Andrea Rehberg, Clinamen Press 2000). She has published articles on Irigaray, Kant, Lyotard and aesthetics, including: 'Adventures in the abyss: Kant, Irigaray and earthquakes' in *Symposium*: *Canadian Journal for Continental Philosophy* (forthcoming 2012); 'Irigaray and Lyotard: birth, infancy, and metaphysics', in *Hypatia* (2012); and 'Lyotard, Chadwick and the logic of dissimulation' in *Gender after Lyotard* (SUNY 2007).

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Chapter 8

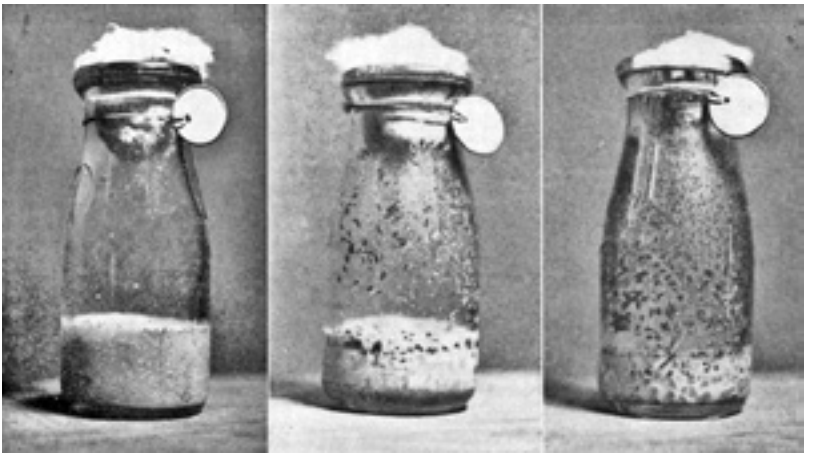
# Economization of life

## Calculative infrastructures of population and economy[1]

*Michelle Murphy*

A bottle filled with the insect *drosophila* – an organism that is born, reproduces, and dies in a flicker – is photographed at three points in time (Figure 8.1). In the first snapshot, the sparsely populated bottle, rich in food, finds generations of happy fruit flies gradually increasing and living long lives. In the second photo, the happy fruit flies multiply rapidly, sharply increasing their numbers until, in the third image, the fruit flies are so numerous the bottle can no longer support them, a point in time where death rises, birth declines, and population growth crashes.

For Raymond Pearl, the prominent and prolific American biologist who conducted this experimental work in the 1920s, 'population', as a living

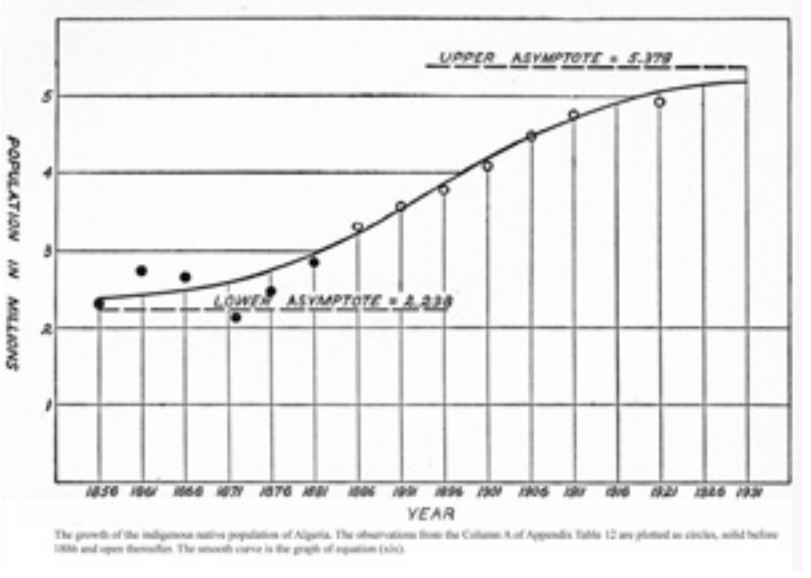


8.1
Fruit flies in a bottle, at three points in time. From Raymond Pearl (1930) *The Biology of Population Growth*, New York: Alfred Knopf.

form, was governed by a law of 'how things grow': a law expressed within the walls of a bottle and which further could be graphed as 'the logistic curve', today more commonly called the growth curve or the S curve (Pearl 1927a, 1930) (Figure 8.2). According to Pearl, this curve ordered any crowd of living beings at any scale: drosophila in a bottle and humans too, in a city, a nation, or a planet.

Pearl's work on population growth took place in an era of eugenics, when a pressing question for many biologists, social scientists, politicians, and feminists was how to alter fertility in order to redirect heredity, with aspirations of engineering the evolution of fitter future races. In contrast, for Pearl, at stake in population's temporal shift was not hereditary or evolutionary futures, but *economic futures* – how to balance population with production. Population could be engineered toward future economic progress.

In this translation from flies to human, the physical limits of the glass bottle stood in for the larger unseeable scale of national economic production. For human populations this limit was determined by the so-called 'stage' of economic productivity: agrarian, industrial, and so on. As the stage of economic productivity 'progressed' the upper limit of the growth curve moved higher up the graph; that is, larger populations could be sustained (and hence mass death avoided) at greater levels of economic progress. For Pearl, the proof that the growth curve applied to humans was to be found in the 'natural experiment' of colonized Algeria, where French colonial machinery had kept impeccable records. According to Pearl, the 'civilizing' of Algeria, the purported improvement from primitive living to a more efficient colonial agricultural productivity, caused a new 'swarm of babies,' a growing aggregate of Algerians that then hit a new upper limit, which in turn prompted a 'process akin to natural selection [in which




8.2
Pearl's population growth curve for Algeria, depicting how French colonialism produced through birth and death rates his 'law of growth'. From Raymond Pearl (1930) *The Biology of Population Growth*, New York: Alfred Knopf.

a] good many natives had to be eliminated before the survivors were reasonably unanimous in their belief that the old days were gone forever' (Pearl 1930). For Pearl, colonialism in Algeria was evidence of a shift in birth/death relations towards a new economic-population plateau.

Pearl's growth curve exemplifies how historically specific imaginaries produced and problemitized population. Population was and is an unstable conjuration, demarcated variously by scientific and political practices, without a secured ontology. While 'population' is often used casually as a neutral name for human groups, replacing the pernicious use of racial categories, the term is nonetheless a baggage-laden concept with its own histories, aporias, disciplinary matrixes, and power relations. Pearl's work signals how population was reassembled in the early twentieth century with the help of laboratory practices, fruit flies, colonialism, and agricultural statistics, and with the subject figures of biologist, economist, civilized and native.

There are four salient points Pearl's research captures about the changing imaginary for populations in the twentieth century.

First, visualizing change over time by charting a growth curve made population into an experimental object in need of governance. The curve delivered a dynamic target for adjustment, experiment, and manipulation. For example, the curve could be smoothed by controlling fertility, or used to calculate and then encourage the optimum population size for a given level of productivity (East 1927, Fairchild 1927). Unlike Malthus's famous eighteenth century Law of Population, with Pearl's formulation of a growth curve mass death, famine and overpopulation were entirely avoidable if production progressed or populations were optimized.

Second, Pearl's call for manipulating this curve reached towards the horizon of economic prosperity, not improved racial kinds. The curve not only adjusted itself relative to national production, but was adjustable for the sake of production. In other words, population (and hence reproduction) primarily inhabited economic time, not evolutionary time. Human birth rates shifted relative to economic conditions, such that a harsh, crowded, or more dangerous environment created by poverty led to higher birth rates (Pearl 1927b). For Pearl, shifts in birth rate relative to personal wealth 'are primarily to be regarded … as adaptive regulatory responses – that is biological responses to evolutionary alterations in the environment in which human society lives. In this environment, the economic element is perhaps the most significant biologically' (Pearl 1930). Here, 'economics' becomes human life's most important environmental milieu. The economic environment is the human's primary ecology. Rates of fertility and death were calculable in new ways as *economic effects* in need of governing at macro-scales.

Third, population as imagined through a growth curve was not a thing, but a set of *relations*, such as rates of change over time, most importantly

rate of growth. In this sense, population was materialized not just as size, but through a host of quantitative measures (birth rates, death rates, infant mortality rates, and so on) understood as snapshots of dynamic temporal associations, and thus shared much with an emerging twentieth century sense of a national economy measured by gross domestic product (GDP), rates of growth, inflation, unemployment rates, and so on. Such temporalized indexes created calculative infrastructures of interlocking relationships to be governed by the twentieth century state, as well as colonial, and later postcolonial, institutions. Beyond representations, such measures structured economy and population as dynamic contingent relations that could, and should, be acted upon via those measures.

Fourth, the drosophila bottles offered a scopic scale of quantity and temporality in which individual lives are but a flicker and what comes into view are tendencies, forecasts, and correlations only perceivable and calculated *en masse*, and across generations. Importantly, at this scale where the individual human being recedes from view, what new practices for valuing/devaluing life become allowable?

This final observation expresses the central concern of this chapter: after eugenics (today commonly reviled for its genocidal and racist legacies) what infrastructures were produced in order to render palpable, pliable, and governable this economized version of population? What methods for valuing and devaluing life have become acceptable through the figure of population?

Pearl's research is just one important example in a set of practices that helped to achieve what I am calling the 'economization of life'. The economization of life names a matrix of practices emergent in the twentieth century that attributed quantitative value to human life relative to macro-economic growth and speculative time instead of ecological or evolutionary logics.

That life and economic value have become entwined is not news. Biobanks, cell lines, *in vitro* fertilization services, and stem cell products are common features of contemporary commodified biopolitical landscapes. The surprise has quickly faded on announcements that molecular and cellular scales of biotechnologized life are harnessed toward economic value. This chapter emphasizes another mode (in addition to commodification) by which life, technoscience, and capitalism have become entangled, a mode that operates at the macro-scale of economic relations, and which is not collapsible to commodification. In short, the *economization of life* concerns: 1. aggregate forms of life exemplified by population; and 2. technical infrastructures that connect population to the macro-scale of national, regional, or global economy as tracked by the discipline of economics and other social sciences.

It is precisely this conjuncture of economic logics and life that Michel Foucault began to excavate in his lectures on the Birth of Biopolitics (Foucault 2008). The sense of the economization of life offered here unfaithfully departs from Foucault to re-situate the history of the co-dependent politicization

of national economy and population as, one, unfolding within cold war and postcolonial geopolitics and, two, crucially achieved through sexed bodies and reproduction. In the same cold war/postcolonial moment that molecular and cellular scales of reproduction were becoming profoundly alterable in laboratories, the mass-production and global dissemination of cheap birth control technologies offered a means for redirecting the recombinatory futures of population and economy in projects of 'population control' and family planning. During the cold war, The Bomb as a weapon of mass death that allowed survival under deterrence was joined by The Pill as an icon that entangled projections of mass death and promises of future personal and financial prosperity (giving a double entendre to the term nuclear family).

When I use the phrase 'the economy' here, I am naming a historically specific entity of 'the national economy' that is invoked today with phrases like 'it's the economy stupid' or calls to 'stimulate the economy'. While national accounting practices and political economy certainly have a longer history, it was only over the twentieth century that the economy as a figure of national aggregate economic activity was concretized as a phenomenon through infrastructures of data collection, giving rise to a plethora of governable indexes, such as gross national product (GNP), inflation, unemployment rates, and later cost of living, consumer confidence, and so on (Speich 2007, Bergeron 2004, Mitchell 2005). Such measures formed a matrix of relations to be governed. Like population, the economy was not a thing as much as a relational entity conjured through calculative infrastructures of accounting and new branches of economics, particularly Keynesian macro-economics. Regardless of one's political economic ideology, today we all live in a post-Keynesian world where the globe is covered with nations that have 'macro-economies' in need of alteration. The economy was, of course, a site of cold war contestation: should it be planned or 'free'; if free, what role did the state have in fostering it, or setting the conditions for the economy? Monetary policy, inflation rates, tax increases (or decreases), and other stimuli were all methods of adjusting the economy. With mid-century decolonization, the economy became the charge of nation-states, which in turn became the universal unit of governance across the globe, with each nation-state presiding not only over its people, but its economy. Economies were thus to be 'developed' and 'modernized', while building modern national economies was a core aspiration of postcolonial national projects around the world (Gilman 2004; Goswami 2004). Significantly GNP per capita became the global comparative measure of a nation's economy, sorting the world into more or less developed economies, with more or less promising futures. Governing population for the sake of the economy was thus a quintessential feature of postcoloniality.

The calculative infrastructures that made up the economization of life tended to be contrasted with the racist orientations of eugenics, and yet at

the same time population reinvigorated temporalized racial logics of modern and backward, giving an economic alibi, and new lease, on old evolutionary temporal hierarchies of human worth. Like eugenics, the economization of life not only offered a way to calibrate human worth, but also forms of human waste, human surplus, unproductive life, and life in excess of economic value.

My claim, then, at its broadest, is that the second half of the twentieth century saw the assembly of large heterogeneous national and transnational infrastructures for the speculative measure and manipulation of living human aggregates, not in terms of heredity or evolution, but instead for the sake of the economy. Moreover, indexes, curves, rates, and ratios produced economy and population as relational entities brought to life through a recursive tangle of dynamic correlations tracked through quantitative measures – in need of anticipatory governance, adjustment, and stimulus. And further, I will be suggesting that fertility was a pivotal focus of economization, turning sex and reproduction into an experimental milieu for the development of technical infrastructures for governing life and speculating on human value.

I will offer here three chronologically arranged moments – three snapshots – that aspire to historicize the calculative infrastructure that makes up the 'economization of life' since the late twentieth century. These three moments offer a counterpoint to Pearl's three photographs capturing the law of population. To situate my claims, these three moments emphasize how sexed living-being and reproduction in its aggregated population form were stitched to shifting liberal practices of fostering the economy as they were significantly forged in cold war/postcolonial circuits connecting the United States and South Asia (particularly Pakistan and Bangladesh).

## Moment one: transition

It is September 1959 and Frank Notestein, an eminent American demographer, is standing at a lectern at the newly founded Institute of Development Economics in Karachi, Pakistan. Notestein's topic – Abundant Life – hinges on the play between abundance as quality and quantity. He argues that future economic growth, and hence what he calls 'the good life' of modern production and consumption, is dependent on the quantitative reduction of population growth (Notestein 1960). In short, reductions in future population quantity lead to good economic quality.

A month before Notestein's speech, Eisenhower's Presidential Committee on Military Assistance had concluded that supplying arms and military training to strategic 'front line' cold war nations, though essential, was not sufficient to ward off 'imperial communism' (President's Committee 1959). The report surprised many by calling for economic assistance combined with

population control, expanding the cold war into the realms of sex. According to the report's logic, swelling and decolonizing poor populations threatened to undermine the expansion of capitalism, hence birth control was part of a national security solution. Only with population control could the US extract 'the maximum result out of our [military] expenditure' (*New York Times* 1959). Lyndon Johnson's administration, in turn, would become deeply committed to this cold war problemitization of fertility, especially persuaded by a RAND economist's calculation that money spent for each 'averted birth' was '100 times more effective' in raising GDP per capita than the same amount spent on 'productive investments' such as building industrial infrastructures (Enke 1966).

As a result, by the late 1960s, there was a dramatic US investment in demography as a discipline with its metrics of 'levels of living', 'births averted', 'cost of children', and again 'rates of increase' that collectively called forth population as a relational entity in need of adjustment. Notestein, a demographer (with prominent positions at the UN, Princeton, and the newly minted Population Council), is among the most significant US figures in a transnational effort to craft governable demographic measures. His signal contribution concerned 'the demographic transition,' a promissory exercise that pegged temporal changes in fertility rates and death rates to economic development in the form of a graph (Mackinnon 1995, Sretzer 1993, McCann 2009). Based on records of Europe's past during the industrial revolution, the demographic transition was used as a predictive model for recently decolonized countries' entry into so-called modernization.

The demographic transition modeled a staged transformation for the decolonizing world from primitive accumulation through modernization, and into the industrialized future. Echoing Pearl's research, in the first stage primitive humans had high birth and death rates, keeping population size steady. In the second stage cheap public health measures introduced by colonial rulers had reduced death rates, thus leading to an increase in the rate of population growth, which threatened to turn previous colonies away from continuing on the path of modernization. With industrialization, Europe had seen a drop in birth rates, so that again population growth was steady, and thus 'underdeveloped' decolonizing nations also needed to alter their birth rates to achieve full modernization. As such, the demographic transition (still widely used) offered an explicit reframing of Pearl's growth curve along old temporal hierarchies of primitive and modern (Engerman *et al.* 2003). This revival of Pearl's curve pinpointed a window where population growth could ideally be altered to achieve economic modernity.

In 1959, Notestein was thus part of the cold war, performing as a postcolonial expert, invited by Pakistani state planners working under the military dictatorship of Ayub Khan, a so-called 'military modernizer' who was a strategic US ally. Following the displacements and migrations of partition,

demographic data was particularly important to establishing the scope of the new Pakistani state. Efforts built upon the finely articulated colonial bureaucratic infrastructures of national census and accounting. The economists and experts hosting Notestein, in turn, exemplified the rising prominence of South Asian, and especially Pakistani, social scientists and economists in transnational circuits, particularly at the relatively new entities of the World Bank and the International Monetary Fund.

Notestein's particular enactment of expertise at this Karachi seminar was a staged polemic for the need to co-plan aggregate fertility and economy. On cue, Notestein declared Pakistan at a particular stage of modernization: 'in the immediate future … there is a conflict between qualitative and quantitative abundance of life' (Notestein 1960). The so-called compressed pace of modernization in Pakistan compared to the norm of Europe was interpreted through the demographic transition to indicate population growth had to be purposively reduced to support increased economic productivity (typically measured in GNP per capita) and avoid projected catastrophe, such as famine, but also communism. Here, the fertility rate (as potential future lives) needed proper adjustment to manage the temporal shift into economic modernity. The rubric of 'abundant life' was symptomatic of a broad re-formulation of the deadly racial logic of mid-century eugenics. What Foucault describes as 'some must die so that others might live' was transformed into 'some must not be born so that future others might live more abundantly/consumptively' (Foucault 2003).

Averting births was an investment in future prosperity. Lives 'economically underdeveloped' were correlated to 'lives less worth being born'. Importantly, demography and economy calibrated together the 'differential value' of abundant life crystallized as the changeable metric 'GDP per capita': a 'national accounting' of total monetary value of goods and services produced for (not in) a country, divided by population. GDP per capita became the index by which the value per person was calibrated and compared globally. What I am arguing here is that the correlation of economy and population transitions allowed new explicit measures of lives less abundant in the measure 'lower GDP per capita.'

Importantly, and like Pearl's bottles, the demographic transition offers a distanced and beyond-human temporal and quantitative scale of concern. It offers *measures* (rates of growth and GDP per capita) rather than kinds of people as the target in need of change. Moreover, the demographic transition has a speculative function that designates potential future lives (babies yet unborn) as avertable for the sake of anticipatory economic measure. These three features worked together to make explicit economized calculations of differential life worth palatable as an aspect of governance in the late twentieth century.

It is important to keep in mind that models of the demographic transition articulated a *problemization* of life and economy, but did not prescribe

any one governmental approach to its solution. Infrastructures that produced the problem of economized life offered targets in need of governance and investment without themselves legislating any particular style of governance. Thus, the measures of economized life could underwrite violent, coercive, and racist projects, as much as foster voluntary or even feminist ones, or even socialist and communist projects.

Thus, in this first moment, the demographic transition illustrates the entangled directing of economy and population through reproduction as a crucial component of a speculative and promissory postcolonial economic development.

## Moment two: affect

A page from a standardized KAP survey circulated by the Population Council in 1970 provides field workers with a flowchart script that asks, 'Do you think there are conditions under which it is all right for married couples to do something to prevent or delay pregnancy?' The question is followed by a list of multiple choice answers: for the health of the mother; for the family economic situation; to help family happiness; a small population is good for the country (Demographic Division of the Population Council 1970). KAP stands for Knowledge, Attitudes, and Practices. By 1970, over 400 KAP surveys had been conducted in some 49 countries. KAP surveys employed a sample survey method most typically used to measure the likely formation of a demand for a commodity. As one demographer explained, 'the most important function of such surveys is similar to any market research project: to demonstrate the existence of a demand for goods and services, in this case for birth control' (Stycos 1964). In those countries without family planning projects, the KAP survey was understood to not just measure but also to *stimulate* interest in family planning, and thus was useful for its persuasive impact (Warwick 1993). KAP surveys recursively hailed desire while measuring desire.

By 1970, a KAP survey would use the 'full market approach,' which highlights socioeconomic measures of consumption, of wage-labor participation, and of propensity to save. More than that, the full market approach was also about drawing out, and measuring 'desire,' the 'impressionability' of that desire to mass media, and the relation between desire and its commodity fulfillment. Should fertility be up to fate? Is prosperity due to luck, or hard work? In short, KAP surveys provoked, altered, and captured aggregate attitudes and desires within market logics.

Once surveyed, a sample might well be surveyed again and again, marking change over time in response to different family planning projects, thereby turning the sample into a longitudinal experimental site. Refracting fertility through attitudes and consumption, KAP surveys were but one genre

of a profuse array of social science survey techniques in the 1970s and 1980s that sought to characterize fertility and contraceptive use as quantifiable and governable data. For example, the UN sponsored World Fertility Survey of the 1970s collected data on 350,000 people in over 62 countries. The Matlab demographic surveillance site has continuously studied a region of about 250,000 people in a rural area of Bangladesh from 1965 until the present, collecting often daily data.

Attitudes and sensibilities as qualities of populations were the concern of some of the earliest family planning survey work. For example, Ansley Coale in his landmark 1958 book based on the Khanna Study in India named as a prerequisite for fertility decline the acquisition of a 'calculus of conscious choice' (Coale and Hoover 1958). Coale's work helped to spark the inclusion of questions that sought to simultaneously hail and detect numeracy, consumption, and monetary practices as attributes of the modern subjectivity necessary for family planning programs (Walle 1992). Another frequent measure that surveys sought to prompt was 'unmet need,' defined as the gap between the desire for fewer children and the availability of contraception.

In sum, KAP surveys attempted to both provoke and measure forms of aggregate desire and attitude, identify avenues for their reorganization through advertising or marketing, and finally program the satisfaction of desire through the acceptance of family planning commodities or services. In other words, KAP surveys can be seen as a technique for simultaneously measuring, hailing, and altering *affect* – capacities to feel, think, and desire or, put another way, capacities to respond. KAP surveys encouraged a particular 'affective economy' of nuclear family units managing their intimacy as desiring subjects, and moreover as subjects who desired abundant life, the good life of quality not quantity (Ahmed 2004).

By 1970, the US government, through the agency of USAID, was the world's most important funder of family planning around the world. The notion of 'unmet need' was central to what it called its 'supply side' strategy to family planning, in which need (or demand) followed supply, not vice-versa (Ravenholt and Gillespie 1976). While KAP surveys measured unmet need as the gap between desire and the availability of contraceptive supply, USAID's supply side approach saw unmet need as desire, and hence demand, stimulated and prompted by supply. In other words, offering contraception triggered new desires for it. Commodities could prompt new affective arrangements. Need and the desire to alter fertility were sentiments stimulated by opportunities for consumption even more so than surveys. Ideally, for USAID, near free contraception would be delivered to each and every household in the developing world. Supply side methods expressed a new form of governmentality emerging in the 1970s which sought to stimulate consumer desire and choice, not for the sake of profit directly from a sale, but for the sake of altering population and economy.

The KAP survey, joined by supply side methods, might well have been fostering calculation as a means to rearrange affect for the sake of adjusting a chain of contingent relational measures – altering birth rates which in turn enhanced GNP per capital. Circulations of affect were thus crucial to the calculative infrastructure assembling the economization of life. As in the realm of marketing, affect was a malleable feature of populations that could be redirected and prompted (Lury and Lash 2007). Populations could be enticed to 'choose' to manage fertility, and individuals would do what they 'want' to do, but this mass 'want' would be stimulated and then fulfilled. I am not arguing here that attitudes and desires were simply implanted into subjects, but rather that particular kinds of affects were encouraged, evoked, and valued at the scale of population through an infrastructure of social scientific practices. Subjects were encouraged to respond to being governed by making themselves available to and recognizable through those affects imbued in family planning projects as moments of modernity, freedom, abundance, individuality, family, nationalism, and the good life (Cohen 2001).

The KAP survey continues to live today as a tool within the widespread practice of 'social marketing' organizations. Social marketing is a technique used in contemporary public health and economic development campaigns that applies commercial marketing practices to non-commercial goals, such as changing behaviors and attitudes (Bhandari 1976, Davies *et al.* 1987). Moreover, social marketing projects typically see 'the market' as the most efficient way of distributing a social intervention.

Through social science practices from surveys to social marketing, affect and choice became indexed in a 'field site' mobilized not only towards altering birth rates, but as aspects of experiments towards developing new techniques of governing the economy. The KAP survey was a symptom of a metamorphosis in governmentality away from the state planning of population and economy that characterized the 1960s towards the emergence of non-profit organizations and transnational development projects as organizers of services, data, and affectively charged subjects. The KAP survey was an example of a technique in a calculative infrastructure that conjured, experimentalized, and harnessed subjects to the project of knitting sexed living-being to the economy.

## Moment three: investment

It is 1992, the cold war is over, and Lawrence Summers is not yet an economic advisor to Obama, instead he is chief economist for the World Bank. He is making a keynote lecture. 'Investing in ALL the People', at the Eighth Annual General Meeting of the Pakistan Society of Development Economists in Islamabad. Here, Summers famously argued for the economic benefits of educating girls.

He calculated that each year of schooling pulled down fertility rates by 5 to 10 percent, such that US$30,000 spent on educating 1000 girls would prevent 500 births. In contrast, a typical family planning program that spent $65 to prevent one birth through contraception would accomplish the same reduction of 500 births for the larger amount of $33,000. Education thus offered a saving of $3000 (Summers 1992a).

In addition, educating girls was correlated with measures of lower mortality and higher income. Thus for Summers, 'educating girls quite possibly yields a higher rate of return than any other investment available in the developing world' (Summers 1992b). Here, I might observe, first, how fertility prevention is temporally pushed forward in the human life cycle to the pre-childbearing years of girlhood; and, second, how fertility reduction has become so thoroughly correlated with economic productivity that it could now serve as a conduit for further removed interventions – such as education. Altering education alters fertility rates, which in turn alters the economy. By the end of the cold war, the voluminous social science data produced through decades of family planning, development, and public health projects had built a dense multi-sited archive of measured relationships for adjustment, stimulation, and intervention by national and transnational economic development planners.

Summers' argument about investment and rates of return rests on the notion of 'human capital,' a Nobel Prize winning concept crafted in its neoliberal form in the 1960s by Theodore Schultz and Gary Becker, both of the Chicago School of Economics. Human capital is defined as the embodied knowledge, skills, personality, and health of people that make them economically productive. The notion of human capital is not the same as that of a human commodity – a person who is owned by someone else, bought and sold. Rather, in economics, capital names resources that are used in producing goods or services, but are not themselves commodities for sale (as, for example, a machine in a factory). Hence, the term human capital designates the embodied capacities of a person that can produce future economic benefits for that person, her employer, and even her national economy. For example, paying for someone to become educated is an investment in her human capital correlated with future pay offs in terms of higher wages for her, but also providing a better worker for her employer. Thus, human capital designates people and affect as sites for investment**,** and considers their embodiment a kind of anticipatory, future oriented, value.

Becker developed his concept of human capital through theoretical mathematical models of fertility, the sexual division of labor, and family dynamics, research that formed what he called the 'new home economics'(Becker 1974). For Becker all human behavior is already forward-thinking, rational, and engaged in cost/benefit calculi and thus all human behavior, including *within* families, is best understood in economic terms. Becker's model compares the rates of

return of investments in the human capital of children – such as education – with the rates of return on the bare cost of children (children without human capital whose economic returns to the family are as unskilled child laborers). This work correlates higher returns on investments into human capital for families with fewer children (Becker and Tomes 1976).

Importantly, the concept of human capital shifts the vision of the iconic economic subject from a worker or consumer to an *entrepreneur*, from a subject who must gain a modern conscious calculus to a subject that already has such a calculus – a reknitting of *homo economicus*. As Shultz explained in his 1979 Nobel Prize lecture, poor farmers and women were, 'within their small, individual, allocative domain' all 'fine-tuning entrepreneurs' (Schultz 1979). With human capital, even the poorest child is an entrepreneur ready to participate in calculative infrastructures. Or as Geeta Patel insightfully suggests, they become 'risky subjects' compelled to calculate their uncertain fates through speculation (Patel 2006).

This focus on human capital helps move the point of intervention from altering fertility directly to education, from distributing contraception to women to investing in girls, a change that has come to dominate World Bank and international development programs in the last decade. According to a 2000 World Bank report around its slogan The Quality of Growth, the rates of return on human capital are considered best in open markets, where 'human capital's value depends in part on its owners' ability to deploy it in a competitive market in which the rules of the game reward innovation, entrepreneurship and higher productivity' (Thomas *et al.* 2000). Here, quality shifts yet again, as an entangled attribute of both an economy's growth and the individual's embodied and social development from child to adult. Quality versus quantity is again reworked, with quality manifested as the speculative success of the impoverished girl to become a worthy investment, and quantity as the specter of the uninvested, racialized multitude of the poor. As risky subjects, poor girls become a 'risk pool' worthy of speculation. In the process, the figure of the third world girl is substituted for the bourgeois knowledge worker as the iconic figure of human capital.

A campaign begun in 2006 on The Girl Effect by the Nike Foundation (with its deep corporate investments into narratives of potential harnessed) and the NoVo Foundation (a project of investment banker Warren Buffet's family) has been one of the most influential projects for promoting 'the girl' as the solution to the 'world's mess'. Following the investment into a girl's education – 'put her in a school uniform' – is a cascade of purported relational effects leading from the increased value of her life to her village to women's rights to national production to world salvation: 'invest in a girl and she will do the rest.' In its promotional video it offers the following equation: 'Girl → School → Cow → $ → Business → Clean H20 → Social Change → Stronger Economy → Better World,' a phantasmagram in which the weight of the world's economic future rests on the risky subject of the girl-child (www.girleffect.org).

The Girl as human capital produces value because she is *simultaneously* a site of investable potential and a remainder. The Girl as an abstraction has been neglected in census data, without birth registration, ignored by cold war development and patriarchal traditions, and is hence an undervalued stock. She is heralded as an opportunity for the future and as an undervalued leftover. She can be discerned as an investable opportunity precisely because of the archive of calculative infrastructures that decades of the economization of life have created.

Investments into the human capital of the girl child, as yet another practice within the economization of life, help to reveal that implied in designation of value are also devaluations: of the potential children of the adult a girl may someday become; of the adults that uncapitalized girls grow up to be as a future form of underproductive lives, no longer worthy of investment; and of boys who offer lower rates of return. Next to the figure of girled human capital are the less discussed figures of disposable and avertable human life, whose future is expendable: the export zone worker, the migrant, the unruly male.

As an effect of a matrix of measurement, The Girl is a figure of concern precisely because the numbers designate her with high rates of return, raising the question, what if the math hadn't added up, and in fact another object or another human kind or different life form was calculated as the better investment?

## Economization of life

The three moments sketched above suggest the tangle of multi-layered practices that have accumulated to produce the economization of life. Of course, there are many more genealogies that one could add to this trilogy. What these practices tended to share was a concern more with instrumentality – what could be done to alter fertility rates, affect, and rates of return – than with truth claims, trading in a cosmology of speculative correlations that could be tweaked and stimulated. Tellingly, in 2010, Summer's findings have been replicated in a report on the value of investing in third world girls by Goldman Sachs, hedged with its standard disclaimer that accompanies all its market forecasts (Lawson 2007).

While the techniques that perform the economization of life were so often co-developed in South Asia as a crucial 'testing site' and as an important node of postcolonial social science production, they have traveled and scattered more broadly, twisting across the globe as malleable and mobile techniques for conjuring value from aggregate life.

The economization of life can be thought of not only as a historically specific experimental mode of making value, but as a mode which was built through an extensive transnational calculative infrastructure, producing reams

upon reams of data, circulating enormous flows of funds, distributing millions of commodities in the name of projects to capitalize and modernize dispossession through sexed life in the name of the economy. As such, it was a regime of value in which reproduction and social reproduction – and hence implicitly sex, heteronormativity, and women – far from being ignored, were at the center. It is ironic that the 1970s and 1980s gave rise to Marxist feminist critiques of the unrecognized and unwaged role of social reproduction in capital at precisely the same time reproduction was in the process of being conjured as an experimental core of the economization of life.

In this account, I have not used economy as an analytical wrench that simply explains the emergence of population problems, nor do I want to portray the economy as an *a priori* juggernaut that spreads insidiously into more and more facets of life. Instead the economy is that which must be explained, not that which does the explaining. I want to keep in mind the anti-Malthusian insight that dispossessions, disposable excesses, and devaluations are *produced* and rendered legible, or invisible, in historically specific ways. The economization of life can also be situated among an array of interlinked recursive measures that designated avertable and disposable future life. As Melissa Wright's work reveals, to render raced and gendered workers devalued to the point of being killable is not the limit point of value, but a desirable potential of labor (Wright 2006). Devalued future lives-yet-lived, with time, became present lives subjected to the fantastical ruler of low GDP per capita, and later uninvestable lives with less future.

It is thus fully within the logic of the economization of life that intensive family planning projects of 'continuous motivation' were so often accompanied by high rates of infant and maternal death, or other forms of letting die. While economy continues to be reiteratively generated in a cacophony of transnational practice, the economization of life names a regime of value-making in which what it means to live an abundant life, a life worth living, and by extension what it means to live a life to be averted, or a life unworthy of investment, has been transformed and instrumentalized in the formula of a calculus.

Abundant life was both the good life of capital accumulation and ignorable, excess life. In this sense, economization operates doubly: to economize is to make productive while avoiding excess. Excess is not outside these calculative infrastructures, but rather is constitutive: a designation relied upon to underwrite both accumulation and aversion, futures and the end of future.

## Note

1 This chapter is based on a larger book project on the economization of life in the late twentieth century.

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