distinguish it from profit. Constraints of length prevent me from writing on this great problem of *macroeconomics* in the section on incentives. I must remain in the sphere of *microeconomics* (along with micro-sociology and micro-psychology).

The literature on economics includes libraries on incentive. As a highly skilled economist, Piketty will know the literature on the subject well. It is not superficiality or ignorance that explains his avoidance of the subject, but his point of view: inequality can be studied and understood while "assuming away" the phenomena of incentives.[20] I see this is an impermissible abstraction, a constriction of the analysis leading to false theoretical and policy conclusions.

Connections between the three groups of phenomena

"Little money, little soccer—big money, big soccer":[21] the remark by Ferenc Puskás, a world-famous Hungarian footballer, may seem trivial, but it sheds light on what I wish to point out in this section.

Let us look at connections between three groups of phenomena: (1) performance (and within the set of various manifestations of performance, innovation and technical progress), (2) incentives to effort, and (3) inequality in the distribution of income and wealth. These three display mutual, multidimensional interactions, of which I will deal here with only a few.

1. *Incentive→performance.* This connection can be expressed and measured also in numerical terms, as much research shows. (See Jensen and Murphy 1990, and for a synopsis of theoretical and empirical literature, Prendergast 1999.) Murphy (1999, pp. 2522-2523)

[20] Piketty's book contains countless citations, but Hayek's name appears just once among the big names in the index, and it does not cover the problem I just raised. It does not note Schumpeter's great contribution to the theory of capitalist development. Instead it awards him an (albeit justly) sarcastic remark for his wrongful prediction of the future chances for capitalism and socialism. Nor could I find a reference to the extensive literature on incentive. Almost parallel with Piketty's book I read a famous work of Kurzweil (2006) on technical progress, cited in an earlier section. Kurzweil does not see events only as a historian of technology, but as one playing a big part in them as an inventor and an entrepreneur. Yet it says not a word on the economic forces behind technical progress. Nor does his long index include "incentive". We can indeed wonder why both an economist studying distribution and an IT man studying technical progress should omit the problem of incentive, a main element connecting the two phenomena.

[21] This is recalled by the economic psychologist László Garai in his studies on inequality (Garai 1990, 2015).

shows how much the monetary income of a US firm's chief executive rises for every USD 1000 rise in its equity, terming this "pay–performance sensitivity," and reveals a rising trend in 1972–96. This ties in with Piketty's propositions, but my way of thinking is to offer a different interpretation of this empirically observed piece of reality. The pay of most chief executives is determined by several factors. One is whether ownership is concentrated or dispersed. The wider the dispersion, the better chances top executives have of wangling high pay. One tendency in ownership relations points in just this direction: to that extent this stronger top executives' position derives from immanent attributes of the capitalist system. But even allowing for variation in ownership structure, the usual labor-market effect does not disappear. Such executives can command higher pay because there is a demand for them. At any level of ownership concentration, it is in the financial interest of owners to grant the top executives high payment.

Some researchers dispute whether any watertight indicator can show a rising trend in chief executives' pay across multiple spheres. I do not feel well enough informed to take a stand on the debated measurement problems. As for interpreting the measured data, I find the argument of Kaplan and Rauh convincing, as stated in the title of their article (2013b): "It's the market: The broad-based rise in the return to top talent."[22]

2. *Incentive→effort→inequality*. Everyone knows that money is not the sole force stimulating high performance. Another strong incentive is reputation: the good name and appreciation that outstanding achievement brings (Garai 1990, 2015). Steve Jobs, the creator of Apple, was a real fanatic, obsessed by being first with each new type of product, the betterment of new and existing products, and by the idea that all Apple products should be beautifully designed (Isaacson 2011). The pleasure of a job well done and altruistic motives can give a strong incentive, not just selfish gains.[23] But acknowledging the multitude of motives is not incompatible with recognizing the primacy of the *monetary, material incentive*. Capitalist firms seek great profits and individuals want to earn more.

Monetary incentives stimulate performance, which varies from person to person. That simple syllogism brings us straight to the conclusion: monetary incentives are among the causes of inequality of income and wealth.

Competition (and let us initially consider it in all its forms, including sports competitions, study competitions among students, and competition between films and musical performers) encourages great effort and necessarily produces inequalities. Here I include both reputation and recognition in the concept of reward, although the winner of a competition will also receive monetary sums. Or if, as in the case of the Oscars, the winner receives no money, the recognition will be followed by highly lucrative box-office and career success. One psychological mechanism by which competition encourages effort is that the reward is unequal. What kind of competition would include not only equal chances but also equal re-

[22] Here I should consider the creation and rewards of "human capital". This does not fit into Piketty's conceptual apparatus: if "capital" and "work" are just aggregated, some essential features of each are lost.
[23] See Garai (1990, 2015). Specific incentives may have different effects; much depends on personality. Notable works have dealt, for instance, with the question of the typical traits of successful entrepreneurs (Caliendo and Kritikos 2012, Cross and Travaglione 2003).

sults: everyone could be a medalist? There are losers too, and some experience it as a tragedy only to receive nothing but a silver or bronze.

Turning to business competition, rivalry in every market produces income differences, including great sums for the most successful and severe trauma for the failures. A failed business enterprise means severe losses not only for its owners, but for the small and medium-sized supplier firms, who do not receive moneys due to them, and for the employees who lose their jobs. Success in running is measured in seconds and in weight-lifting in kilos; there is no doubt who is the winner. The rightfulness of victory in business competition may be debatable and the failure undeserved—this is not a field where justice abounds. But its power to stimulate is irreplaceable: competition is one of the main explanatory factors behind the dynamism of capitalism.

Theoretical debate over the way in which various market structures—the varieties of monopoly, duopoly, oligopoly, contestable market, and perfect competition—affect the innovation process is far from over. Do state interventions promote or impede technical progress (Stiglitz and Greenwald 2014)? Is the current practice of patent law useful or harmful (Lybecker 2014)? Many justified doubts arise: is the actual structure of operating markets the most favorable or not? However, all participants in the debate admit the strong incentive effect of competition.

The recent development of theoretical literature based only on deductive logic has been accompanied by burgeoning empirical research as well. The Schumpeterian vision is backed, as noted in section 3, by the fact that a very large fraction of revolutionary, epoch-making innovations in recent decades have been made by profit-oriented firms competing against other initiatives, and in so doing, their owners and managers have acquired vast wealth. Phelps (2008) compares the performance of the US and European economies. The US government curbs competition and intervenes bureaucratically less frequently than its counterparts in Europe, and its capital market is more flexible. That may be the main reason that the American economy is more innovative and dynamic than that of Europe.

The [incentive→effort→inequality] connection is not linear. If rewards to Puskás's soccer team are doubled, it is not clear they will win twice as many games. But if the stars of spectator sport consistently receive a very high reward, this encourages exceptional performance. The effect of competition—and now I mean business competition, the rivalry of firms and individuals—is strengthened by the fact that the dispersion of rewards through competition is extremely uneven. The gains from outstanding achievements are *far* greater than those from lesser achievements. This enhances effort in most competitors.

3. *Inequality→incentive*. Some people are distressed by the fact that the distribution of incomes and fortunes is uneven. They forgo entering into the struggle at all, feeling they start from too great a disadvantage. They feel it is hopeless to try to excel or doubt their own capabilities. Others are spurred to action. They want to rise at least one or two steps up the social ladder and earn more. The boldest aim still higher. An image flashes in the eyes of many start-up entrepreneurs: perhaps they too can break out, like the great role models or icons of technical progress (Van Auken, Frey and Stephens 2006, Bosma et al. 2012). Selec-

tion proceeds with many errors, but "enterpreneurial capitalism" ultimately brings its talents and abilities to the fore. In that sense inequality, including the rise of an immensely rich group, has a stimulating effect. This is a complex connection, because the stimulus comes not from the actual existence of inequality and wealth, but from how the entrepreneurs see the prospect of great success. (See the article by Xavier-Oliviera et al. 2015.)

Entrepreneurial decision-making under uncertainty

The number starting an innovative venture is far bigger than the number who succeed: the chance of success is far less than that of failure. Entrepreneurs risking innovation crop up under suitable political, social, economic and regulatory conditions, which create an atmosphere that fosters rapid technical progress.

Everyday experience suggests that entrepreneurs risking innovation overestimate their chances of success: that is one of the motivations of risk-taking. (See the review in Barberis 2013 of the literature on the psychological and behavioral economics of the topic.) Barberis brings up an example from equity investment on the stock market, illustrating well the situation discussed in this study. "…an individual gives himself a chance—a small chance, admittedly—of making a lot of money, should the stock experience a right-tail outcome, in other words, should it turn out to be 'the next Google'. Under probability weighting, this tail event—the event that the stock makes him rich—is overweighted in his decision-making" (Barberis 2013, p. 612) .[24]

Other observations confirm the excessive optimism of investment decision-makers about their success (Malmendier and Tate 2005, Landier and Thesmar 2009, Astebro et al. 2014). I would add that the optimism, though exaggerated, reflects a boldness (recklessness?) essential to innovation. Technical progress is a process founded on experimentation—there are a hundred or a thousand failures before a revolutionary breakthrough (Kerr, Nanda and Rhodes-Kropf 2014). An American survey found that over half the firms founded in 1996 failed within six years (Astebro et al. 2014). Self-confidence—even excessive faith in one's own ideas—is required before taking the risks of entrepreneurship.[25]

Spontaneity and tnatural inclination

What has been said does not amount to a concisely phrased "theory"—and that is as it should be. The picture gained from observations, serious statistical calculations, individual lives, characteristic events, questions put to people, as well as many other impressions, is varied and inconsistent. Tendencies and counter-tendencies appear side by side. I cannot and would not like to summarize the phenomena that have been described so far in some

[24] The extended end of the probability distribution is termed its tail.

[25] I am grateful to Botond Kőszegi for pointing me to these articles and some other works, including an article by Kamenica (2012) on "behavioral economics and psychology of incentives," which takes a thorough look at the literature and left me with the following impression. There are quite a few studies based on psychological experiments arranged under *"artificial" laboratory conditions*. There are also *real-life* empirical observations, but mostly based on experience *in other spheres* (e. g., voting or charity donating). Unfortunately, it is rare to find empirical research on the topic that concerns me: to which incentives *real* entrepreneurs react, and how they think and decide.

kind of "law," because they are marked precisely by their diversity and spontaneity.[26] My study reflects the view that the capitalist system has a *natural inclination* to spawn innovators who move technical progress forward, a *natural inclination* toward unequal distribution of incomes and wealth and the production of an upper group of the wealthiest, and a *natural inclination* to develop strong stimulatory mechanisms.[27] These three spontaneous inclinations are connected by many strands and influence each other. The capitalist system cannot be understood by looking only at one or two of the three tendencies, as they are inseparably woven together as its joint products.[28]

My line of thought so far is confined to applying a *positive* research outlook and refrains from formulating proposals for the government or enterprise decision-makers. Concluding a book or a paper by explaining the policy implications and offering practical proposals is just what much of the literature on incentive seeks to do, but the logic of this article does not seek to draw on such conclusions; rather, it is concerned with answering the following questions. What is the role of innovations that shape and transform people's *real existence*? What are the *real sources* of the income and wealth of the wealthiest? What are the incentives effective in *real life*? The answers present phenomena that in my view are attractive, contributory to the joys of human life, and interesting—even exciting. I have spoken also of phenomena that are repugnant, offensive to my sense of justice, and even dire and dangerous. Here, in concluding the discussion of the [incentive→effort→inequality] trio, I have merely sketched my position on the value judgments, leaving the emphasis firmly on understanding the nature of capitalism.

5. Contradictions, dilemmas, and action plans

Piketty sees in capitalism a "basic contradiction": the return on capital is greater than the rate of growth. The compact mathematical formula $r > g$ has already spread among economists. (See Piketty 2014, pp. 571-573.) Much of the debate turns on whether the statement in this formula is true. Is it universally true or only under certain conditions at certain times? I leave that debate to others. To my mind it is a question that can only be answered satisfactorily by comparative historical analysis of a large number of countries operating under various political and economic structures.

[26] I find it useful and important to classify the capitalist system's innumerable specific historical realizations according to various criteria and to create typologies of the *variation*s of capitalism. See, for example, Hall and Soskice (2001) and Baumol, Litan, and Schramm (2007). Recognizing the importance of that research program is compatible with the approach in this study of focusing on what is *common* to the varieties of capitalism.

[27] The socialist system at its birth was imposed on society. Later, when it consolidated and people's behavioral traits emerged, this system too developed its innate inclinations.

[28] Aghion et al. (2015) convincingly prove the strong effect of the three-way interaction described above. According to the regression analysis presented there, innovation explains about 17 per cent of the top one per cent income's growth in the USA.

Before I introduce my own reasoning, some conceptual clarification is required. I will not discuss contradictions between values, but use the term contradiction to cover conflicts and incompatibilities among forces, mechanisms, and tendencies apparent in *actual social practice*. I have no problem with Piketty calling the $r > g$ phenomenon a contradiction. What raises intellectual resistance in me is the fact that Piketty declares this to be *the* "basic" contradiction. I view with doubt and intellectual suspicion any theory that picks out one of many contradictions and awards it primacy. It is not hard to find other contradictions that have powerful effects and are likewise system-specific, i.e., not applicable or strongly effective under other systems.

For myself I prescribe greater modesty. I do not even attempt to find the "basic" contradiction in capitalism, because I know that all real systems are replete with irresolvable contradictions. I would be content, when studying some sphere, to find a few of its most typical contradictions. For this reason, I identified just three tendencies in this study (technical progress, inequality, and incentives to perform) as innate, "genetic" attributes of capitalism, among which contradictions exist.

Marx in his *Capital* drew a distorted picture of capitalism when he declared the conflict between productive forces and the capitalist production relations retarding them to be the basic contradiction. He drew conclusions from that premise with perfect logical rigor. Marx was a revolutionary. Since the conflict was irresolvable, the production relations had to be destroyed and replaced by radically different relations.

Piketty is no revolutionary. He accepts capitalism but wishes to reform it. But *his* book too gives a partial, distorted picture of the system, not in what he writes, for there is much truth in that, but in what he *omits* to write, or refers to only in passing, without due emphasis. He is silent on the system's dynamism, on the incentive effect of competition, on technical progress and on its shaping effect on all aspects of today's human life.

This distorted picture leads to false value judgments. Only a balanced and sober positive picture can produce a balanced and sober value judgment. To my mind capitalism is no devil and no angel, and that can be said about socialism as well. Both have attractive and repulsive features among their main attributes. The multiplicity of that picture was brought out sensitively in the post-socialist transition in Eastern Europe. There appeared side-by-side the delight of political choice and the loathsome complicity of political power and business activity. The stormy acceleration of technical progress took place not only alongside the rapid enrichment of the pioneers of progress, but also the accumulation of the vast wealth of oligarchs, derived from helping themselves to state assets and obtaining huge state orders by political connections.

If I weigh the arguments for and against, my system of values tells me to rejoice at the turn of events in 1989–90, and the shift to capitalism. These values are influenced by two considerations.

First and most importantly, parallel with the transformation of the ownership relations and coordination mechanisms in Eastern Europe, was the change in the form of political government—the shift from a one-party to a multi-party system, from totalitarian dictatorship to liberal democracy. The latter was impossible while public ownership remained the dominant form and bureaucratic centralism the reigning coordination mechanism—there can be no modern democracy without capitalism. Sadly, capitalism, a necessary precondition for democracy, is not a sufficient one.[29] Capitalist economic relations have invaded Russia and China too, but they have not made democracies of them. In Eastern Europe at least the *possibility* of democracy is open. That in itself makes me a believer in capitalism.

Secondly, this study has placed great emphasis on my enthusiasm for the dynamism of the system, its technical achievements, and all the good that the quantitative and qualitative increase in productive forces has brought us. I see the drawbacks and dangers of the tendency, but I consider the achievements more important.

And I espouse other great values as well: the principles of equality among people, social justice, individual freedom and right of self-determination, tolerance and openness, and solidarity with the needy, and peaceful means in place of militancy and physical or psychological violence—to name but a few of the most important. I know there are contradictions among these ultimate values; I cannot (and have no wish to) be consistent in weighing their relative merits. I live with much pain through those contradictions.[30]

My frequent use of first-person formula in the last few paragraphs does not stem from egocentrism. I am talking of spiritual things that lie deeper than rationality, which can only be clarified by self-reflection. Only a fanatic can be truly consistent in selecting values. The conflict and struggle among values is part of moral human existence.

I append this personal confession to this study because Piketty writes in an honest, human way, not shrinking from subjective feelings (in which Marx too could be an exemplar). What I find alien in this monumental work is its unhesitating obsession with the worth of one ultimate value, that of equality and social justice, over all the others.

The book's positive description of capitalism and the bias in its moral judgment have their effect on the very narrow plan of action it outlines. Fiscal reform, including progressive income tax (or greater progressiveness where this already exists), higher taxation on wealth and inheritance: I am not against any of them. But before expressing my approval of it, I would expect thorough analyses of the short and long-term effects of the changes on a given country's state of affairs. I do not believe in prescriptions of universal validity.

So is Piketty's narrow action plan the key that unlocks the great contradiction in capitalism? The tasks are far more complex than that, and different for each country and period. A single partial reform cannot be picked from the multidimensional package of short and long-term reform measures. Many changes are required to overcome the various harmful occurrences, curb the inevitable, "genetic" inclinations of capitalism, and lessen their ef-

[29] Unfortunately space does not permit this study to discuss the relation of capitalism to forms of government (democracy, autocracy and dictatorship) and the connection of this to problems of distribution, although I have comments on Piketty's book in this vein as well.

[30] I wrote a study 35 years ago (Kornai 1980) on the contradiction between efficiency requirements and socialist morality proclaiming equality and solidarity. The title of one of my books of studies was *Contradictions and Dilemmas* (1986) and another was *"Old and New Contradictions and Dilemmas*" (1989). (Here I refer to the title of the original 1989 Hungarian volume. The English translation was published in 1990 under a different title.)

fects; indeed, rapid changes, but also ones that need implementing slowly and gradually. Acemoglu and Robinson (2012) showed convincingly that many factors, including government decisions, determine whether a country facing a historic juncture takes the right path or the wrong: stagnates or begins to decline, or on the contrary, starts to move upward.

The big decisions are taken primarily in the political sphere.[31] This means, in a democratic political environment, obtaining support for a favorable decision in the political arena, under the existing power relations. Those who wish their ideas to prevail must work with the weapons available in the political arsenal, which are generally known to differ from those of researchers. Scientists are marked by impartiality, objectivity, and doubt. Politicians who are truly successful emanate a conviction that spurs their supporters to action. Can one person perform both roles really well?

Piketty is brave to take on both roles at once. Perhaps it was, among other things, his one-sidedness, his lack of doubt and struggle, and his self-confident assurance that brought great success. Millions of readers eagerly awaited a great book that would tell them clearly what was wrong and what had to be done. No such mass approval could have been expected of a work where the sentence began with "on the one hand" and continued with "on the other," or from a work reflecting that the author was not quite sure what to do about the difficult dilemmas. It is in that knowledge that I offer, without any self-deceptive expectations, my notes on Piketty's book.

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[31] Piketty's remarks are not heard in quiet academic lecture halls divorced from the political arena, but in the midst of political battle. His message is flown from political banners and his policy proposals gauged also by which political forces can wield them. While I consider it justified for the book to be analyzed also in terms of current political struggle, it is a task I will leave to other contributors.

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