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An Agenda for Stabilizing Israel's Population

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Chapter 2: Of Pollution, Paucity and Population Pressures

Overconsumption and overpopulation underlie every environmental problem we face today. Jacques-Yves Cousteau

Tone it Down

Senior Israeli police officers were bemused at the end of 2012 when they evaluated the criminal complaints filed during the year. One out of every four Israelis who submitted a formal grievance at a police station complained about noise pollution. As cities and towns swelled to new population densities, and apartment residents clustered together ever tighter, unprecedented numbers of Israelis decided that the racket made by their neighbors had reached levels that were not only intolerable - but unlawful. On 300,000 occasions the police sent out mobile units to investigate the commotion.[1] By way of context, there were more than one hundred times more complaints requesting relief from noise disturbances than those directed against the next most vexing environmental problem: littering.

Noise has always been ranked by Israelis as the most bothersome environmental nuisance[2], but the new dimensions of discomfort are unprecedented. "Israel's Police, force working on its own, is unable to withstand this burden," explained Yitzhak Aharonovitch the Minister of Internal Security, apologizing for the apparent impotence of his law enforcers. "Police patrols cannot successfully arrive at every call and citizens simply suffer."

Many factors contribute to the marked increase in noise pollution: It might be that the Israeli public has become even rowdier (or more abrasive) than ever. Maybe new amplification technologies are now available that increase decibel levels in public and private spaces. Perhaps Israelis are becoming more sensitive -- or alternatively more militant -- in demanding their environmental rights. All the above reasons may be true, but none sufficiently explain the growing rate of irritation.

Seasonal timing, however, offers an important insight into the cause of the phenomenon. It turns out that the public's affliction with noise pollution peaks between the months May

and October. These are warm months when windows open to catch the occasional breeze and children are on vacation, taking leave of their packed apartments. Restless from the time indoors, they pour onto teeming sidewalks and streets. The timing suggests that noise pollution is one of the predictable results of the crowded conditions which have come to characterize life in modern Israel. Indeed, sociological research in Israel's cities confirms that there is a correlation between the frequency of a given noise exposure and the degree to which it is considered annoying.[3]

Israelis are living in closer quarters than ever before. At the new densities, there is an extremely fine line between reasonable human behavior and a nuisance. Israel's demographic growth pushes hundreds of thousands of citizens every year into unpleasant and sometimes confrontational situations with their noisy neighbors. The associated stress should surprise no one.

Literally hundreds of animal experiments show the negative effects of living under congested conditions and the resulting anxiety and aggressive behaviors.[4] Humans are also animals. There are numerous cross-cultural studies[5] that show that while some people successfully develop coping mechanisms, a positive correlation exists between crowding and human hostility and violence.[6] There is some evidence suggesting that the response to crowding is gender-specific. Faced with crowded environments, women are more like to be depressed or withdraw from social interactions, while males tend to respond more aggressively.[7] In settings from prisons[8] to homes,[9] overcrowding invariably creates stress and produces a high degree of irritability. Complaining about noise can actually be seen as a civilized response to the associated frustration.

Fortunately, annoying, ambient noise pollution does not cause physiological damage to exposed populations. Police involvement can often squelch an annoyance within a reasonable time. There are even some occasions where the interventions produce a modicum of deterrence against future disruption. But there are other areas where Israel's extraordinary population density creates a new national reality and the damage can be irreversible. Overpopulation leaves the country with inferior environmental quality and an increasingly dysfunctional society.

Problems caused by demographic pressures are often divided into social and environmental categories. In fact many nuisances, like noise pollution or transportation gridlock have interwoven social and environmental dimensions. They represent two sides of the same coin. For other hazards, the distinction is clearer. Production of garbage and greenhouse gas emissions, like the loss of biodiversity and open spaces, p

are part of Israel's present environmental crisis, caused primarily by demographic pressures. Overloaded schools, hospitals, courts and roads, along with the lack of affordable housing, the growth of poverty and income inequality are but a sampling of the related social problems to be discussed in the next chapter.

Regardless of their classification, when these social and environmental maladies are added up, the unavoidable conclusion is that a tipping point exists that separates positive and negative demographic conditions. The dividing line is sometimes defined vaguely in physical terms as "carrying capacity". Whatever the line may be, in Israel it has long since been crossed. A review of these trends and their distinct (and aggregate) impacts suggests that Israel's environment already suffers acutely from population pressures that are only getting worse.

Garbage Out

When Tel Aviv's citizens filed suit against the city's repulsive garbage dump in 1950, it was the first case of environmental litigation in the country's history. The municipal government realized things had to change. After consultation with the nascent Ministry of Health, the municipality eventually began to cart the 300 tons of trash produced in the city each day for disposal several kilometers to the east, on top of an abandoned village called Hiriyah. By and by, Tel Aviv's population grew so that in 1997 the entire metropolitan region was dumping 3,000 tons of garbage a day on the site.[10] During the intervening years, a sixty meter high mountain of trash arose in the heart of Israel's coastal plains. Its leachate contaminated the underlying ground water. There were frequent fires at the site and the resulting odors were a nuisance to the thousands of residents who now lived in the vicinity.

Eventually, it was neither the mountain's instability nor the pollution but the danger to air traffic from birds feasting on the rubbish that forced the closing of the facility. Birds were occasionally "sucked" into the engines of airplanes arriving at nearby Ben Gurion airport, turning the landfill into a disaster-in-the-making.[11] In 1998 Hiriyah was officially declared to be full. But then a political struggle ensued about the fate of the site. After prolonged confrontation between environmental groups and land developers, it was decided that the old dump would eventually be converted into a park and an environmental education center rather than a commercial or apartment complex. The story ostensibly had a happy ending: in November 2004, plans for the Ariel Sharon park were approved.

The problem, however, did not go away; there was still no alternative burial space for garbage within a hundred kilometers. The lion's share of Tel Aviv's trash would now have to be transported down to the Dudaim landfill in the Negev desert.[12] Unfortunately, its capacity was also finite and projections at the time suggested that it would fill up within twenty years. Increasingly, entrepreneurial pirate operations transported the growing quantities of Israeli trash to Palestinian sites on the West Bank.[13]

Israel's solid waste profile offers just one example of the environmental side of the overpopulation debit sheet and its synergistic interface with consumption patterns. Even though Israel enacted a "recycling law" in 1993[14], the country still buries some 80 percent of its garbage.[15] This creates a significant problem.

In 2002, Israel's Environmental Ministry introduced a national strategy for managing solid waste that sounded the alarm:

"Today, there exists a shortage in the available and approved burial space for 3,000 tons of garbage a day…. If all the solid waste were buried in institutionally approved garbage sites today, the available sites would be exhausted by 2003. The addition of two large sites, like the Efeh site planned for the Rotem Plains, has a capacity of 25 million tons. This will allow only adequate burial volume until the year 2008." [16] More than a decade since the landfill shortage was officially acknowledged, the amount of garbage produced by Israelis has increased at a rate of 3 to 5 percent a year.

An external international evaluation of Israel's waste management in 2011 offered a global context: "Population growth and rising standards of living resulted in a 15% increase in municipal waste generation during the last decade. The 610 kg of solid waste generated per capita per year is well above the OECD and OECD Europe averages."[17]

Clearly, Israel needs to be far more conscientious in its efforts to reuse, reduce and recycle. But even as it embraces integrated waste management, the amount of garbage that is produced will continue to grow: there will simply be more people living in the country who throw things away.

While conventional wisdom has for some time claimed that "solid waste" was a consumption problem and that wealthy Israeli communities are the main perpetrators of excessive trash generation, this turns out be imprecise and constitutes an overstatement. A recent, in-depth analysis of the solid waste disposal patterns in Israel's cities reached a different conclusion: "Regression analysis reveals that aggregate per-capita waste outputs of cities are only vaguely correlated with their socio-economic indicators. In fact, the apparent 'hedonic' waste of the richest cities, compared with the average ones, accounts for only about 2% of the total waste production."[18]

Idit El-Hasid, a solid waste "maven" and one of the country's leading "garbologists" is in charge of the new environmental education center at Hiriyah. El-Hasid describes the throw-away epidemic affecting all sectors of Israeli society this way:

"We would have assumed that the Haredim (Israel's ultra-orthodox) don't fall into the consumption trap, but Haredi society uses tremendous quantities of disposable items: cups, tablecloths, cutlery, diapers, aluminum pans. Bnei Brak, where garbage cans were for years a bastion of organic waste, has turned into an 'empire' of stores for disposable dishes that find their way into the garbage. A Shabbat meal is set on a disposable tablecloth, with disposable dishes, and at the end the housewife wraps everything in a disposable tablecloth, turns it into a garbage bag and throws it out. The same is true of Arab society and everywhere where women are trying to deal with the heavy burden of caring for a large family."[19] Empirically, rich or poor – more people means more trash.

As they fill up, landfills are abandoned and Israel's municipal governments move on to the next location, vaguely aware that this strategy cannot go on forever. Although there is an expectation that the sites should be rehabilitated, in practice it has been difficult to enforce the high expense of environmental restoration. The many deserted garbage dumps offer a vulgar monument to a culture of consumption, fueled by steady demographic growth. At most recent count, only ten sites have been rehabilitated while another thirty are waiting.[20]

Paradise Lost

Henry Baker Tristram was an eccentric British priest who visited Palestine on four separate occasions between ~~to~~ the years 1858 and 1881. Tristram was a reasonable man of the cloth, but an extraordinary naturalist and prolific writer. As he traversed Ottoman Palestine he meticulously recorded the numerous creatures that he stumbled upon, many identified for the very first time. (Half a dozen of the bird species that he discovered and a few gerbils bear his name.) Then he returned to England and set about documenting his findings. Together these five voluminous tomes form a treasure chest of descriptions, drawings and observations.[21] Sadly, today they mostly tell us what we have lost.

More than a century later in England, an important landmark in the international strategy to preserve global biodiversity involved the identification and demarcation of global "Biodiversity Hotspots". In 2000, a team from Oxford University published an article in the journal Nature that mapped 12% of the planet that it recommended for preservation because the lands contained such a high percentage of the world's species. The natural world Tristram described lies entirely within the "Mediterranean basin" prioritized for preservation.[22]

Prior to Israel's independence, unregulated hunting was rampant, leading to the disappearance of such species as cheetahs, crocodiles and bears. But for the past sixty years, the State of Israel has made exceptional efforts to protect the 115 mammal species, 103 kinds of reptiles, 534 bird types, and 2,780 species of flowering plants it inherited.[23] A national master plan was enacted that designated almost a quarter of the country for nature reserves;[24] in 1995 an additional ten percent of lands were zoned as forest; an

extensive list of "defended natural assets" was assembled and afforded legal protection. A Nature and Parks Authority was established with the requisite manpower and authorities to pursue an ambitious preservation strategy.

Sadly, these bold measures do not seem to be enough. All recent surveys suggest that the vast majority of identifiable trends among flora and fauna populations in Israel are negative. When the OECD summed up the available data in 2011, it concluded that 33% of the country's vertebrate species were endangered, with particularly high losses among amphibian and mammal populations. More than half of the thirty-four species now listed as extinct used to live in the country's wetlands environment. [25] As humans increasingly filled the land and drained the swamps, 97% of these aquatic habitats were erased forever.[26]

When dire prospects for nature in Israel are compared with statistics in other countries the role of population densities becomes self-evident. Israel has 56 mammal species that are threatened with extinction today. This is more than double those found in the vast and largely empty continent of Australia which has only 24 endangered mammals or in the United States with only 17. Nineteen Israeli bird species are dwindling and are on track to disappear. This is almost 50 percent more than endangered species in the massive United States (12 species) or Australia (13).

Although Israel signed the United Nations Convention on Biological Diversity and even adopted a National Biodiversity Strategy in 2010,[27] these formal commitments remain empty declarations that have done little to stem the tide. Direct interactions with human population alone is not the only cause of nature's woes. Indirect drivers also contribute, but ultimately, they are all associated with human activities. They include the crowding out of native plants and animals by invasive species and illegal hunting. These are still not sufficiently widespread to lead to extinctions. The central problem in Israel is loss of habitat, supplanted by people and development.

Habitat fragmentation -- literally "the breaking apart of habitat" -- takes place at a landscape scale.[28] It is "a large expanse of habitat transformed into a number of smaller patches of smaller total area, isolated from each other by a matrix of habitats unlike the

original."[29] Trapped on land that essentially functions as an island, animals often begin to die off. Frequently, they come to lack sufficient food or available mates to ensure a, genetically diverse community. Even trees need room to spread their seeds and suffer when open spaces are fragmented. Expanded contact with humans, their vehicles, poisons and garbage typically do not end well for non-human organisms.

The OECD analyzed the Israeli dynamics in its 2011report: "Habitat fragmentation is mainly attributable to construction, infrastructure development and agricultural activities. Israel's population is projected to increase by 1.8% annually and to triple by 2050. Demographic changes are leading to increased demand for new dwellings and for more floor space. Taken together, these effects are increasing demand for new construction. Most of the construction is likely to take place in the non-desert areas which host higher amounts of Israel's biodiversity.

One example of the shape of things to come is the mutually exclusive tradeoffs between human population growth and Israeli wildlife which is being played out in the young city of Modi'in. The city is set on the hills where in 167 BC a four year rebellion by the heroic Maccabees was launched against the occupying Greek regime. Its success is commemorated each year in Hanukah celebrations around the world. The town's convenient access to Jerusalem in the east ---and Tel Aviv in the opposite direction -- along with relatively moderate real estate prices makes it a particularly attractive community. Founded in 1996, in less than fifteen years the city-is home to 80,000 residents.

Modi'in is located in the heart of Israel's crowded central region and fills an enormous swath of land that used to provide precious habitat to the country's idiosyncratic mix of African, Asian and European wildlife. The hills just south of the city still continue constitute a critical ecological corridor for a rich variety of animals.[30] On any given morning, the quiet visitor can enjoy a virtual safari of gazelles, porcupines and even the odd hyena. Little wonder: with a hermetically sealed fence separating Israel and Palestine to the east and the urban barrier of stone and asphalt to the west, wildlife is increasingly squeezed into this tiny sliver of Judean foothills, which may soon disappear.

Their future is grim. Haim Bibas was elected mayor of Modi'in in 2008 on an optimistic platform of development, defeating a candidate deemed to be somewhat more environmentally friendly. Yet during his first term as mayor, the young politician made his peace with the city's strong environmental community and local chapter of the Society for Protection of Nature in Israel (SPNI), the country's largest green NGO. Bibas has come to appreciate the unique ecological endowment that surrounds the city and sees it as a valued resource. But he tries to be pragmatic, caught in a seemingly insoluble dilemma.

"If it was up to me – I would stop the city's growth at 120,000 people and not even touch the southern hills. They are magnificent. But I'm a realist and I know that in the not so distant future, a whole lot of people are going to want to move to Modi'in. And there's nothing that I, nor green advocates, can do to stop this. People need to live somewhere and in a democracy that means that a city like Modi'in is going to keep growing. So my suggestion to environmentalists is to try to prioritize what you might be able to protect. There will be 250,000 people in Modi'in before long. If we're pragmatic today, maybe we can save something for the future."

Modi'in's situation is symptomatic of numerous other sites in Israel like the cities of Beit Shemesh, Elad or Jerusalem where population pressures threaten to destroy lovely landscapes and critical habitats. Israel's largest environmental NGO, the SPNI published its most recent catalogue: "119 Threats to Open Spaces", in January 2013. [31] This was during the heart of the national election campaign. Unfortunately, the warning went almost unnoticed by the competing political parties. The report describes development projects that would destroy extraordinarily diverse national treasures -- from Mediterranean beaches to Galilee hills to the scattered lonely vistas of the Negev desert. But the dynamics behind each story are identical.

The growing number of people and the development needed to support them is slowly but steadily devouring the lovely countryside that makes the land of Israel a magical, edifying place and a home to rich ecological communities. The population pressures not only leave little nature available for animals, but also for human beings. By ten in the morning on major national holidays, the media broadcast the long list of nature reserves and forests that are already full to capacity.[32] Authorities beseech the public seeking a bit

of respite from their jam-packed cities to simply stay away. Even before the 119 natural wonders cited by the SPNI are destroyed, there is not enough nature to go around.

Growing Greenhouse Gas Emissions

In December 2009 as part of the U.N. Convention on Climate Change, representatives of the international community assembled in Copenhagen. Israel participated in this international forum of 192 nations, including 115 heads of state. The goal was to chart a path towards global atmospheric stability. Expectations had been high for a dramatic breakthrough that would finally lead to progress. But even here, only a day before the meeting's conclusion, cooperative efforts were in disarray and no agreement was in sight.[33] On December 17th, Israeli President Shimon Peres took the rostrum.

As part of its responsibility to global sustainability, Israel was expected to present the Conference with a summary of its future, internal policies to mitigate global warming. But, in truth, the actual measures planned were still amorphous. There had been unceasing haggling between officials on the Israeli delegation from the Ministry of Finance (who were evasive) and those from the Ministry of Environmental Protection (who were enthusiastic). Nothing had been resolved. So the President simply took matters into his own hands. Reading from a text he called for action:

"Copenhagen is a hope." Peres intoned. "It has to be realized... Dear friends: In the Mediterranean, a growing population meets declining resources. The population has tripled from 150 million to over 400 (million) in thirty years. Water is diminishing. Energy is polluting."

After self-congratulatory comments about Israeli technological innovations in water and electrical cars, Israel's President got down to business, promising: "By 2020, the government of Israel intends to make best efforts to reduce its CO2 emissions by 20% compared to a business as usual scenario." [34]

To outsiders, it seemed that Israel was "stepping up to the plate" to do its part in the international efforts to address what many believe to be the planet's paramount ecological challenge. In fact, Peres's speech has come to represent a low point of hypocrisy in

Israeli environmental diplomacy. Despite lip-service to the significance of global warming, the rate of the country's greenhouse gas emissions is increasing and remains among the highest in the world.

In 1992 when the U.N. Climate Convention was drafted in Rio de Janeiro, Israel choose to classify itself as a "developing country" and has clung to this status ever since, its economic prosperity notwithstanding.[35] This means that any promises to reduce emissions only constitute a voluntary commitment anyway. The Convention's Kyoto Protocol does not require mitigation activities from developing countries -- only monitoring.

When Peres made his proclamation, pledging an impressive 20 percent reduction in emissions, he was deliberately misleading. The "business as usual" scenario to which President Peres referred was based on projections made for the Israeli government just a few months earlier by McKinsey & Company, a leading international consulting agency.[36] The report, hastily prepared to be ready prior to the Copenhagen meeting, documented Israel's growing greenhouse emissions. It calculated that "business as usual" would result in a doubling of greenhouse gas emissions by the year 2030. The report explained that this increase was "higher than other developed countries, primarily due to Israel's relatively high growth in population and GDP per capita." At best, even fairly heroic policy interventions, largely involving low carbon energy sources and improved energy efficiency, meant that Israel would "only" increase its emissions by a third during a period when the international community expected countries to meaningfully reduce emissions.

The "business as usual" calculations also reflected an expectation that there would be a per capita increase of emissions amongst Israelis, which would bring their individual rates above the average levels in Europe.[37] The McKinsey report systematically explained how the rise in Israeli per capita emissions could be reduced by sundry energy policy measures and improved even further through behavioral patterns, such as reduced meat consumption. Nonetheless, the relentless anticipated population growth, which in recent years has held steady at 1.8%, would mean that the country would literally have to

run to stay in place. In other words, if over the next ten years, Israel could manage to curb "consumption" and increase energy efficiency by an impressive twenty percent (as Peres promised) the concomitant rise in population would erase any improvement.

Of course the high minded promises of Copenhagen were soon forgotten. But a modest program of loans along with investments in energy efficiency and renewable energy was adopted by an intergovernmental committee. Soon thereafter, however, in the face of a 2013 budgetary crisis, the program was frozen. The sad fact is that since 2009, energy demand has not gone down by 20 percent— but has actually increased by 20 percent within five short years. Israel's Ministry of Energy and Water Resources now predicts a doubling of electricity demand within twenty years, a rate far faster than the sanguine McKinsey report had predicted. And because of the high relative costs of solar energy and low political will, as of 2014 Israel's renewable energy portfolio was stuck below two percent.[38] This embarrassing chapter in international environmental subterfuge highlights the fact that while changing consumption patterns is surely critical to improving Israel's environmental performance – alone it is not enough.

There are some environmentalists in the "consumption camp" that challenge the significance of population growth, and constantly point to the higher carbon foot print of affluent Israeli families, who frequently fly abroad, own multiple cars and enjoy an electrical appliance-intensive lifestyle.[39] The consumption advocates call for "disaggregation" of the causes of environmental impacts to better identify those that are caused by rising population and those exacerbated by affluence and consumption.[40]

In fact both overconsumption and overpopulation contribute to Israel's massive environmental degradation. Paul Ehrlich, the great Stanford ecologist has compared the false dilemma implicit in spats over the relative importance of consumption versus population to a rectangle. It doesn't really matter which of the two sides are longer than the other two – the area in the figure remains the same. [41]

Ultimately, based on individual perspective and bias, advocates conveniently select the particular criterion which highlights one or another contribution. (For instance, organic

loadings in sewage, measured by biological oxygen demand are more affected by population growth than by consumption as there are physical limits to how often even rich people must go to the bathroom.) Among those who argue that "consumption is the problem", it is commonly assumed that affluence dominates the "impact equation" with regards to greenhouse gas emissions. In fact the statistics suggest otherwise.

Israel's Central Bureau of Statistics meticulously measures myriad environmental parameters and conforms to the U.N.'s monitoring protocols with regards to greenhouse gas emissions. While overall greenhouse gas emissions continue to rise – increasing by 23% from 62 million tons in 1996 to 76 million in 2010, per capita emissions during the same period actually dropped by ten percent: from 11 tons per person to 10.[42] During this time, Israel's population grew from 5.6 million people to 7.5 million people, an increase of 34%. In other words, Israelis made some progress in adopting conservation measures and the fleet efficiency of its cars improved. This led to a per capita drop in greenhouse gas emissions. But it did not affect the overall trend: the steady increase in Israel's carbon footprint can be attributed almost entirely to demographic growth. Indeed, Israel's Ministry of Energy and Water web-site attributes the increase in the country's electricity demand, first and foremost to the expanding population, not its buying power.

Israel may want to continue to pursue a path of least resistance on climate policy, but it is unlikely that the OECD will allow it to do so. The recent discovery of natural gas will surely slow some of the projected greenhouse increase, even as natural gas production has its own carbon footprint[43] and the methane associated with its production is 23 times higher "carbon equivalent" than that of carbon dioxide.[44] Best estimates suggest that Israel will have to cut back even further. As voluntary life style changes are unlikely to happen by themselves, the taxes associated with inducing reduced carbon emissions will disproportionately fall on poor populations. When climate change policy makers in Israel are honest, they admit that population growth makes it almost impossible to become a responsible player in the world community.

Hydrological Overdraft

Israel is located in a region characterized by water scarcity. Malin Falkenmark, the Swedish Hydrologist wrote a report in 1976 that calculated that people need 1000 cubic meters of water (1,000,000 liters) a year.[45] Countries that did not have rainfall sufficient to supply that level were characterized as suffering from "water scarcity". (Those that have 1700 cubic meters a year were merely "water stressed".) In the Middle East, nine out of the fourteen nations have the more parched status of water scarce countries. Israel is one of them.

In Biblical days, the young former shepherd, David evaded a vengeful King Saul by hiding in the caves around the Ein Gedi oasis near the banks of the Dead Sea. **(**1 Samuel 24:1) A thousand years later, King Herod, the prolific builder and despotic king erected his magnificent Masada palace, which towered over its shoreline, as a highly fortified, spa and resort.[46] For millennia, the deep blue waters encircled by the majestic dolomite and limestone cliffs offered inspirational scenery. But if either of these protagonists of old were to see the present condition of the Dead Sea, they would be aghast.

The Dead Sea" has always been something of a misnomer. The "Sea" is actually only a moderately sized, hyper-saline lake. But it has characteristics so extraordinary that it was a finalist in the recent global vote that selected the “Seven New Wonders of the World"[47] Located at the lowest point on the planet, with 33.7 percent salt content, the Dead Sea purportedly is also the saltiest water body in the world, containing water with ten times the amount of salt of the oceans. There is no misnomer associated with the adjective: "Dead", however. The hyper-saline concentration makes the marine environment intolerable for almost all aquatic organisms, save some trace amounts of extremely hearty bacteria and microbial fungi.

Tragically, due to decades of abuse and demographic pressures, the Dead Sea seems to be disappearing. A third of the water is already gone, and during the coming decades another third will surely vanish.[48] The Sea is dependent on Jordan River water, which receives the overflow from the Kinneret Lake in the Galilee. The River Jordan was never really chilly and wide, and it was always a little bit salty for freshwater. When it poured into the terminal lake, the scorching desert climate -- over time -- caused massive evaporation, leaving a salty broth of minerals.

Today tourists on both the Israeli and Jordanian sides of the lake enjoy the salubrious properties of the mud and mineral rich waters. The Dead Sea is a prized destination for people seeking treatment for dermatological conditions such as Psoriasis and Atopic Dermatitis. This is because the exceptionally low altitude along with the scorching sun provides patients plenty of the ultra-violet rays they need to keep such diseases in remission, while naturally filtering out the more damaging radiation. The elevated salt concentrations increase buoyancy so much, that visitors can literally sit in the water and read a newspaper, creating the most popular photo op snapped by tourists in the Holy Land.[49] They do not realize that this enormous, saline, bathtub is rapidly shrinking.

A homiletic metaphor aims to characterize the difference between the Kinneret Lake -- which is teaming with life -- and the moribund Dead Sea: In its natural state, the Kinneret takes whatever waters it needs from the Upper Jordan River and then spills the rest over to the lower Jordan which tumbles down along the Syro-African rift until it is trapped in the Dead Sea. But as the Dead Sea is unwilling to share even a drop, the sweet water is transformed into an oily, lifeless morass. People too, presumably can learn from the two different water bodies: They can hoard all their resources, never part with any surplus flow, and slowly die like the Dead Sea. Or, they can take what they need and share nature's blessing, like the sparkling, vibrant Kinneret Lake.[50]

The problem with this adorable metaphor is that it is anachronistic. The 1960s saw the establishment of the National Water Carrier in response to the country's insatiable demand for water. For the past fifty years, the Kinneret hasn't really been sharing any of its water with the River Jordan, pumping all surplus waters from the lake directly into the pipeline and the national water grid. The carrier delivered the flow as irrigation and drinking water for the country's growing agricultural and urban centers, as far south as the highlands of the Negev desert.[51] Very often, during drought years, when there was no surplus water available, overpumping occurred. When too much water is drawn from the lake, water quality and aquatic life suffers. With the coming of the recent climate change-induced drought, the past decade has seen the lowest levels ever recorded in this cherished and spiritually significant water body.

Israel is not the only country that has been siphoning water away from the Lower Jordan River and the Dead Sea. During the past sixty years the other riparian nations -- Syria and Jordan – also witnessed astonishing population growth. (Jordan's population has increased from less than one half million in 1950 to 6.4 million people today; Syria's increased from 3.4 to 21.5 million.[52]) This demographic surge was immediately translated into a magnified demand for water. Syria constructed dams along the watershed to the Yarmuk River and virtually emptied this major tributary of the watershed. The Hashemite Kingdom of Jordan, one of the most water scarce nations on earth, captures whatever flow is left in the river Jordan for use by its struggling farmers.[53] The River Jordan has been left with less than a tenth of its original flow.

When the first measurements were made of the Dead Sea in 1900, the "lowest place on earth" was measured at 392 meters below sea level. By the end of the 1970s its shoreline had begun to drop noticeably.[54] Only a pitiful trickle of putrid sewage and irrigation runoff reached the lake, while evaporation continued unrelentingly. The Dead Sea's water level began to fall at an average of one meter per year. This understates the visual phenomenon. As the sea bank is not set at a right angle, for every meter drop in altitude, the retreat in the actual waterline can be many meters more.

Such crass and colossal interference with the natural hydrological cycles of the region produced "unexpected consequences". The most spectacular of these came in the form of some 3000 "sink holes" that have turned the local landscape into a virtual Swiss cheese.[55] These massive gorges in the earth are caused by a drop in the groundwater levels around the Dead Sea and the dissolving of the underlying salt rock. The surface collapses into cavities that can be as wide as thirty meters and fifteen meters deep.[56] The phenomenon evokes epic Biblical legends of the earth swallowing wayward humans (Numbers 16:31–34). Today's sinkholes not only constitute a substantial safety hazard, but threaten the viability of the local tourist industry.[57]

There have been several plans for saving the Dead Sea. The most high-profile proposal involves building a massive canal or "conduit" from the Red Sea designed to replace the deficit in the fresh water flow. A 2012 World Bank assessment estimated the costs of this project at a “mere” ten billion dollars. Moreover, the environmental impact

assessment did little to dispel the concerns of environmentalists about the possible dangers of seismic instability and the resultant effect of such a mega-project on surface water chemistry.[58]

Whether or not Jordan, Israel or the international community can find this kind of money remains unclear. It is clear, however, that no one has discussed the real, underlying reason why the Dead Sea has been transformed from an international treasure into a natural resource disaster area: The ecological balance of a lake is based on a delicate equilibrium. Like the vanishing Aral Sea, the steady disappearance of the Dead Sea and the associated environmental insults implicitly stand as a sad testament to Israel and its neighbors' exceeding their hydrological carrying capacity. People need water and the Jordan River flow has been diverted to help meet this demand. When the number of people living in this water- scarce region increases by a thousand percent, nature cannot keep up.

The Dead Sea is just one example of overpopulation's impact on Israel's water resources. There are many more. The hydrological history of the country can be seen in the context of a "frontier" paradigm. Israel brought a pioneering spirit to its water management strategy where it set out to subjugate the natural resources. As more and more people became water consumers, existing fresh water were stretched to the last drop. But there was not enough. So the country then began to recycle its sewage during the 1960 and today boasts an unprecedented 86% wastewater reuse rate[59], supplying the majority of irrigation for farmers and adding some 50 percent to over all supply.[60] Notwithstanding the additional improvements in Israeli irrigation techniques and local agricultural efficiency these innovations still were not enough to satisfy the demands of an ever-growing population.[61] Water scarcity problems continued to grow worse.

From the mid-1960s, the 560 million cubic meters of rain water, which historically reached the Kinneret Lake, provided a quarter of the overall national water supply. But during the recent seven-year drought, the lake was drawn down to historically low levels. As a result, hardly any water could be pumped during the summer months without risking long term salinization. Luckily, two consecutive years of excellent rainfall in 2011 and 2012, replenished the lake's levels impressively.[62] Nonetheless, global climate change

appears to be affecting the long-term precipitation trends in Israel's northern Galilee region. The present surfeit is considered temporary and overall precipitation is expected to continue to drop.

The mountain aquifer offers another case illustrating the perilous dynamics of scarcity. This groundwater resource is shared by Israel and Palestine. It has had a sustainable yield of 350 million cubic meters of water a year.[63] The ongoing drop in rainfall has reduced this. One analysis shows that the recharge rate in the Mountain Aquifer fell by 5 to 7% in recent years. Wellheads and the aquifer water table in the region south of Jerusalem (e.g., the Herodian and Bani Naim wells) dropped by as much as 30 to 60 meters, leading to acute shortages in the greater Hebron region. In 2008 only 64% of the usual rain fell in the West Bank, creating the most serious groundwater shortfall of the past decade. Palestinian hydrologists estimated that the drought caused an estimated shortfall of 69 million cubic meters.[64]

The U.N.'s World Health Organization (WHO) recommends a minimum of 50 to 100 liters of water per person a day.[65] Palestinian water availability varies greatly across the West Bank, but the per capita average is 73 liters per person / day.[66] This means that there are many communities that fall below the bare bones minimum WHO recommended levels. Israelis, who have developed other water resources, enjoy roughly three times Palestinian levels, but still live in a nation defined as "water scarce".[67] While interim pre-peace agreements seek to manage the aquifer sustainability, the growth in population on both sides fmakes the original allocations irrelevant. There simply isn't enough ground water to go around. And every year, per capita availability drops 2.0 percent, commensurate with the increase in population size.[68]

The only major fresh water resource that Israel enjoys which is essentially not transboundary and shared with neighbors is also its largest. The Coastal Aquifer runs beneath Israel's crowded coastal corridor from Haifa to the Israeli border with the Gaza Strip. Dr. Sara Elchanani, the Head of the Government Hydrological Service recently reported that a full tenth of this aquifer is polluted from human activities, most notably

salinization from overpumping. This constitutes a loss of 4100 billion liters of water, which are forfeited for the foreseeable future.[69] For decades, water managers drew down the groundwater levels to meet the country's insatiable demands and sea water from the Mediterranean rushed in to fill the resulting "vacuum".[70] Hundreds of wells were decommissioned due to the ensuing salinization. Unfortunately, this is just the tip of the iceberg. Israel's Ministry of Environment reports that 3300 sites have been identified where soil is significantly contaminated with pollutants that constitute likely sources of future corruption to the underlying groundwater. The pathology of overpumping is being played out in other, smaller aquifers throughout the country. For instance, farmers living in the Central Arava, in Israel's deep south, face hydrological oblivion. High quality well water there was reduced by 400% during the course of a decade due to overpumping. Recent tests show available, clean fresh water makes up less than 3% of the total water extracted.[71]

In 2002, the impending shortages pushed Israel's cabinet to reach a decision to build a series of four desalination facilities on the Mediterranean coastline. The project has changed Israel's "hydrological profile". The new facilities now provide 50% of Israel's annual fresh water supply and virtually all of its drinking water.[72] Most of the country's water is no longer transported from the north to the thirsty south and central regions.

This good news has some drawbacks, however. Desalination plants are energy intensive and contribute to even greater greenhouse gas emissions. (Some 3.5 kilowatt hours of energy are required to produce 1000 liters of water. The basic formula is that that a new desalination plant increases national electricity demand by one percent.). Technology appears to have provided a way out, at least temporarily, for Israeli domestic water use. But it makes Israel's water system highly vulnerable to terrorist or military actions that target infrastructure. Water prices have also become dependent on international energy markets. Most agricultural operations cannot afford the high cost of desalinated water and must depend on effluents, containing high levels of sodium that cause long-term damage to the soil.[73] And the Dead Sea will probably go on dying as the Jordan River waters will be completely exploited. In the meantime, the collective thirst of Israel and its neighbors is only expected to increase up stream.

Population Growth and Elusive Environmental Progress

Even if Israel's population had not grown geometrically, local ecological conditions today would hardly be pristine. Under ideal circumstances, it is still very hard to overcome millennia of neglect, desertification and degradation and move towards meaningful ecological restoration. Like many other Israeli environmental problems – from pesticide exposures and hazardous chemicals to electromagnetic radiation and industrial meat production -- incremental and site-specific progress can be made. It may be possible to temporarily reduce noise, garbage, water and air pollution through greater societal commitment and smarter policies. Nonetheless, two sobering facts are worth considering: if Israel were to consist of two million people today rather than eight million, its environment would not be facing a crisis of such daunting dimensions. And without stable demographic conditions, it is unlikely that its future environmental challenges will be solved.

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Chapter 12: We Can Do It – An Agenda for Stabilizing Israel's Population

This will appear a dream to many -- but less than any other country should Israel be afraid of dreams."

- David Ben Gurion

No Regrets

For global advocates of zero population growth, the past decade has been the worst of times and the best of times. On the one hand, numbers continue to increase, albeit at a reduced rate, on the inexorable march to ten billion – and probably beyond. Present projections by the United Nations suggest that many poor developing countries will soon have to address staggeringly high populations, twice to three times their present size. By 2050 the number of countries with populations of 100 million people or more will double. There will be 440 million people in Nigeria, 129 million people in Tanzania. Uganda will have 104 million, and 270 million people will fill up Pakistan. Over 1.6 billion people will live in India, roughly the number of people who lived on the entire planet at the turn of the 20th century! [1] Life in these countries will be very crowded and for most residents unpleasant.

But many other societies have shown that demographic policies make a difference and as a result witnessed a rapid transition to replacement or even below replacement levels. There are dozens of countries throughout Europe and Asia where population is essentially stable or even contracting. For example, in 1970, the total fertility rate in South Korea was 4.3. By 2000, it was down to 1.5. The average family in Iran had 6.5 children in1980 but by 2000 only 1.96. Ireland's total fertility was 3.83 in 1970 and by 1991 was at 1.9. Thailand had a birth rate of 5.99 children per family at the end of the 1960s, but by the 1990s it was 1.99. At the end of the 1970s, Bangladesh still had fertility rates of 6.6, but today levels are 2.3. And China went from 5.7 in 1970 to 1.5 today.[2]

Two different kinds of countries are emerging on the planet. Within thirty years, the distinction will be even more marked: There will be lands where timid, myopic (or religious) leaders took a path of least resistance and let demographic inertia continue unrestrained. Life for the majority of people there will increasingly become a jam-

packed, congested tangle where privacy, quiet and natural vistas grow chronically scarcer. In the poorer of these nations, acute food and water shortages will define the existence of more and more people.

At the same time, in other lands, a combination of foresight, political will and cultural evolution will combine to produce the regulation and self-restraint required for stabilizing population. Life there will be very different. Growing prosperity and per capita comfort will continue to spawn diverse, creative civilizations with the potential for equitable, poverty-free societies. Residents in these countries will enjoy the underlying calm associated with stability. People will be able to savor the preservation of beautiful landscapes and biodiversity in open spaces along with the sanity and room for living that will characterize urban places.

Demographic decisions have a long latency period. It literally takes decades for strategies adopted today to produce demographic stability. Hence, Israel needs to decide now which of these paths it wishes to choose. As a society it must make the hard decisions necessary to reach a lower population and reach the proverbial higher ground.

There are many fortunate places around the world where population stability evolved as a function of cultural transitions. But the demographic equilibrium and the precipitous drop in birth rates that took place in the aforementioned countries for the most part did not happen because of an invisible hand or the intoxicating influence of Western civilization. Enlightened public policies catalyzed these changes in attitudes and familial norms.

For some time, population has been recognized as a problem of "unmanaged commons". It is the most natural thing in the world to let other people worry about these areas which belong to everyone and no one in particular. In today's world, demographic growth is the result of millions of individual decisions that do not internalize the harm that might be caused to society at large. As personal responsibility becomes diluted, collective disaster becomes inevitable.[3] Garret Hardin's famous 1968 essay, The Tragedy of the Commons, explained it this way: "The most important aspect of necessity that we must now recognize is the necessity

of abandoning the commons in breeding. No technical solution can rescue us from the misery of overpopulation. Freedom to breed will bring ruin to all. At the moment, to avoid hard decisions many of us are tempted to propagandize for conscience and responsible parenthood. The temptation must be resisted because an appeal to independently acting consciences selects for the disappearance of all conscience in the long run, and an increase in anxiety in the short."[4]
When such dynamics prevail, only government intervention can produce socially optimal results. The world is full of examples where legislation and regulatory programs enacted for the common good curbed behavior that damages natural resources or erased age old destructive norms and prejudices. Many of the countries that have stable populations today are the direct beneficiary of such farsighted policies. Assuming that the State of Israel prefers to take a sustainable route, it is time to consider the measures that it must adopt to stabilize population. In some areas there is a need for legislative reform and new initiatives. There is much that can be learned from the experience of other nations. In other areas, Israel simply needs to do a better job of enforcing existing laws. In either case, there is no need to reinvent the wheel. From a public policy perspective, it is quite clear what must be done and how to do it. What is less clear is how to sell this "package" to the politicians who must enact these measures and see to their implementation.

For more than twenty years Adam Werbach has been among the world's more creative environmental thinkers and sustainability advocates. At age 23 he was the youngest president in Sierra Club history. He then went on to launch innumerable public interest and sustainable business ventures, helping to reform the environmental practices of corporations like Walmart, Procter and Gamble and Frito-Lay. Werbach has come to understand a bit about marketing and why the general public does or doesn't buy into environmental messages.[5] He is extremely uncomfortable with the way overpopulation has been framed over the past fifty years:

"Population control" frames the problem as too many people, and even worse, as too many poor people. Within this framework, one set of issues counts (including immigration, contraception, and abortion), while another set of key issues (the North American Free Trade Agreement, economic development, the rights of women, and poverty) remains outside. In the population-control frame, the number of people and

their placement on the planet is the root problem that needs to be solved. But is that really the problem? Family planning has succeeded only where economic security has been improved for women, including access to food and shelter, health care, and education. With this as background, the real population problem may be the treatment of women on the planet. If we reject the population-control frame in favor of the goals of women's emancipation and sustainable development, we may achieve a healthier and more stable population without inviting the unwelcome embrace of ugly exclusionists."[6]

While there is strong ethical impulse behind this view, ultimately Werbach's concern is about tactics. Sustainability advocates surely need to be thoughtful about how they present population policies lest they get derailed, defamed, and driven into a defensive mode. At the same time, there should be no confusion about the need to alter present global demographic trends as well as the direction in which Israel is headed.

Few thinking people would contest the notion that local carrying capacities need to be respected and that the planet's population growth needs to taper off. Some methods that further these ends are more objectionable to the public than others. Coercive policies in the past have been extremely harmful to international efforts to reduce population. They created a "straw man" -- a caricature of pitiless, patronizing, social engineers -- that is vulnerable to attack from a peculiar coalition of the Vatican, feminists and developing countries.[7]

In Israel, as well, the occasional intrepid voices that dared to point out the implications of existing demographic dynamics in the past have been ridiculed and distorted. This is unlikely to change. Those who raise the flag of sustainability and population stabilization will invariably be branded alarmists, anti-Zionists, anti-Arab, anti-Jewish, anti-Orthodox, elitists, heartless or eugenicists. Faced with such a predictable backlash, few choose to speak openly about the disaster that Israel's pursuit of perpetual growth is creating. Who needs the headache when the prospects for change seem so small? There are plenty of other worthy causes without such toxic fallout. And yet, more and more Israelis have quietly come to realize that if demographic pressures are not addressed, efforts to improve the country will be fruitless. This silent majority can be galvanized. But when the problem of

"population" in Israel is finally tackled, it will not be enough simply to be "right". Given what's at stake, it is critical to be "smart".

There is much that Israel can learn from regulatory experience around the world. In some areas environmentalism has been highly successful, while in others, significant effort still resulted in abject failure. Ozone depletion has been ameliorated[8] and whale extinctions averted.[9] Overpopulation, however, is another story. When Paul and Anne Ehrlich wrote The Population Bomb in 1968 there were 3.5 billion people on the planet. In the forty-six years that have transpired, the number has more than doubled. Notwithstanding many remarkable local transitions, at a global level, the outcome of decades of pronouncements and warnings about overpopulation has been most disappointing. To better get the message across, strategies that perform poorly need to be identified and avoided while success stories need to be evaluated and emulated so that the lessons can be translated into sustainable domestic policies.

There is indeed much to be learned from considering failures. Another global challenge where efforts have been less than satisfactory is climate change. As the debate about the science of global warming has dragged on, environmental advocates realized that they needed a “new angle”. Many began to frame their proposals as "No Regrets Options". No Regret Options are policies that are worth pursuing regardless of whether or not a greenhouse effect poses an existential threat to life on the planet. In either case, the direct and direct and indirect benefits of innumerable projects more than offset the costs of implementation.[10] Even climate change skeptics would agree that society benefits when more trees are planted and automobile fleets are more efficient. It makes sense for homeowners to install double glazed windows, insulate their houses or shift to energy saving light-bulbs. It is a good thing when people consume less beef and are less dependent on fossil fuel imports.[11] Focusing on the long suite of “no-regrets” endeavors engenders less resistance from the public and politicians, while producing the desired outcome of greenhouse gas reductions.

Those who wish to stabilize population in Israel need to adopt a similar perspective. It may take more than a generation until the country's pro-natal inclinations in disparate camps give way to the sustainability ethic that informs most of the developed world today. That doesn't mean that the problem of overpopulation should

not be raised openly and a new, sustainable perspective promoted. In the interim while the internal debate rages, there are any number of interventions which directly or indirectly can contribute to reduced fertility, even though they are not designed to promote that particular goal per se. Providing free contraception; abortion on demand; inexpensive day care for working mothers; stopping polygamy; offering scholarships to minorities and women – all are part of an economic and social justice package that can help stabilize population in Israel. These policies may contribute to healthier demographic dynamics, but do not need to be framed as population initiatives.

If Israel wishes to change demographic trends and slow population growth it must substitute many existing programs and policies with others which directly or indirectly stabilize population. Such an agenda for sustainability will need to:

- Empower Israeli women and integrate them in the workplace;
- Ensure greater access to contraception and abortion;
- Eliminate government incentives that encourage high fertility; and
- Change public norms about marriage, fertility and family**.**

Programs that pursue these goals will contribute to a reduction in birth rates and help transform societal attitudes that affect population size. Yet, they all have an inherently sound, parallel rationale that makes them worth pursuing, regardless of Israel's demographic circumstances. Even those not concerned about overpopulation will not regret their implementation.

Empowering Women

"Empowering women" is a slogan that has reached consensus levels of support even in multi-cultural, politically divided societies, like Israel. Most demographers, environmentalists and even economists agree that independent, educated and gainfully employed females hold the key to stabilizing population size. There is certainly a link between the two phenomena: It turns out that there is no society on the planet with high fertility rates that also has objectively low levels of gender inequality. [12] The status of women, in particular their capacity to attain profitable and fulfilling employment, is good for any economy. Japan offers an excellent case in point: After many years of lackluster performances, the Japanese economy finally began to turn

around in 2013. The stock market increased by 65 percent in six months and attained the highest GNP growth among advanced economies.[13] One of the central reasons for the boom was the expanded participation of women in the workplace. Even though Japan is aging rapidly, women are poorly integrated into the workforce, and the country has one of the worst gender gaps in the world.[14] The government has set a 30% target for female participation in the civil service and the Prime Minister has asked every Japanese corporation to appoint at least one woman to its board of directors.[15] Empowering women and ensuring their place in the labor force is starting to do wonders for prosperity.

Guaranteeing women equal access to education and the job market is surely good for women. During World War II , Rosie the Riveter was the illustrated poster icon who promoted the slogan: "We Can Do It" and encouraged American housewives to take manufacturing jobs during World War II while their husbands had gone off to fight. The pitch was: "if you can use an electric mixer you can use a drill". After initial hesitations women answered the call, with female employment up a full 50% by 1944. Retrospective studies show that salaries provided the initial attraction, but women soon came to appreciate the independence, the mastery of new skills and being out of the house as part of the war effort.[16] There was considerable unhappiness when many were relegated back to their domestic lives after the war. [17] These rechanneled productive energies contributed greatly to the American baby boom.

Empowered women tend to have fewer children. Accepted economic theory holds that as the status of women improves, family size decreases. Because they hold such influence over policy makers, it is particularly interesting to understand the logic behind economists' perspective on this inverse relationship. University of Chicago professor Gary Becker won the Nobel Prize for economics in 1992 for a lifetime of prolific research. No area of Becker's thinking has been more influential than his work on the economics of family dynamics and fertility. In 1960 he published "An Economic Analysis of Fertility", an essay which considered the unanticipated negative relationship between income and fertility. [18] According to conventional economic wisdom at the time, this was counterintuitive.

Two centuries earlier in England, Thomas Malthus' was writing the Essay that put forward these assumptions. Although an ordained minister, Malthus was much more famous as an economist. Writing in 1798 Malthus argued that wealthier families are better able to pay for health care so that their children have a higher probability of surviving.[19] Moreover, wealthier family can allow their children, especially their girls, to marry and start their "child bearing years" at an earlier age without worrying about the need to "abstain" so that the family could pay the bills.[20]

Becker realized that Malthus's famous observation about income and family size, empirically was no longer valid. He tried to understand why. Becker identified several basic changes in modern living that altered earlier dynamics and, hence. the role of women. Two factors were easily pinpointed/identified. First, the advent of inexpensive contraception allowed families to choose whether or not to have children, making the age of marriage or a couple's sexual activities of secondary importance to fertility. Indeed, one reason why wealthier families in many societies have fewer children than poorer ones involves greater familiarity with and access to contraception. Second, childhood mortality in most of the world has dropped among all classes; oday it is only a minor factor in population dynamics.[21]

But the real change that Becker identified in the household economic dynamics of modern "post-agrarian" societies involved the costs of raising children. Every child brings direct costs. Children have long since ceased to be assets that produce family income. Due to their extended period of dependence in modern societies, children use up family income. A child needs to be fed, clothed, sheltered and provided with basic goods, all of which can be very expensive. Moreover, it turns out that these costs are just a fraction of the full price in many societies. Societal expectations for investment in children consistently go up as families grow richer: from preschool to university education; from summer camps to therapies; from fashionable consumer goods to entertainment, raising children and ensuring their success is costly. More children are even costlier. Becker called this phenomenon: the "quality" of children. Affluent families may not buy more cars than poor families, but the cars they do buy will typically be more expensive or of "higher quality". Similarly, wealthier families will make a larger investment per child as they acquire greater disposable income. As

families grow richer, they substitute fewer children of "higher quality" for more children of "lower quality".

Becker then went a step further. He argued that the most important change in the cost of raising children in modern societies involves indirect expenses, or "opportunity costs". This corresponds to the value of the time that is spent with "the kids" rather than at work. In his 1981 book, A Treatise on the Family Becker showed that as women move up professionally, the value of their time increases. Promotions raise the effective opportunity costs of having a child. A fulfilling career also means that meaning in life is not only derived from child rearing.[22] Women today are not as selfless today as in the past and do not feel uncomfortable seeking meaning in life beyond their role as mothers. This is a good thing. In the implicit calculations made by many women, additional births means spending more time at home and less time at work. This not only results in lower income but also in reduced professional opportunities or in economic jargon: lower overall utility (Becker explained that since fathers have always spent little time taking care of children, increases in their earning power do not significantly affect the cost of children.) Clearly, this sort of "cost-benefit" equation is not the only factor that informs women when deciding whether or not to get pregnant. But it appears to matter very much.

Becker summarizes: "The economic approach suggests that the negative relation between income and fertility is an indication that the effective price of children increases with income, perhaps because the wives of men with higher incomes tend to have greater earnings from market activity or higher values of their time. I believe that the interaction between quantity and quality of children is the most important reason why the effective price of children rises with income."[23]

Empirically, Becker's model appears to be validated by experience across developed societies. This was not always the case. As late as the 1970s , data from OECD countries indicated that total fertility rate was in fact positively associated with the participation rate of women in the work force as it was in Malthus' day. In other words, women who worked had a higher likelihood of having more children. But this relationship soon changed 180 degrees, and by the 1980s the trend was entirely reversed. Women in the labor force were having fewer children than those who were

not working. Explanations for the turnaround involve inflexible working hours which created obstacles to raising children and greater associated stress. Higher wages surely contributed a great deal to the change. Because childrearing is considered to be a time-intensive task, many women felt that additional children would force them to settle for less lucrative employment. Interestingly, when unemployment surged, women did not go back to having more children. On the contrary, fertility dropped even further.[24] According to economic logic, therefore, the single most important thing that can be done to reduce female fertility is to increase female participation rates in the work force and ensure that no unfair impediments block their professional advancement.

To what extent does empowering women need to be a social policy objective in Israel? Secular Jewish Israeli women already show impressive labor participation rates: 79.5% of women from this sector work, far higher than the OECD average of 66.2%. (Only Sweden, Iceland and Norway are higher.[25]) Some 66 percent of Haredi women work, precisely the overall average of the OECD. This is a reasonable rate but could be far higher. And those working part-time could expand their hours. The reason why the national average for women is only 75% involves the low participation rate of Arab women, only 22% of whom are employed.

An agenda with the potential to empower Israeli women must be clearly defined. The list, at a minimum needs to:

1) ensure access to affordable higher education and scholarships for women of limited means;
2) make childcare easily available and inexpensive; and
3) enforce existing laws which prohibit differential salaries based on gender or race and which forbid polygamy.

<u>Education</u>

Education first and foremost plays a central role in determining children's -- especially girls' -- roles and identity. It is not just about providing skill sets for an increasingly demanding job market. (Nor is it a particularly difficult pedagogical challenge to teach adolescents the mechanics of avoiding pregnancies.) Through its schools, society can impart values and aspirations that facilitate independent familial

and non-familial roles.[26] Central to any strategy seeking to empower women is the provision of an identity and the confidence that will enable girls to lead fulfilling and challenging lives.

When given opportunities for a productive and satisfying life beyond the confines of the family, the vast majority of women opt to work. As any teenager who has taken her first job knows, a positive sense of pride, freedom and self-sufficiency soon follow. Around the world, education, especially for women, has been highly associated with low fertility.[27] The correlation in dozens of studies in disparate countries is unmistakable. Surveys in nine Latin America countries showed that women who had little or no education had average family sizes that ranged between 6 and 7 children; those with a higher level of education ranged between 2 to 3.[28]

More than ever, at the practical level, proficiencies and competence in a variety of marketable fields matter a great deal to empowerment strategies. That's because something has happened in the Israeli "job market": Positions available to people without advanced education never paid well. Recently, however, they pay especially poorly. The phenomenon is evident in other post-industrial societies.[29] But like so many other areas, Israel constitutes an extreme case. Gaps in salaries among Israelis are less connected to seniority – or even gender - than they are to education and training.[30] As foreign workers flood the market, opportunities for low-skilled workers continue to shrink.

Given the interplay between education, employment and fertility, a new Israeli demographic policy needs to prioritize the empowering of women in Israel's Arab sector (especially Bedouin women) as well as Haredim. The centerpiece of such a strategy needs to involve higher education and training for entering an increasingly competitive job market. While there are some similarities between these communities, they are sufficiently distinct to warrant different programmatic interventions.

Haredi Empowerment: For Israel's Haredi community, the education – fertility connection appears to be true not only for women, but for men as well. Haredim who did not pursue formal education but studied religious texts in yeshivas on average

have 6.5 children as opposed to those with academic degrees who have 5.5 children. While this level of fertility is still very high, it is still 15 percent lower.

To understand the magnitude of the challenge in Haredi communities, it is well to review a few descriptive statistics. A recent study shows that between ages 25-44, only 12.8% of Haredi women have college degrees; for women ages 45-64 the numbers are only a little bit better: 17.6%. But in terms of formal education, Haredi females are more accomplished than males: the percentage of men with degrees is only 7.5% and 15.1% respectively. In comparison, 30% of non-Haredi Jewish women in all age categories hold degrees. This educational shortfall has enormous implications for economic well-being and employment opportunities. Half of Haredi women without academic degrees are unemployed. For those Haredi women who completed formal training after high school, the figure is only 24%. Among Haredi men, the figures are even more striking: 34% of those without a formal degree are employed as opposed to 71% of college graduates.[31]

There are some signs that change is in the wind: the number of Haredim pursuing higher education has begun to increase. In the six years between 2006 and 2012, the number of ultra-Orthodox students in post-high school academic institutions doubled. Of the 7,350 students most recently enrolled in college programs, 3,500, roughly half are female.[32] But at the same time, the number of Haredi boys completing academic high schools where, "secular" subjects are taught is actually plummeting. Between 2002 and 2010, the rate of Haredi men completing formal secondary education dropped from 26 to 12 percent, with the vast majority of boys opting for religious studies.

When the Ministry of Industry, Trade and Labor surveyed the Haredi community most female respondents were willing to consider non-religious programs, seeing "general studies" as an option for future instruction. Only 30% of the males were open to the idea. [33] At the same time, many Haredi women are severely limited in the workplace due to religious constraints. Certain basic activities are not allowed, such as coming into unsupervised contact with males; unrestricted access to the Internet or even unregulated e-mail. At the conclusion of a recent job training practicum, two Haredi women were outstanding participants and slated to be among the speakers at the closing ceremony. When permission from their Rabbi to appear in a public did

not arrive in time, they felt compelled to disqualify themselves from the proceedings.[34]

An increasingly large number of Israelis are beginning to see the dangers associated with this phenomenon. Indeed, Haredi unemployment and dependency on public welfare funds was one of the central issues in the 2013 elections that for the first time in decades left ultra-Orthodox parties out of the government.[35] But entrenched policies and legislation perpetuate the educate gap. In 2011 Israel's Supreme Court rejected an appeal by a pair of law professors and a former general that called for religious academies to teach children the so-called "core studies" of English, Math, Science and Computers. The petitioners argued that the children's right to a basic education was being violated by a curriculum that was almost entirely based on religious subjects. The court felt that it did not have the authority to overturn existing policy, even if the judges well understood that this was a central reason why ultra-Orthodox are so underrepresented in in the job market.[36]

Any real change needs to involve a combination of "top-down" government interventions with a "bottom-up" appeal to the Haredi community. The "no regrets" economic case for investing in better schooling is definitely compelling. A 2013 Bank of Israel study demonstrates substantial societal dividends: Given the low Haredi participation rates in higher education, the country will soon fall from 14th to 16th place among OECD countries in average number of years of schooling, a key human capital index. If, however, Haredi educational levels converge with the general societal average, within 50 years it would add 5% to GDP.[37]

Of course, the Haredi community would be the biggest beneficiary. Higher education is immediately reflected in higher incomes and escape from the poverty trap that so burdens the ultra-Orthodox community. There are not a lot of Haredi families where both the father and mother have academic degrees. In fact, such families only make up 5.2 percent of Haredi households. But when both parents have studied and work, the average family income is $5,100 /month. For the 80% of Haredi families in which neither parent has an aadvanced degree, average income is less than $2,000. [38]

The Neeman Institute at the Technion University has undertaken several initiatives that focus on integrating Haredim into Israel's labor market. Its researchers argue that

Haredi women will advance little from their studies, which are primarily based in religious "seminars" or small, colleges with a very limited number of offerings. Most of them pursue degrees which "enable them to set up and manage a household" with little encouragement to major in subjects that are of interest to them personally or which may contribute to the national economy. The Institute's reports call for provision of greater resources for Haredi women considering college and university so that a larger number can pursue a richer menu of higher demand, paraprofessional or professional tracks.[39]

The situation of Haredi men, whose many years of studies have primarily focused on religious topics, is not simple. Among the obstacles impeding their continued education is poor English and little grounding in science and math. Then there are toxic political dynamics, leaving them with an uneasy sense that the country's secular majority holds a hostile, adversarial bias against the community. This creates a resistance among Haredi men (and women) and reluctance to attend mainstream Israeli academic institutions.

Many proposals involving advanced training centers and subsidies for higher education have been floated.[40] For instance, a "second chance" program for completion of high school and college has been proposed. It would be coordinated with the needs of the private sector and include job placements with incentives based on the workers' success. Helping the products of Israel's broken educational system to enter the labor force is important, but ultimately only addresses symptoms of a larger problem which starts in the primary school years. As long as the government continues to fund schools with an educational curriculum which does not provide basic knowledge and skills for Haredi boys and girls, progress when they grow up will be limited. Certainly it will fall short of the educational revolution needed to change familial norms. To transform present dynamics, extended school days and subsidized afternoon youth enrichment programs are required. High quality-educational after school programs can free up both parents to work and give the children the "head start" they need. [41]

Arab Empowerment:

When the relatively poor economic state of Israeli Arab communities is considered, the most conspicuous factor to emerge is the shockingly low 22% employment rate among women. The wages of Israeli Arabs also tend to be lower than those of Jews. (Arab men earn on average 43% less than Jewish men do. For Arab women the gap is only 21%). Much of the explanation for this involves their presence in industries and professions where salaries are modest. It is interesting to note, that Arab women earn hourly wages that on average are higher than Arab men, due to the superior education of many working Arab women.[42]

It would be wrong not to acknowledge some good news: participation in the work force has, in fact, already gone up three-fold: In 1970, only about 8% of Arab women worked and by 2010 the percentage had risen to 22%. But during the same period, in absolute terms, the number of Jewish women in the force increased far more: going from 32% to 60%. Nonetheless, more and more young Arab women seek to enter Israel's labor force. When present figures are stratified according to age, it turns out that in 1980 only 18% percent of women ages 25 to 29 worked; by 2010, the figure was 38%.[43] Over 90% of the women in older age brackets do not work and probably never have, bringing down the overall average employment rates. But still, employment levels are very low. Furthermore, the range of employment pursued by Arab women is also relatively narrow: 36.6% work in education; 11.6% work in sales; 18.2 percent work in health related professions; about 9% continue to work in agriculture.

Israel's high-tech sector reflects the limited access to lucrative professions among Israeli Arabs in general and Arab women in particular. The best estimates in 2013 suggest that 1,200 Arabs work in Israeli high-tech companies, only 1.5% of the total work force in the field. But this is up from 350 people, or 0.5%, five years previous. Nazareth, the largest Arab city in Israel, has emerged as the center of high-tech jobs in the Arab sector: Between 2008 and 2013, the number of high-tech firms in the city jumped from 1 to 12, with the number of employees increasing from 30 to 400. Two thirds of the workers there are non-Arab and one third are women.[44] This is far from noteworthy, but at least a beginning. In a word, in Israel's most profitable economic sector, Arabs are almost invisible.

Eran Yashiv and Nitsa Kasir of Tel Aviv University have taken a closer look at the situation . In surveys of 7,647 Arab citizens, they considered women's participation in Israel's labor market and how to increase it. Not surprisingly, education emerged as the key. The researchers considered which factors motivate Arab women to work and which encumber them. They found that those living in cities have higher employment rates, a function of transportation and accessibility. Without the benefit of a second income, single and divorced women tend to be employed more than married women. They also are not subject to the same residual patriarchal chauvinism that discourages wives from working. Having children influences employment rates negatively. Not surprisingly, the researchers also report that government child allowances serve to squelch the motivation to work. Cultural factors are also important, particularly the surveyed women's orientation towards modernity. But ultimately, the best predictor of whether an Arab woman is working or not is higher education: The economists' regression analysis shows that there was a notable divide in attaining employment between women having 16 or more years of formal education and those having even 13 to 15 years of schooling.[45] Here, the trends are encouraging: the percentage of Arab women studying in undergraduate programs has increased from 2 to 12% during the past 35 years. Those pursuing graduate degrees has gone up from 1% to 10%.[46]

Yashiv and Kasir recommend seven different policies and programs to increase the participation of Arab women's-in the workforce. Many of these have been recommend in earlier reports. [47] These include provision of local occupational guidance centers to direct information to women and to potential employers-professional training courses to upgrade marketable skill sets among women, subsidies for daycare to reduce the costs of going to work and expanded transportation infrastructure and services. The researchers also suggest that more attention be paid to career tracks and job skills as part of the high school curriculum. Ultimately, subsidies for higher education and greater investment in the Arab educational system are essential. Finally, the researchers also recommend stronger legislation and enforcement against discrimination.[48]

The importance of fast, inexpensive and readily available public transportation cannot be overstated. Most Arab women do not have ready access to a private car. Present transport service to dozens of Arab communities in the Galilee and the Negev is

minimal. In the short run, subsidies for taxis and ad-hoc shuttles can help. However, a reliable network of bus routes is better. Frequency of service is critical. If a bus reaches a village once an hour, it isn't enough to allow sufficient mobility. In the long run, bringing employment to the periphery where so many Arabs live is the only real "systemic" solution.

One interesting statistic appearing in a 2009 report prepared for Israel's Knesset states that only 22% of Arab women in Israel who applied to be in employment programs had a driver's license.[49] Presumably, the driving rate among these women is actually more likely to be higher than the general average. Attaining a license in Israel is an expensive process. Subsidizing these lessons or providing them as part of their high school curriculum could make an important contribution to the mobility of Arab women.

There will be enormous "no regrets" benefits to the Israeli economy from ramping up existing efforts to boost employment among Arab women. One scenario predicts that increasing the number of Arab women in the work force from the present 100,000 to 315,000 by 2030 would add 50 billion shekels to the national economy or 5,500 shekels to national per capita income. In short, it seems that Arab women increasingly want to go to work; expediting this process, especially in the Bedouin sector, will contribute to a stabilization of both these sectors and the country's population levels.

Childcare

Among the most central challenges to integrating women into the workplace is providing a reliable framework to take care of their young children during the day. According to a recent study, German mothers who utilize child care are about 35% more likely to work than those who do not.[50] Israeli mothers are no different. Here again, improving daycare services has great societal benefits.

In 2012, when Japan's Prime Minister, Shinzo Abe set out to fix his economy's lackluster performance of the previous twenty years, he realized that the key was increasing the number of women in the workforce. To do this, childcare needed to be more accessible. Typically, after giving birth, 70 percent of Japanese women stop working and find it difficult to return. Only a third of Japanese women with young children have jobs compared with three quarters in Sweden. Part of the reason

women's participation has been so low involved the "Catch 22" they faced in daycare enrollment. Without a job, they were not eligible to send their children to day care. But without a framework to take care of their children, they could not commit to a job. The new government policy is designed to end day-care waiting lists by 2015 by establishing 200,000 new day-care openings in government monitored centers; another 200,000 will open by 2017. [51] France, faced with a low birth rate, instituted a policy of highly subsidized municipal day care, offering tax breaks for families employing in-home child care workers, and universal free nursery school.[52] It is not clear whether this raised local birth rates as much as the government hoped. Yet, it has led to an impressive 80 percent participation of women in the workplace compared to 60 percent in the U.S.[53]

Japanese and French policy makers see day care as a way of encouraging women to have children. But the opposite is true in Israel where feminist leaders view day care as a critical way for reducing birth rates by enabling women to enter the labor force.[54] This is especially germane for Arab women in Israel who are increasingly well educated and keen to work. Beyond the inadequate transportation infrastructure and bias among many Jewish employers, absence of childcare facilities constitutes the most significant obstacle to their employment. With so few reasonable facilities in Arab towns, many mothers simply cannot commit to a job. They have no place to leave their children.[55] Across Israel's diverse social spectrum, most women are willing to drop children off in a daycare center within their community and depart for work. But they won't if the service is too distant, too incompetent or too expensive.

The price of daycare can be a problem: A 2013 report by the U.S. census bureau reports that the average price of day care has almost doubled in real terms during the past thirty years,[56] thereby affecting decisions of married mothers much more than single mothers.[57] (For single mothers, day care is an "inelastic" service. Lacking backup, they have little choice but to pay more for it.) At the same time, high daycare expenses can discourage fertility. In China, for instance, child care is readily available in most cities and communities. But it not free. Parents must pay a hefty sum for their child's first six years of schooling. This economic factor reinforces the country's "one child" policy.[58]

Haifa University's Amaliah Sa'ar is an expert in the problem of employment and business among Arab women. Her research shows that poverty and lack of support makes it hard for Arab women to take initiative.[59] Frequently it simply makes no economic sense for an Arab woman to work. If she lives in Arabeh and finds a job in Haifa, employment may turn out to be an economically losing proposition by the time she pays for a car to get to work and a caretaker to watch her young children – employment may turn out to be an economically losing proposition. The government has begun to provide free day care from age three. But the cost of childcare until then averages over 20,000 dollars.[60] For working mothers of lower socio-economic levels whose salaries are modest, this price is a non-starter. Government subsidies should be expanded to help working parents cover the infants' first years in day care.

Of course there are enormous intrinsic benefits associated with placement of even very young children in daycare. Empirical studies around the world clearly show that toddlers who are placed in well-designed early childhood day care frameworks do have a head start. [61] Statistically significant advantages were found among children placed in cognitively-oriented child care programs. These include better cognitive, IQ and school achievement test scores, lower rates of special education, higher grades, fewer grade repetitions, and higher rates of graduation from high school. The earlier and the more intense the educational intervention, the better the results. Data in Israel show similar advantages: The new subsidies for childcare increased the percentage of children attending preschools as well as employment rates among their mothers. But the employment bonus was found primarily among women with higher educational levels.[62]

Daycare programs in Israel have always been relatively well developed in secular Jewish communities. They enrich young children and are worth supporting. But the real societal dividend from expanding them is the expanded number of working mothers. It is ironic, therefore, that originally, during the 1950s, the central object of early childhood care in Israel was to facilitate large families. Naamat, the Labor Zionist women's organization operates 250 preschool centers across Israel today, making it the country's largest early childcare provider. In its original charter Na'amat accorded priority to children from large families rather than smaller families, even if

the mother was not working and even when a working mother needed a spot for her toddler.[63]

Presumably, this approach has changed. Under the shadow of the demands from the 2011 "Social Protest Movement", the Israeli government expanded day care with the express purpose of “encouraging the integration of mothers into the labor market”. Initially, this appeared to be largely lip service as there was no formal preference provided for working parents. Indeed, directives from the Ministry of the Economy specifically allowed Haredi men who weren't working or studying a trade to enjoy the full benefits offered from free child care. The government pays 1,730 shekels a month for every child in preschool and 2,273 shekels when the child is an infant. No expectations were stipulated for parental entry into the labor force in return. In fact the subsidy just made it easier to have more children and stay out of the work force![64] The government, at this writing, has supposedly decided that this makes no sense and will begin to require that both parents work in order to enjoy day-care benefit subsidies. As it is such a politically loaded matter, whether or not the decision will be enforced or circumvented remains a question.

Overcoming Bias and Discrimination

Another obstacle that has been difficult to overcome involves discrimination. Amal Ayoub could be a poster-girl for professional competence among women in Israel's Arab sector. Growing up in Nazareth, she was recognized as academically gifted at a young age. But upon completing her undergraduate degree in Physics from the prestigious Technion University she was rejected by dozens of potential Israeli employers for being under-qualified. [65] So Ayoub went on to complete a doctorate and also a post-doctoral program at Ben Gurion University in Bio-technology. This time when she came looking for work, she was told that she was overqualified. Eventually Dr. Ayoub established her own company, Metallo Therapy which develops techniques for focusing radiation on tumor cells through the use of gold nanoparticles.[66] Although she acknowledges that there is prejudice in the Israeli workplace, she claims that other obstacles, such as providing transportation and childcare to the many Arab women who wish to work, may pose more fundamental impediments to their successful integration in the workplace.

One undeniable reason why many women in Israel do not work is that the remuneration is so pathetic. Often, it simply does not pay to work. Women's salaries in skilled and unskilled positions have always been lower than men's. Deliberately or unconsciously, they tend to be passed over in promotions to senior positions. The numbers speak for themselves: Females working in Israel earn 66% of the salaries that males receive for commensurate work. Israel's Central Bureau of Statistics in 2014 reported that on average, Israeli men earned 10,953 shekels a month: women only 7,244. Women are particularly underrepresented in the hi-tech sector where only 35.6% of the workforce is female.[67] And although the numbers appear to be improving, in 2013 only 20% of top management jobs at companies traded at the Tel Aviv Stock Exchange were held by women; only 7.9 percent of CEOs in the hundred largest Israeli companies were women. (This was up from 4.5% only a few years earlier.[68]) The present gender gap calls into question certain axioms of equal opportunity in Israel society and weakens the economy. It discourages women from working and surely does not help reduce fertility.

Israel's Arab women face a "double whammy" of prejudice based on gender and ethnicity. The trouble is that it is extremely difficult to prove discrimination in the workplace, even though it often exists. Dr. Ayoub may or may not have been "under" or "over" qualified in the eyes of any given employer. Israel has begun to address the problem of the underrepresentation of Arab women in the labor market. The Or Commission, appointed by the government to consider the clashes between police and Arab demonstrators in October 2000, openly acknowledged that the Arab sector had suffered from historic discrimination and neglect. The Commission report called for funding to close gaps in education, industrial development, employment, and other social services. [69] In 2008, the Israeli government set a goal that 10% of civil servants come from Arab communities by 2010. This is 50% lower than their percentage in the country's population, but better than the 6% that existed at the time. And still the target has not been met[70]

Haredim also complain that they face prejudice and discrimination when they look for work. It is a valid complaint. The Technion’s Samuel Neeman has taken on the issue of Haredi joblessness as a priority project, even preparing promotional material about the benefits of hiring Haredim for potential employers. The Institute's research also

reveals discrimination in salaries between Haredi and secular employees, as well as gender salary discrimination between employed Haredi men and women. For example, there is a large salary differential between Haredi and non-Haredi academic employees . In addition, Haredi women in Israel earn less than Haredi men (5,620 shekels/ month versus 8,950/month. But they also make less than secular Jewish women with comparable education, who earn 8,000 shekels a month.[71] Equal pay for equal work may be the law, but it is a very difficult law to enforce

The creation of the Equal Employment Opportunities Commission in 2008 was an important step in confronting this phenomenon. Based in the Ministry of Economy, the Commission is designed to address discrimination in the workplace on fourteen grounds of prejudicial treatment, including: nationality, race, ethnic origin, age, gender and sexual orientation.[72] Tziona Koenig-Yair, has overseen the Commission's work since its inception. A former prosecutor in the District Attorney's office and later executive director of the Israel Women's Network, she brings the right combination of legal competence and ideological commitment to the work. But hers is a particularly trying task. Koenig believes that Israel actually has excellent laws that call for equal pay for men and women, prohibit sexual harassment and other occupational hazards while ensuring vacation days, reasonable hours and other social benefits. But these statutes often are not enforced. "Many employers don't realize that they can't discriminate based on people's gender, race or ethnic identity," she explains. [73]

Koenig is well aware of the low percentage of Arabs working in Israel's hi-tech industries (2.4% overall -- but only 1.3% working as professionals). She cites the usual obstacles: the distances between Arab communities and potential employers, poor public transportation, inappropriate skill sets and corporate recruitment policies. Koenig does not deny that part of the explanation involves overt or unintentional discrimination. When given the opportunity, her agency will take legal action against violators. But despite the hundreds of phone calls that come in to her hot-line, illegal discrimination remains a very hard thing to prove. Proactive efforts constitute a far more promising strategy.

The Israeli government has allocated 200 million shekels over the coming years for Employment Centers, that are starting to be opened around major Arab population

centers that are designed to help match workers with potential employers. (Pilot programs were launched to prepare Arab citizens with appropriate backgrounds for work in the hi-tech industry. For instance, one initiative provides 30 million shekels in wage subsidies for employers in hi-tech who hire qualified Arabs. Special industrial areas have been set up to encourage start-ups near Arab communities, and Arab students are subsidized in relevant fields.[74] But funding levels for these programs are modest when one considers the enormous gaps which exist and the potential economic benefits that might be derived from expanding Arab participation in the work force.

The elephant in the room of course is military service. The vast majority of Arabs and Haredim, both men and women, do not join Israel's armed services. Nor do they do alternative, civilian national service which is an option for religious girls, pacifists or eighteen year olds with health problems. Efforts to make conscription compulsory for many years were an extremely controversial political matter. In 2014 legislation was finally passed to that end, but its implementation remains a huge unknown.[75]

Serving in the army may take young Israelis out of the general work force and delay their professional training for several years. But the leadership experience and, for many soldiers, the technical skills attained are valuable assets in the Israeli job market. (It is harder still to quantify the benefit that being in an elite army unit provides for future professional networking, but it is substantial.[76] There are some Arab Israelis who acknowledge the academic advantage accruing to Jewish students who arrive at a university as veterans who are far more mature and focused on their studies. They believe that National Service is in the interest of Israeli Arabs because it will produce a more seasoned student who can better compete in the classroom and in the job market.[77] But few take advantage of it and Arab political leaders are vociferous in their opposition to its expansion.

The problem is that numerous industries in Israel cater to the Israel Defense Forces. These companies screen workers closely for security clearance. "The defense industry" constitutes a club that Arab citizens cannot yet join. Without some resolution of the military service gap, progress might be made, but there will never be true symmetry between Arab and Jewish Israelis entering the job market.

In short, a critical part of the package of social policies required to stabilize Israel's population is eliminating the obstacles facing female citizens -- and Haredim -- from achieving a suitable education and finding an appropriate job. To the extent that it can do this, Israel will be a more egalitarian country. This in no way means that educated, working women who come from cultures that idealize large families will abandon their aspirations for a bevy of children. But economic theory and empirical sociological data suggest that empowering women is a critical first step, without which fertility will not come down.

Ensuring Reproductive Autonomy

It is a common myth that women not using or not knowing how to use contraception is limited to developing countries. While the percentage of women using contraception globally has increased since 1960, the absolute number of married women and men who do not use birth control has actually gone up. Of the 2.3 billion people of reproductive age worldwide, some 44% -- or about 1 billion people -- do not use contraception.[78]

Birth control may be more available in developed countries, but that does not necessarily mean that it is utilized. A 2014 study published in the American Journal of Public Health reports that in the U.S. over half of pregnancies are unintentional. Some forty percent of these are aborted. [79] Surveys around the world reveal a similar story: All told, only 53% of pregnant women in developed countries indicated that their pregnancies were planned.[80] For some it is just a case of inconvenient timing, with the baby coming earlier than would have been preferred. But in many other cases, there are ample personal, professional or economic reasons why a mother or father prefers a birth not take place at all. When miscarriages and abortions are subtracted, only about one out of five children in developed countries involved unwanted pregnancies.[81] In Israel, the figure may be even higher.

As women across all of Israeli society become independent, they need to have the final word in decisions about their bodies. Reproductive autonomy needs to be afforded legal recognition as a human right. This should not just be a high-minded declaration. Israel needs to make it as easy as possible for sexually active women,

who do not want to have a child, to avoid pregnancy. This means that the country's vaunted public health system should provide safe and effective contraception free to all citizens. It also needs to remove any barriers that create discomfort, embarrassment and inconvenience in dispensing the birth control of choice.

Beyond the many men and women who forget or can't be bothered to use birth control, there are innumerable cases of Israeli women who are either embarrassed to purchase contraceptives or are afraid their husbands will disapprove. Adolescents are frightened of what parents will say. Then there are some who cannot afford the expense. Policies need to guarantee Israelis a full menu of contraceptive options that can be acquired at little or no cost, discreetly, without fear of disgrace or retribution. Once women (or men) select their birth control method of choice, they should not have to encounter physicians again or need prescriptions for continued use.

Contraception policy reform is not just a matter for women. Men share equal responsibility. Notwithstanding the recent increases in the price of latex,[82] condoms are an inexpensive method of birth control. Manufacturing costs are only about 0.04 cents per unit.[83] Their free distribution should be a priority, with dispensers in the bathrooms of high schools, universities, army bases, factories, and restaurants. This approach would also reduce teenage and unmarried pregnancies and sexually transmitted diseases. Free vasectomies should also be available without deductible health care fees.

Birth control makes some people feel uncomfortable, especially in Israel where there are large elements of society that do not discuss sex openly and where modesty is taken to an extreme. These customs need to be respected. There is no reason why sharing information and making contraception available needs to undermine the values of traditional communities. Culturally sensitive sex education packets and programs can be prepared in coordination with relevant authorities. At the same time, there is also no reason why Israeli society should let prudish, self-conscious or outdated norms define its population policies. Sensitivities in Israel have evolved a great deal and the country is fundamentally liberal on matters of sexual conduct. In the public domain (and in many families as well), however, there is still a way to go.

Contraception needs to move from the realm of unmentionable taboo to the matter-of-fact world of familiar pharmaceuticals.

In efforts to expand the utilization of birth control, it is well to remember that NGOs matter. And yet there is no active NGO in Israel with the resources to really influence contraception accessibility. The Israel Family Planning Association: "Open Door", an Israeli branch of Planned Parenthood exists but remains a relatively low profile organization, with modest resources. This should change. Non-profits have played a very constructive role in countries around the world to take on this educational and dissemination challenge.

When, in 1993, the number of HIV cases in Thailand reached one million, an increase of 1000 percent from just three years earlier, an emergency initiative was launched. The Thai government moved the "battlefield" into the classroom. The "Population and Community Development Association" was pressed into service to train over three hundred thousand teachers to educate students about family planning.[84] These classes raised public health concerns, and succeeded in transforming national perceptions about contraception. While some of the procedure might rankle Israelis, they proved highly effective for Thailand. Distribution of condom became a national pastime, removing any remaining stigmas and associated embarrassment: school children blew them up as balloons, contraception festivals were held, and restaurants used them as a decorative theme. Lawmakers decided to distribute condoms free of charge and required their utilization by men in brothels.

The new distribution initiative was so successful that it led to a fifty percent drop in fertility rates, pushing the country below replacement levels. It also produced significant public health benefits. The incidence of sexually transmitted infections among sex workers in one province fell from 13% to less than 1% in two months![85] Because the sex industry in Thailand is not just for tourists and many Thai men avail themselves of these services, the United Nations estimated that the policy prevented HIV infection among 7.7 million citizens.[86] Given the growing, local prevalence of sundry, sexually transmitted diseases,[87] Israel would gain a "no regrets" public health dividend if it would show the same kind of perspicacity and introduce a program that is consistent with Israel's somewhat more staid norms.

To transform “reproductive autonomy” from an ideal to a reality, Israel’s abortion policies need to change. When a woman becomes pregnant and wishes to terminate the pregnancy, she should be able to do so expeditiously and safely. It is wrong to allow pro-life advocates to take a moral "high ground" and talk about "coercion" in the area of abortion. The only coercion taking place in Israel today involves citizens who cannot have a legal abortion or who do not feel free to have one because their husbands or society disapproves. Despite modest modifications in recent abortion policy, an entire system designed to make abortion inconvenient and disagreeable remains largely in place. Unmarried women must face a committee of strangers and plead their case before receiving permission. This creates unnecessary delays and anxiety. For a married woman, the situation is far worse: Technically it is still illegal for a married woman to abort a pregnancy. She must either lie to a committee or undertake an uninsured, "illegal abortion". A change in this statute may or may not have demographic implications. But it is time to put an end to this blatant infringement on a woman’s right to decide what to do with her body.

Robert Engelman, the director of the environmental think tank "World Watch", writes: "Removing from women the shackles of external reproductive control would more quickly reduce birthrates worldwide than any other imaginable policy. Imagine this world: children are born only when both partners, but especially women are freed from the pressure of others to give birth and want to raise a child to adulthood, and women have real autonomy in the productive as well as the reproductive sphere of their lives." With a few legislative amendments and modest adjustments in the budget of the Ministry of Health, Israel could be part of that world.

An End to Perverse Incentives

Good public policy rewards desirable behavior and outcomes while taxing undesirable behavior and outcomes. Periodically, decision makers suffer from confusion and obfuscation and there are many cases where the opposite happens. When governments pay people to do things that ultimately have negative consequences it is called a "perverse incentive". In fact it is a startingly common phenomenon.

Here are but a few interesting and instructive examples. In old Hanoi the colonial French government placed a "bounty" on rats in order to control a growing pest problem, only to find that a small cottage industry had emerged where locals raised rodents in return for payment by the colonial regime.[88] Another example is that of the U.S. Endangered Species Act's ban on development of lands with rare creatures. This Act led to extermination of animals by landowners who feared crippling economic constraints.[89] All over the world, health insurance guidelines are designed to limit payments for treatments that prevent illness, and in so doing lead to greater morbidity. In Israel, farmers' rights to subsidized water were renewed annually on the basis of usage during the previous year. This induced some farmers to wastefully water fallow fields at minimal expense, in order not to lose next year's rights. In China, paleontologists paid peasants "by the bone" to help collect archaeological evidence. Opportunistic archaeological "sub-contractors" increased their revenues by shattering intact artifacts into splinters that were of greatly reduced scientific value.[90] The list goes on and on.

Population policy in Israel constitutes a classic case of perverse incentives. Child allowances and other benefits for large families might be justifiable in European countries that seek to maintain the native ethnic population that will soon start to shrink or is already shrinking.[91] In fact, hysteria over low birth rates is misplaced. Countries like Japan are already starting to prove that even if tight immigration controls cause modest population decline, this can actually lead to better paying jobs, greater social equity and higher per capita affluence.[92]

Societal transitions, however, are easier to weather when they happen gradually. Nations can get the "bends" when populations rise or fall too hastily. Hence, a "stability" case can be made to support pro-natal subsidies in countries with below replacement fertility levels. Israel's situation, however, is entirely different. In the world's most crowded developed nation, where population pressures cause myriad social and environmental problems, the government continues to incentivize people to have large families. Perhaps in days gone by, there “demographic takeover” was a clear and present danger. With Arab birth levels stable, today it makes absolutely no sense.

Child allowances in Israel don't make sense precisely because its pro-natal policy measures seem to work so well. Much as Nobel Prize laureate, Professor Becker hypothesized, paying families to have more children reduces the opportunity costs of additional children in the short run. This changes the perceived economic calculus for child rearing. To be sure, the impact of these subsidies is not uniform. While the amount of money is not nearly enough to cover the expenses of raising a child in Israel, it appears to encourage poor families to have more children by creating an illusion that they will be taken care of.

Tel Aviv University economist Alma Cohen assessed the effectiveness of Becker's theories on the actual case of Israel's child allowances. Not surprisingly, the influence of allowances on fertility is weak among richer families where the subsidy constitutes a trivial percentage of their overall earnings. Yet it has a significant impact among poorer couples, where the subsidies make up a considerable sum relative to disposable income. [93] In other words, inadvertently, the policy targets the very people who are least able to support large families.

When the government reduced child allowances even modestly in 2003, it immediately affected Israel's birth rate. Arab Muslims appear to have been the most influenced: a modest reduction in child allowances was associated with an immediate 6-7 percent drop in fertility.[94] The reduction greatly affected women between the ages of 35-45. By this stage, the drop in fertility levels cannot be interpreted as merely a delay in having the next child, as women are starting to reach the end of their child bearing years.[95] The impact of cancelling allowances altogether would be far far greater.

The subsidies were not just designed to encourage large families but also to aid poor households, offering them a better life and equal opportunity. Over the years, the policy has had the opposite effect. Israel's child allowances create a dynamic which discourages work while encouraging unnaturally large families. Another unintended consequence is de facto state support of polygamy. The bottom line is that subsidizing large families exacerbates the country's poverty gap. Between 1970 and 2010, welfare payments per capita in Israel grew by over 400%. During this time the economy doubled.[96] Yet, income inequality, as measured by the Gini coefficient and the percentage of families living below the poverty line, grew significantly worse.[97]

Rewarding births with welfare payments has led to unfortunate results for centuries. Malthus's 1798 "Essay on the Principle of Population" was originally written in response to a bill submitted by politician William Pitt to "allow a shilling a week to every labourer for every child he has above three." Malthus writes of his initial affinity for child allowances that intuitively seemed like a fine humanitarian proposal and his subsequent change of heart: "I confess that before the bill was brought into Parliament, and for some time thereafter I thought that such a regulation would be highly beneficial; but further reflection on the subject has convinced me that if it object be to better the condition of the poor, it is calculated to defeat the very purpose it has in view. It has no tendency that I can discover to increase the produce of the country and if it tend to increase the population without increasing the produce, the necessary and inevitable consequences appear to be that the same produce must be divided among a greater number….. and that the poor in general must be more distressed."[98]

Becker describes another unexpected consequence of child allowances in the U.S.: encouraging unwed mothers. "Programs providing aid to mothers with dependent children have reduced the cost of children; aid increases as the number of children increase, and the decline in the labor force participation of mothers by these programs reduces the opportunity cost of time spent on children. Since mothers without mates have more readily qualified for aid, the growth of the programs in recent years has contributed heavily to the sharp growth in the ratio of illegitimate to legitimate birth rates since the 1960s. The illegitimate birth rate has remained constant (while the legitimate rate has fallen substantially.)"[99]

Phasing out pro-natal incentives is a critical first step that Israel must take to stabilize population. But if the country should decide to get serious about cutting its fertility rate it must go much further. Israel can learn from countries that facilitated profound shifts in fertility and public attitudes about responsible parenting without coercion, through taxation and incentive policies. And no country has taken its demographic dynamics more seriously, and achieved more remarkable results than Singapore.

Upon receiving independence from the United Kingdom in 1963, the tiny 710 square

kilometer island was already very crowded. Quality of life and economic development suffered as a result. In 1966 the Minister of Health launched a new policy initiative, explaining: "Singapore as we all know is a very overcrowded little island of nearly 2 million people living in an area of just over two hundred square miles or a density of population around 8,000 people per square mile. Family planning is therefore a matter of national importance and indeed one of urgency for us. Our best chance for survival in an independent Singapore involves a stress on quality and not quantity." [100]

The social programs introduced reflected this pragmatic perspective: For starters, all barriers to the reproductive decisions of couples were removed and the state funded medical expenses associated with contraception. In 1969 a law was passed that covered the full cost of vasectomies and tubal ligation procedures. In 1974, free abortion on demand was allowed. The minimum age for marriage was raised to 18 and women were encouraged to enter the workforce. (Today 42% of Singapore's workers are women are in the work force.

Singapore's program was unique because of the comprehensive use of incentives and disincentives to encourage smaller family size. In August 1972 the country took a series of steps that included:

1) income tax reductions for families with three children or less;
2) lower priority for receiving admissions to elite elementary schools for children who are the fourth, fifth or sixth in their families;
3) higher hospital fees for delivering babies with each successive child;
4) loss of access to state-subsidized housing for large families; and
5) paid maternity leave limited to two children.[101]

These policies did not punish large families in Singapore, but simply rewarded smaller families for doing the right thing. In the same way that society might provide incentives for installing home solar systems, subsidies for public transportation users or special highway lanes for carpooling, Singapore made it easier to embrace fertility decisions that were in the public interest. Society is entitled, if not obligated, to provide remuneration to encourage socially beneficial behavior.

In retrospect, Singapore's policies greatly accelerated a preexisting population transition and the results were unusually swift: The annual population growth in 1957 was 4.5%. By 1980 it was down to 1.5%, with the increase merely a function of age-related momentum. Total fertility in 1955 was over 6 children per family; by 1980 it was down to 1.74.[102] Abortions rate soared, up seven-fold at first, as not all citizens had figured out their contraception routines.[103] Eventually, however, the number of abortions dropped to the lowest level in recent memory. .

Refuting the notion that population growth is a prerequisite for economic growth, the precipitous drop in fertility was soon reflected in the country's extraordinary economic performance. In 1960, the annual GDP per capita was roughly 2,200 dollars. With an expanding economy and a stabilized population, by 2012 the average adult in Singapore was earning $51,709 -- a level comparable to Sweden.[104]

These kinds of policies are not unique to Singapore. Iran's astonishing demographic transition was not just about education and awareness. In 1993 the Iranian Parliament passed legislation that cancelled food coupons, paid maternity leave, and social welfare subsidies after the third child. Birth control classes were required before a couple could get married. Nobody in these countries was penalized or punished for having three or more children. But the country decided to prioritize its resources and help those who were limiting their family's size for the benefit of all.[105]

Israel needs to formulate and implement comparable policies: It should cancel tax breaks and direct payments for families after they give birth to two children. There are many other financial advantages that large families are given that should also be discontinued:

1. Mothers should no longer receive special government birth grants after delivering their third child and for all subsequent ones.
2. Youth should be given scholarships and special stipends on the basis of merit rather than their being born into a large family.
3. If there is to be prioritization for scarce public housing, space should first be available for the smaller families that society wants to encourage.
4. No discounts on city taxes should automatically be made to households just because they chose to have many children.

5. Childcare should be paid in full for a family's first child, subsidized generously for the second and only modestly covered for subsequent children.

Regarding the final point, the entire area of subsidies for early childhood education need to be reconsidered. Because hypothetically these subsidies enable both parents in a family to work, day care is critical. But for years it has been part of the broader package that encourages women to stay out of the labor force.[106] Day care policy needs to reflect the country's new sustainable demographic objectives. If a parent chooses not to work and contribute to the economy, why should society cover the costs of childcare? There is no reason why large families should receive disproportionate resources so that other people are paid to take care of their offspring. Why should a family of eight receive 200,000 shekels in day care for a child's first three years of subsidies, while paying only 80,000 shekels out of pocket while the assistance rendered to a family of four, doing the "right thing" for society, will pay 144,000 for their two children's daycare enjoying dramatically smaller subsidies?[107]

Learning from places like Singapore that prioritized welfare and assistance to first and second children will undoubtedly produce howls of protest. This kind of policy reform is invariably attacked as callous, odious and cold-hearted, throwing thousands hundreds of thousands of children below the poverty line. But such a critique suffers from acute myopia. Changing pro-natal incentives can help prevent hundreds of thousands of births into underprivileged, large families that cannot provide financially for their children. When a time horizon that extends beyond a few years is used for calculations, forcing families to be responsible for their children is a far more compassionate approach than present incentives that broaden this circle of debilitating poverty among Israel's underclass.

In retrospect, the hard-nosed policies that rewarded small families in Singapore eliminated poverty there. Israeli society needs to send a message that while it shuns imposition of legal limits on family size, it also does not encourage people to have children if they cannot support them. For the first time, such messages are starting to emerge. For instance, the city of Beersheba in defining its economic and social objectives for 2010-set itself of a goal of reducing the number of families with four or more children by 50% percent by 2020 – as an anti-poverty measure.[108]

Clearly, a decent society will not let children go hungry. The government needs to find ways to provide necessities without positively reinforcing behavior that dooms scores of youngsters to a childhood of poverty. The child of a poor family that does not have enough to eat should be able to attend preschool and after-school programs that offer a solid educational curriculum. Here, the child can be provided two hot meals and a full day's worth of calories. Regarding the most basic needs, family size is irrelevant: a child should not be blamed for its parents neglectfulness. At the same time, parents who make children that they cannot support should not be rewarded.

Cutting entitlements is strong medicine and decent, compassionate people will feel sympathy for the large families whose poverty will be temporarily aggravated. This empathy is natural and very human. But there are different kinds of conditions which should engender different kinds of sympathy. One can feel badly about smokers with emphysema, or alcoholics with liver problems. One can feel a certain empathy for compulsive gamblers who lose their homes or even with criminals languishing in prisons. But when individual behavior contributes to an unhappy condition with negative societal impacts, sympathy should be tempered by the recognition that unbecoming behaviors have social consequences. Public policy must make parents responsible for the decisions they make. It is possible to feel badly, and even lend a hand in treating symptoms without giving smokers subsidized cigarettes or providing liquor to recovering alcoholics. Granting child allowances to large families with low incomes serves to encourage even larger families. The ultimate objective of welfare policies should be to end the cycle of poverty and dependence – not deepen it.

It is completely legitimate for a society to recognize that parenthood is a fundamental right. But it can take steps to protect its children and, in the long run, perpetuate its own existence and collective quality of life. A policy is needed that ensures that all its members, regardless of their financial capacity, are entitled to have one or two children, and assists those who cannot afford a small family. But countries that suffer from overpopulation surely are not obligated to pay for families who reproduce beyond replacement levels of fertility. On the contrary, sound policies based on intergenerational justice subsidize sustainable and stable birth rates.

Social Diffusion

Changing social norms is a slow process that will not take place overnight. It also requires full recognition of the power that peer behavior exerts and the social pressures which drive many reproductive decisions. Landmark methodological research in modern demography focusing on these phenomena was conducted by Norwegian politician and demographer Gudmund Hernes. The study analyzed why and when people get married. Hernes designed a model that characterizes the process of entry into "a cohort's first marriage". The Hernes model identified two forces that affect individual decisions to "settle down". The first involves the social pressure to marry, which is proportional to the number of peers already married. The second is a person's "marriageability" ,which presumably declines with age. Before mathematically demonstrating the phenomenon he explained:

"Single people experience the social pressure to marry in various ways as the percentage already married increases. Much social interaction is age-graded. As a larger percent of the cohort marries, single people will have reduced interaction with old friends. They will be invited less to parties, dinners or trips, partly because of the awkwardness of diverting interests, partly because of the threats to the established couples. When singles are invited, hosts, often play the role of matchmakers….. With increasing age, the psychological experience of being unmarried as a kind of deviance is heightened by popular culture. For example, as a woman remains in the pool of the not yet married, her social definition changes from maiden to spinster or even reject."[109]

Hernes' characterized marriage as a contagion that affects those around it. His quantitative model predicted the likelihood of marriage based on "social diffusion"– and the increased influence of an individual's peers.[110] Fertility also is a social contagion.[111] When fertility patterns were examined in countries where family size fell far below replacement levels, demographers found that the most common characteristic was the substantial increase in the age of first birth. Socioeconomic incentives alone could not explain the phenomenon. Rather, it was social interactions that most significantly affected individual fertility.[112] In a word, the decision to have children often depends less on family background variables and life course paths than on the behavior of friends as transmitted through social networks. When demographers model the probability of an individual having a child, the key coefficient is determined by what peers and compatriots are doing at that time.

Demographers have applied Hernes model to conduct probabilistic forecasting of fertility by age cohorts.[113] The calibrated models mathematically reflect the potency of these social forces, forces that are well known in most societies, especially in Israel.[114] For many years, having children is not a salient consideration in people's lives. Then, rather suddenly, there is enormous pressure on couples (and today on many singles) to have children. One sociological study describes a “syndrome of encirclement-by-pregnancies" which leaves people "feeling compelled to do what everybody else does" as the main reason for having children.[115] In Israel, the amount of pressure applied by Jewish and Moslem families on young couples is legion.

There are many ways to integrate this insight into policymaking. The most obvious involves supporting frameworks and opportunities that delay the age of marriage and the time when child-bearing becomes normative in a certain age group. Accordingly, higher education provides a "double demographic dividend" for population stability: it not only raises the opportunity cost of additional children for parents, whil also contributing to the delay in a cohort's marriage and fertility decisions.

In Israel there are already signs that higher education and changing expectations for women contribute to a delay in the age of marriage -- and child bearing. Women in all sectors of Israeli society marry later today than they used to. In 1980, the average age of marriage was 22.4; by 1995 it had increased to 23. 4; and today it is around age 25. Divorce rates have also increased modestly, but remain low by European standards.[116] Not surprisingly the average age when women first give birth has also gone up. For instance, in 2003 it was 26.3; a decade later it was 27.3.

In a multi-cultural country such as Israel, however, the value of generalizing about fertility is limited. Averages mask profound internal contrasts and opposing trends. A higher resolution look at the country reveals that by 2009 in the secular Jewish majority, only 2% of secular women had given birth before reaching age 25 years of age. Today, most births in secular families are concentrated between ages 30 and 34. Indeed, 38% of secular Jewish women in Israel between ages 30-34 still have not given birth. This represents a profound shift in social patterns.

The picture in the religious world is completely different: Among Orthodox Israelis, 28% have their firstborn before age 24 and among the ultra-Orthodox the figure is 32%. -Israeli Moslem women's primary child bearing period is still between ages 15 and 24.[117] These figures make sense when the differential fertility rate in Israeli communities is considered. Without an early "head start", it would be harder for many Haredi and Arab families to reach such prodigious sizes. To stabilize society, it is important to encourage delays in marriage and births across all sectors of Israeli society. This is yet another reason for empowering women and helping them to acquire higher education.

Just because couples may start their families later does not mean that their desired family size will dramatically change. But families have all sorts of aspirations and ambitions which are not always attained. People often settle for less than their ultimate house, their perfect yacht or the best private schooling for their kids…, and still lead wonderful lives. Starting later means that many thousands of families may fall a little bit short of reaching their demographic dreams. It is important to maintain perspective about the contribution of postponement. Ultimately, delay is not a game changer. Deferring marriage and first children will only modestly put off the inevitable overpopulation and exceedance of local carrying capacities. But it can be part of a larger package of change that together will transform present dynamics.

Many family planning advocates around the world share a common misconception that assumes that inadequate access to contraception is the reason why people have large families. In fact, research in the World Bank shows that 85 to 90 percent of actual family size is explained by parents' family size targets. When motivation to limit family size is lacking, providing contraception can be largely irrelevant.[118] Many Israeli parents, especially religious Jews and Bedouins, still want to have an extraordinary number of children. Most of them will.

In all fairness, veneration of children is not limited to these communities. Sixty-five years of pro-natal policies definitely can be seen in the mentality of mainstream Israeli society and is reflected in demographically ambitious inclinations and enthusiasm for child-bearing. Living in a country with ongoing security threats affects secular citizens' sense of family; people need something to hug in trying times. The more family members to hug -- the better. For some, subconsciously at least,

having more sons is an insurance policy against possible loss in the country's never-ending wars. The country is small enough for grown offspring to regularly join their parents and families are often a central component of one's "social life".

Furthermore, a distinctly Jewish outlook endures that sees family as a statement of permanence and, the ultimate personal -- and biological -- raison d'etre. The Hebrew phrase "b'karov etzlicha" ("May it soon happen to you") has become synonymous with greetings to singles at weddings or births. Seemingly well-meaning, the patronizing implication is that young peoples' unfulfilled lives will get better once they find a spouse and have children of their own. Whatever the reasons, birthrates among all Jewish cohorts remain higher than those in Europe.

Hence, the second insight from the social diffusion theories of fertility is that if population is to be stabilized, existing perceptions and norms about optimal family size need to be changed and become more uniform across all Israeli society. A fundamental shift in societal attitudes will not be easy. For the country's Orthodox Jewish and Bedouin publics, it will require nothing less than a sea change.

But while the task is daunting, it is well to remember that the high percentage of staggeringly large families in Haredi and Bedouin communities is still a relatively new cultural phenomenon. Fifty years ago, it was impossible to distinguish between birth rates of secular and Haredi Jewish families. Low employment rates in these sectors despite a relatively robust economy are even more recent. The pendulum can swing back. A demographic "transition" among Israeli Arabs is occurring much faster than anyone imagined. Average family sizes fell even without the progress that might have been hoped for in the status of women and their integration into the labor force. This is consistent with the pattern of societies around the world which have witnessed dramatic demographic shifts once modernization took hold.

There are signs that such a generational shift is taking place in Israel. Sociologist Evgenia Bystrov has identified numerous characteristics among Israel's secular community that are comparable to what demographers in other countries are calling the "second demographic transition." They include a rise in the valuing of individual autonomy, postponement of family formation and childbearing, as well as an affinity for alternative lifestyles. These social phenomena combine and appear to contribute

to low or below replacement fertility levels.[119] Bystrov found that young Israelis today, especially in the secular world, think differently than their parents do. In national surveys, a significant percentage of older, secular Israelis agree with statements such as: “People without children lead empty lives”; “Households satisfy as much as paid jobs” , and “What women really want is a home and children”. Younger Israelis are less inclined to agree.

The structures and dimensions of families also are evolving.[120] Israel's younger generation is more "lifestyle tolerant", showing open-mindedness about homosexual families, cohabitation , and single parents. The popular U.S television show Modern Family and the growing diversity in the forms of socially acceptable family units, have come to Israel. Many educated woman decide to have a child long after choosing a career over marriage, despite never finding the right partner. Over the past decade, the number of unwed mothers entering middle age in Israel has increased steadily. In 2002 there were 5,036 births involving single mothers; in 2011 the figure came to 7,267, an increase of 44%. There are new norms among Israel's lesbian and homosexual community, who are increasingly coming to see children as central to a fulfilling life.

The unmarried mother figures also include many heterosexual couples who are alienated from Israel's Orthodox –controlled governmental Rabbinate. Many couples choose to live together and raise a family without suffering the indignities imposed by the official Orthodox bureaucracy that registers and performs marriages. (On the other hand, 73% of the Jewish population in national surveys stated that a religious wedding was important to them. And only 3 to 4% of adult Israelis are permanently cohabiting , a far lower rate than Europe.[121] In all the new family structures of the secular world, a common denominator is a general trend towards replacement fertility levels rather than large families. Secular women of European origin, born before 1964 and immigrants from the former Soviet Union actually have come to average below replacement fertility levels.[122]

The "bottom-line" question for those wondering whether Israel's population can move towards stabilization is whether religious and traditional communities will ever change their vision of what constitutes desirable family size? The age of prophecy has long since passed making it impossible to predict the future. But looking back,

there are cases of sudden and unexpected revolutions in pro-natal biases and fertility levels that took place among religious communities (and countries. They suggest that Israel should not assume that what "has been" is necessarily "what will be". Given present animosities, it is hard to imagine that Israel might learn anything from Iran. Yet, population policy and individual behavior in the Islamic republic offers an unlikely story that suggests that religious Israelis could also change.

Iran's battle with Iraq raged on for eight years, from 1980 to 1988, with the last prisoners of war released only in 2003. The war was the longest military conflict of the 20th century.[123] It was also one of the deadliest. The number of casualties was extraordinary, by some estimates higher than one million Iranian dead.[124] Iraq was better armed than the Iranians, but the population of Iran was more than twice that of Iraq. Iran brought its demographic advantage to the battlefield, launching "human waves" that overwhelmed Iraqi positions with numerical supremacy.

In order to provide soldiers for the struggle, the country's spiritual leader, Ayatolah Khomeini, called on Iranian mothers to have as many children as was biologically possible and create a "Twenty Million Man Army". The legal age for marriage was lowered to nine, family planning offices were closed and rationing was designed to provide larger families with economic advantages. The Iranian people responded, with annual demographic increases at a dumbfounding rate of 4.2 percent.[125] Iran's birth rate was already soaring before the war, but with the religious call to arms, population more than doubled in just twenty years, between 1968 and 1988, reaching 55 billion. By then the war had stalemated to a halt, and in 1989 the Ayatollah passed away. He was replaced by Ali Khamenei and a more moderate president, Akbar Rafsanjani. It became clear to Iranian economic planners that if the high birth rate continued, there would be an acute employment crisis in a in a decade or two and that the socio-economic gaps would become unbearable. Now in the driver's seat, Iran's supreme leader, decided to put on the brakes.

To effect this change. some 23,000 male and female "behavarez" (health workers) were trained, with an expertise in "family planning" health. Hundreds of mobile teams set off to remote regions of the country, often on horseback, where they offered a full array of conventional birth control as well as injectables and implants.[126] Even

though some Moslem sects initially frowned on the program, when the economic and ecological implications of unrestricted demographic growth were explained, the local Shiite clerics proved to be extremely enlightened. They not only approved but encouraged parents to take advantage of the free vasectomies and tubal libations.[127] One hundred thousand women were sterilized during the 1990s, completely voluntarily. More surprisingly, a full 220,000 men agreed to undergo vasectomies. Use of contraceptives rose from 37 percent in 1976 to 72 percent in 2000. [128] In rural areas the increase was even more remarkable: from 20 percent in 1976 to 67 percent in 2000.[129]

The program had other benefits: women began to perceive their roles in society very differently. Minimal marrying age was increased to 21and education was officially promoted. In rural regions, where females traditionally married young, some 70% of mothers preferred that their daughters continue their education after high school. [130] In 1975, only a third of Iranian females were literate; by 2012, 60 percent of university students were women. As female gynecologists began to appear on Iranian television, public perceptions underwent radical change. The country was already exhausted from the war and desired family size plummeted. The fertility rate was down to 2.1 by the year 2000 and kept on dropping. By 2014 it had reached 1.84.[131]

After the plummet to below replacement levels, Iran's Islamic leaders subsequently had second thoughts and even tried to dismantle some of the contraception services. But Iranian women do not want to go back to the days of 4% annual growth in population. A similar story has taken place in Islamic Bangladesh, a land were 184 million people live in an area no bigger than Wisconsin. Radio and billboards echoed Prime Minister Sheikh Hasina's 2010 proclamation: “Not more than two children; one is better.” And like Iran, 35,000 women were drafted to spread the gospel of contraception throughout the country's rural hinterlands.[132] Publicly, Bangladesh officials have expressed admiration for China's "One Child Policy" with the intention of introducing it as a voluntary program.[133]

These successful cases show that when religious leadership partners with government health agencies, the results can be breathtaking. For Israel to successfully change the present demographic dynamics, it must engage religious leaders and confront them

with the negative social and environmental implications of high ongoing birth rates. The Orthodox and ultra-Orthodox communities are not nearly as homogeneous as is commonly imagined. They have always been splintered politically and theologically. There are Orthodox rabbis and lay leaders with sincere ecological sensitivity. Others are starting to show openness to improving the status of women. While "top down" models of change are the most common in the religious world, there are signs that "bottom-up" dynamics also exist and may be even more important. Many members in these communities are already making up their own minds. Over time new norms can affect the thinking of the establishment. Still, many commentators believe that reduction in ultra-Orthodox fertility will only happen after "liberation from religious authorities" takes place[134] and the issue becomes less politicized.

To be successful, Israel does not need to launch a campaign that sends para-medics on horseback into the hills to spread the gospel of family planning. Yet, if the goal is to facilitate real change in demographics, it is time to think beyond conventional educational frameworks in spreading the message about population stabilization and reproductive autonomy. The creativity exhibited in demographic programs' interface with the media around the globe can be highly instructive.

In some countries, popular, commercially-successful television programs have done more than anything else to change societal attitudes towards contraception, women's autonomy in reproductive decisions and public perceptions of optimal family size. For instance, in India, a year-long mini-series, "Come Along With Me" became the country's most popular television show in 1992. The series focused on a fourteen year old girl who begged her father not to be forced into an arranged marriage. Her pleas went unheard and the girl tragically died in childbirth. Over 100 million people watched each week as the tragedy unfolded. Follow-up surveys with 3,000 viewers revealed significant changes in attitudes towards reproductive norms, particularly among adult males.[135]

In Mexico the effect of a telenovela with an underlying message of family planning and women's rights was even more profound. The show itself enjoyed ratings that ranged between 60 and 90 percent of the television audience. Follow-up surveys showed that 70 percent of viewers felt the program had affected their opinions,

favoring independence for women; an impressive 71 percent reported learning "that family size should be limited." The TV network received 400,000 letters from the public. Radio shows in Tanzania and Kenya produced similar results. [136]

In the past, media campaigns have been highly successful in transforming the Israeli public's attitudes by promoting environmental values from wildflower protection to water conservation.[137] On other issues as well, popular television shows have surely helped to change public perceptions of Arab Israelis, homosexuals and the Orthodox community. Fertility experts have called entertainment broadcasting and mass media communications the single best donor investment in terms of "birth averted per dollar spent" that can be made[138]. Even if the Israeli government is slow to embrace the imperative of family planning and population stabilization, with a very free media, Israel's philanthropies can be drafted to underwrite the costs of commercials or motivational programs about the status of women and the perils of present population trends. Not all sectors of Israeli society watch television or have free access to the Internet. To reach the Bedouin and the Haredi community, new forms of communication will need to be found. But the message must be delivered.

Growth versus the Art of Living

As Israel muddles forward in search of some semblance of sustainability, the country must realize that any successful, long-term strategy for the years ahead requires an enduring equilibrium. A balance must be struck between the number of people living throughout the land and the resources that support life. As Israelis consider their demographic future and the kind of country their grandchildren will inherit, it is well to remember that mere survival was never the vision which motivated the founders of the Jewish state. Israel's progress needs to be measured in terms of spiritual and cultural advancement, justice and equity, aesthetics and beauty, health and happiness -- rather than perpetual economic or demographic expansion whose value is only instrumental . Today population density negatively affects all of the criteria that really matter. The simple truth is Israel will not become a better place if millions-more live inside its borders. Regardless of where its borders will ultimately be, Palestine also will not benefit from higher population densities.

Demographically, Zionism has been a sensational success. Millions of Jews facing oppression or economic hardship found a haven in the land of Israel. Immigration is never easy and mistakes were surely made in official efforts to absorb so many people from so many cultural realities. Yet, the Law of Return along with a prodigious investment in immigrant absorption translated the Zionist dream into a dramatic national transformation. Those Jews who wish to avail themselves of the opportunity to settle in their homeland should be able to do so. But considerable historic experience suggests that relatively few will. The era of mass immigration is over.

It is time for Israel to move onto the next stage of sustainability. It is time to listen to the pragmatic voices in Jewish and Moslem tradition and to salute the common sense logic which is motivating more and more Israelis of all ethnic backgrounds to plan smaller families. Of course it is never simple to set a clear limit for the number of people who live in a particular area. But if everyone agrees that such a limit exists, surely it is better to talk about what it is and plan for it, than to one fine day wake up and discover that it has been exceeded.

The number of people in Israel is not the only limit that needs to be considered. The amount of products and energy that Israelis consume in their increasingly consumerist lifestyles also challenge any future equilibrium. But to argue that profligate consumption means that population growth doesn't matter is as foolish and simplistic as saying that because cancer needs to be treated, heart disease can be ignored. Both need to be confronted; society is capable of addressing two existential challenges simultaneously.[139]

The time for change is now, while proactive action can still avert unnecessary human hardship and irreversible ecological damage. Decision-makers need to recognize that population growth during their tenure may only have modest impacts on present quality of life or availability of resources. But the cumulative impact of demographic increases will be felt long after they have left the stage, even after the population stabilizes, as it eventually must.[140] It is high time that Israel starts to seek the best steady state possible for offering future citizens a place to pursue the art of living.

For the people of Israel, life has always been dynamic. As more humans filled the land, reality changed. The Biblical commandment to be "fruitful and multiply and fill the land" appears twice in the Bible. Initially it was part of Adam and Eve's welcome

to the Garden of Eden. Years later, after the cataclysmic deluge almost wiped out humanity, Noah is again told "to be fruitful and multiply". The Bible is never presumed to be redundant, so the sages sought an explanation for the repetition. They reached the conclusion that in the initial passage, "To Be Fruitful and Multiply" was simply a blessing. But then, following the dire conditions created by the flood, the status of the adage was elevated to that of commandment. Today, circumstances have changed, yet again. The land of Israel is teeming with people. It still offers its residents a good life: in international surveys that apply happiness quotients, the State of Israel consistently comes off as a joyful place to be. Yet, as present densities increase, this blessed state is threatened. There is no commandment that requires cramming more people into a holy land that is already full.

Perhaps the Bible's most important ethical statement is its sanctification of human life. The quintessential passage from Deuteronomy 30:19 sets forth the human mission clearly: "This day I call the heavens and the earth to testify before you: life and death I have set before you; the blessings and the curse. Therefore, choose life, so that you and your offspring may live**."** [141]

A traditional interpretation of the passage saw this as a call for children, with large families attaining the standing of a moral imperative. But in every age there is a responsibility to interpret scripture in light of the ever evolving reality on earth. With a planet teetering beyond global carrying capacity and a promised land of Israel that is already very crowded, the rules of the game need to change. The final phrase in this Biblical passage needs to inform its operational implications.

In the not too distant yesteryear, infant and childhood mortality was high everywhere in the world, especially in the land of Israel. The physical security of Jews and the other people living there was perennially precarious. In those days, "being fruitful" was a sound individual and national strategy. But those days belong to a past that will not return. Offering Israel's offspring a chance to live well and not merely survive tomorrow, means stabilizing population today. It also means recognizing that the greatest blessing of the modern age is the opportunity to celebrate the quality rather than the quantity of life.

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