

# Religion and Demography – On the Biological Success of Faith



## Religion and Demography On the Biological Success of Faith

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University of Leipzig, 08.05.2007

[www.blume-religionswissenschaft.de](http://www.blume-religionswissenschaft.de)

For various reasons it is a special honour for me to be given the opportunity of speaking here today. On the one hand my parents and grandparents were born in this area and I still can recall some childhood memories of a farm and several day trips across the fenced border in summer. What I did not know about then: Leipzig is an important scene in Goethe's "Faust", which, being the most significant work of literature in German language right behind the Luther Bible, we will encounter in the course of this presentation as well. And finally I am happy to be able to keep a promise I made to Mr. Prof. Seiwert.

Prof. Seiwert and I first met at the general meeting of the Görres-Gesellschaft in Regensburg last year. He had been asked to lecture about "Religion und Evolution" - resulting in an impressive speech which since then has influenced and encouraged my works. After him I was given the chance to speak about „Hirn und Religion aus religionswissenschaftlicher Sicht“ (Brain and Religion from the studies of religion point of view), as the so-called „Neurotheology“ had been the object of my doctorate. Both topics, evolution and religion as well as the neurobiology of religion, are naturally connected most closely. Today I may continue the dialogue we began in Regensburg.

**What is happening in the brains of religiously active persons?**

**A damage? Or an aptitude?**



**Why religious behaviour?**

**Is religion irrational?**

Assuming that religious activity and religious experience also take place in our biological brains raises the question why we inherited brains capable of religion. Is the differently pronounced religious musicality of our brains a loss, an accident of evolution? Or is it a life promoting aptitude? And if the latter, an aptitude for what?

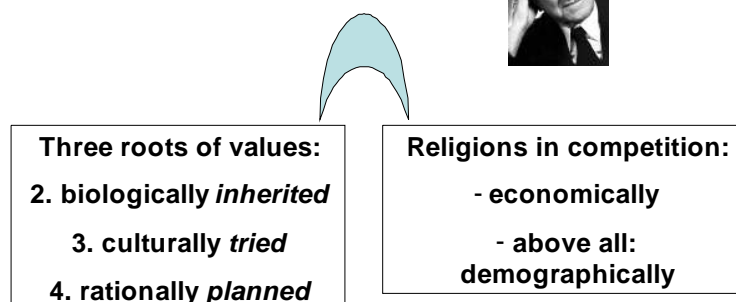
Apparently religiosity has “the potential of behavioural control”, as Prof. Seiwert expressed in Regensburg. But how can one explain from the perspective of evolutionary biology, that human organisms shoulder enormous religion-related costs in terms of energy and options, mostly without any directly obvious consideration. Is religion – irrational? Or is it rational on a deeper level than is accessible for our limited everyday rationality?

Today I would like to confront you with the assertion to be able to prove that exactly the latter statement is to be considered true. Religion may commonly seem to be irrational to our often overestimated human reason, because it (also) serves a much deeper biological rationality. Its emergence was neither coincidence nor an accident, but an evolutionary-logical necessity. Religion helped and helps us humans, since our brain learned to biographically plan forward, to solve on a completely new level the original problem of the evolution of life: reproduction.

For that reason I assume that religious aptitudes not only *developed* within the evolution of the human brain in the past, but still do so now. In my opinion the empirical result is very strong: Not only in Germany, not only in Europe, but everywhere in the world and obviously since tens of thousands of years religious persons on average give birth to more children and grandchildren than their secular contemporaries of the same age and social stratum. Religiosity, understood as a polygenic and biographically developed disposition, and religions, understood as its actual sociocultural realisation, only operate as one factor of human demography among others, but in general they operated successful in terms of reproduction for several thousands of generations.

After Regensburg, I owe to scientific journalist Rüdiger Vaas the finding of a quotation from an economist who followed that very track some decades ago and conceived and verbalized vital aspects thereof.

## Religion – Demography after Friedrich August von Hayek (1899 – 1992)



Friedrich August von Hayek was an economist and social philosopher who at last worked in Freiburg, who thought far beyond the limits of his particular faculty and whose also religion-related works have hardly been explored yet from the perspective of the Studies of Religion. When he received the Nobel prize in Economics in 1974 he delivered a brilliant speech with the indicating title: "Die Anmaßung von Wissen" (the pretence of knowledge). This was the lifelong issue of this thinker, to whom religion became the "great subject of old age" (Hennecke): to demonstrate that the human abilities of knowledge, reason and forward planning have less power than we usually are willing to accept, and that overestimations (in terms of rationalistic ideologies, for example) bring ourselves again and again into societal crises and refuse us valuable chances of development, even if motivated by morally best intentions. Culture to Hayek is the more flexible (tried), biology the firmer (inherited) way to store useful strategies as traditions that we may and eventually have to expand carefully, but which we cannot completely reject or reschedule with impunity.

Religions are of sustaining importance to this structure. Religiosity, too, is founded on biological endowments, but first of all the merits (and also the dangers) of cultural evolution manifest themselves in religions: because in direct competition only those convictions will prevail which achieve economical and above all demographical success. Hayek has phrased this beautifully by saying that the connection between religion and demographical success is not intrinsic: just as most genetic mutations turn out to be detrimental (and obviously do not perform according to a targeted "construction plan"), religious systems arose and still continually arise that fail in the reproductive and socio-economical competition. The connection is rather a historical one: only those religions prolific in terms of their reproductive and economical dispositions will be passed on over several generations with increasing success. To Hayek it is not surprising but of reasonable efficiency, that the first words of the biblical God (and according to the Jewish count the first of all 613 commandments) read: "Be fruitful, and multiply" (KJV, Gen 1,28).

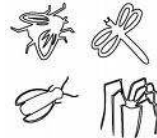
Religions, by this theory (which is completely corresponding with observations made by James Frazer, mainly in "Psyche's Task" (1909), as Hayek discovers in the end), achieve at least two aspects that other domains of society including economy and science cannot accomplish: they store, develop and legitimate complex life knowledge that having to be constructed rationally would overextend human abilities, and they provide, among others, additional arguments for family circle and children, which take effect especially because they are given transcendentally, not being accessible on a rational-temporal level. Hayek anticipated what empirical studies confirm today: *a putatively irrational Homo religiosus on average finds more reasons to found a larger family than an allegedly rational-progressive Homo oeconomicus.*

The final chapter in Hayek's last book, "Religion and the Guardians of Tradition" in "The Fatal Conceit" including the appendix to James Frazer inserted shortly before printing, I consider to be one of the most gripping texts for the Studies of Religion being descended from the 20<sup>th</sup> century! Unfortunately it seems to be almost undiscovered yet, and also the religion-related theoretical convergence of Frazer and Hayek has not been taken up yet with an interdisciplinary approach.

As an exception worth reading, the British Chief Rabbi Jonathan Sacks presented in his Hayek-lecture “Morals and Markets” (2000, online) a compelling, constructive-critical dialogue between Judaism and Hayek's basic approach.

## Demographic strategies

**r – strategy** (*reproductive mass*)



**K – strategy** (*competitive class*)



**c – strategy** (*adaptive decision*)



What Hayek justly recognised: The social darwinist catch word of the “survival of the fittest” reaches out to short when applied to humans, because from survival and competitive fitness direct or closely kindred progeny must emerge so that one can speak of success in a biological sense. A 90 years old former competitive sportsman, multimillionaire, media-favourite and multiple womaniser may for lack of children mark a biological impasse, while his decent housekeepers, a married couple with three children and five grandchildren as well as nieces and nephews, has successfully passed on, apart from the genes, some cultural-religious impressions and lore to coming generations. Biological and also cultural evolution happens decisively by successful reproduction.

Because this presentation does not have evolution biology as its main subject it shall be sufficient here to gather the hardly manageable diversity of reproductive strategies in three categories. Many plants and animals count on the biologically so called r-selection strategy up to these days: they give birth to a large number of progeny without investing too much in the individual. This strategy proves useful when at least some of the many hundreds of offspring survive long enough to procreate themselves.

More complex animals, among them mainly larger mammals, rather tend to follow the so called K-selection strategy: only few offspring are born, but they are invested in with special expenses also connected with high energy costs, and in some cases they are accompanied for years. Accordingly a not merely more complex but also more flexible social behaviour develops which increases the chance of survival and reproduction of the small-numbered progeny. The pre- and early human evolution followed the way of the K-selection strategy until the development of the human brain, above all that of the Neocortex, rang in a new quality that I, following demographer Massimo Livi-Bacci (2006), would like to describe as the “strategy of choice”.

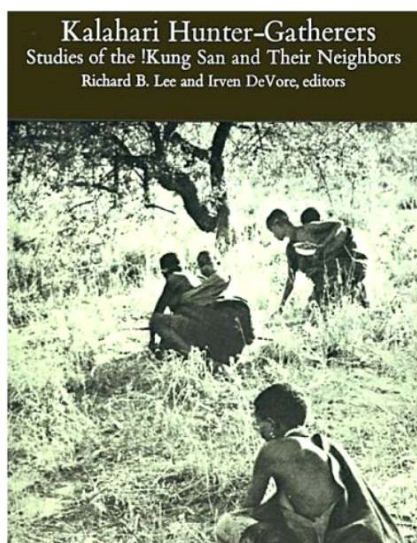
Animals do not decide biographically whether they act sexually, bind themselves to a partner; how many if any children they want to have. r/K-selection strategies become retrospective, retroactive, shaped: by countless trials those strategies prevail in the genetic endowment that haven proven to be successful so far. Thus, changes take a very long time and may result in heavy losses or even the extinction of whole species in case of rapid environmental drifts.

Darwin himself already recognised that in contrast to animals early humans as well as recent hunters and gatherers reacted culturally to their environment: as they regulate sexuality by wedlocks and join it to economic requirements and as they expose unintentionally born children. Human reproduction strategies are mainly aimed prospectively, even though many protagonists (in historical and to a lesser extent in prehistorical times prevailingly women and adolescents) were deprived of the freedom of private decision.

In a disturbingly honest line in "The Descent of Man, and Selection in Relation to Sex" Darwin therefore concedes that another principle than that of brutal competition must have shaped the evolution of mankind – a brilliant thought which should have weakened social Darwinism and could have strengthened the perception of the women's relevance, but which later was represented solely by Alfred Russel Wallace, the co-discoverer of evolution. Darwin wrote in „Descent of Man“:

“Since we see in many parts of the world enormous areas of the most fertile land capable of supporting numerous happy homes, but peopled only by a few wandering savages, it might be argued that the struggle for existence had not been sufficiently severe to force man upwards to his highest standard.”

## c – strategy (hunter-gatherers)



### Possibilities of avoidance:

- ❖ sexual regulation
- ❖ child abandonment
- ❖ contraception

### Gründe für Kinder:

- ✓ economical (old age provision)
- ✓ social (protection)
- ✓ emotional (filial love)
- ✓ + *religious*

Modern ethnology has further expanded Darwin's statements – here we have a fascinating anthology on the !Kung San, hunter-gatherers of the Kalahari. On the picture one can fairly recognise that the San women almost continuously carry their infants with them – when foraging as well as when wandering. The number and frequency of children is thus being regulated. Besides bequeathed knowledge of sexuality and its consequences the San are familiar with technical as well as with natural contraceptives. Furthermore conflicts may occur after too closely successive births or after the birth of twins. The !Kung San are completely aware of the costs and risks of siring, birth and parenthood and so complex decision-making processes determine the reproductive success in the first place, not a martial rivalry for scarce resources.

Also in the culture of the San there is quite a number of reasons for having children that seem modern to us: children are of economical importance in terms of nourishment provisioning, reciprocal assistance and old-age supply. Beyond this they provide social integration and as a consequence protection from exclusion and arbitrariness. The Kalahari is no paradise either and the anthology tells exemplarily about the cruelty of several teenagers directed at an older childless woman on the brink of the group. Finally, another important issue is constituted by emotional gratifications resulting from the intensive interaction with children.

And: also with the !Kung San we can find rich hoards of myths and commandments concerning questions of life, love, sexuality and parenthood. There are tales saying that the god Kauha actually gives children to men only very reluctantly because he would love them and want to keep them to himself – a religious myth that is able to explain unintentional childlessness just as contrariwise able to increase religiously the worth of every single newborn – a child as a divine present.

Thus religiosity was and still is not the only variable in human reproduction for the San as well, but whoever is religiously musical could take reproductive advantage from it. This effect is additionally boosted by the possibility for religiously active San men to get qualified after complex initiation as dancers with traditional healing knowledge who, when performing the ritual Num dance, circle the singing women. In an otherwise egalitarian society religious aptitude is therewith a rare and important status symbol, especially with regard to possible courtships.

Ultimately ethnologists interestingly detect changes of birth demeanour as well as of gender roles, culture and mythology of the San living in environments newly made available with a different biota, and especially also among those who began integrating themselves prevaillingly as unskilled labourers in agrarian contexts. As a consequence thereof with increasing settledness a change of inner-societal economical relations as well as a specialisation and hierarchisation appear: the compulsory allocation of goods gets restricted, functional roles and first hierarchies develop for political spokespersons and religious specialists. While the *culture and religion* of the San got under pressure to change, their *ability to perform culture and religion* grants them their adaptive, demographic and therewith biological survival.

This short excursion to a living people of hunters and gatherers shall in the first place counter the impression that only the industrialised human being would have been able to

apply his mental and cultural talents to questions of sexuality and reproduction as well and that our common forebears would still have procreated aimlessly, without alternatives, consciousness of problems or knowledge of control, and would afterwards have been at war with one another. We may, on the contrary, alongside modern demography, describe the starting of a family beginning far earlier than with the industrialised person mainly as a result of individual decision-making processes taking place in a social, economical and, after all, super-rational, cultural-religious scope. And the development is in progress (including very problematic aspects): for yet quite a long time the adoption of modern contraceptives no longer marks the entire extent of the field which can be decided on.

Prenatal diagnostics, accompanied by ethical-religious protests, are used millionfold to prevent the birth of disabled children or as in the case of China and India also the birth of girls (to which we will get back later).

And major parts of orthodox Judaism, whose smaller communities in a Christian or Islamic environment were not allowed to accept converts for centuries and thus were only permitted to marry among one another, meanwhile engage, before celebrating an (often arranged) marriage, foundations like the "Dor Yeshorim" being established in 1980, which check both partners anonymously for the existence of certain recessively hereditary diseases and in accordance with the result advise the marriage or not. The founder of "Dor Yeshorim", rabbi Joseph Ekstein, had lost four of his children owing to the Tay-Sachs disease and implemented this experience in a religion-demographic strategy to save other parents and the community from it.



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*Translation of Caricature "Life Planning"*

*He (to the elders): We cannot afford expensive children...*

*She: ...and parents needing care.*

As a caricaturist recorded appositely we are living in a society with a never reached before level of freedom, security, prosperity and also lifespan – and still we decide (as expected by Wallace and Hayek, but entirely differing from what Malthus and Darwin predicted) continuously for fewer children. At the moment in Germany adults and children are in a ratio of 3:2 – a dramatic decay of the population when looked at from a biological perspective. (Whereas in a manner of speaking we could instance other (e.g. ecological)

reasons that might argue for a temporary diminution. Finally such a discussion points to the philosophical question whether existence of humans constitutes a worth inherent in itself – certainly a thrilling debate, but not the topic of this descriptive recitation.

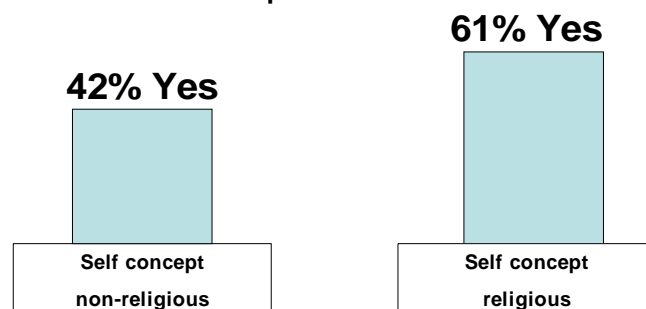
Of course this caricature – like every good of its kind – is shortly exaggerated: nobody will deny the many reasons that also in our society argue for having children. Though economically parents are still getting exploited regularly, they experience social and emotional gratification including again increasing appreciation and encouragement. The assumption based on Hayek expressly does not say, I may underline this once more, that religion provides the only motivation for having children, but says that it rather involves additional arguments and thus on average a larger number of offspring.

We can verify this empirically. Let us begin with the simple question whether young people in Germany who consider themselves either religious or non-religious feature differences concerning the desire for having children.



### ***Transcendental (and social) additional reasons for children***

Allensbach 2006 asked persons living in Germany between the age of 16 and 29, whether “having children” is important to them:

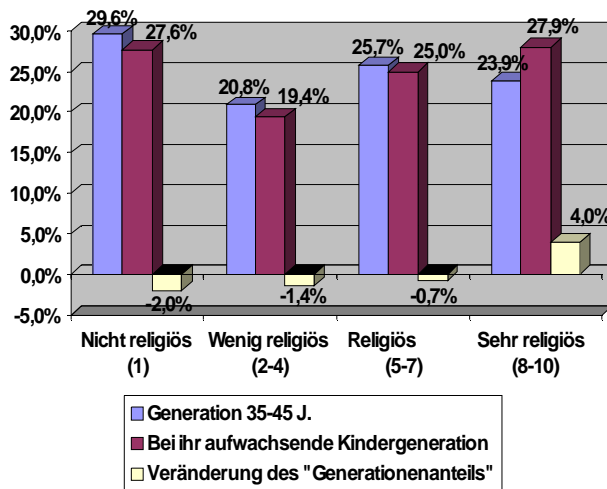


An Allensbach-survey from the year 2006 shows clearly that this difference is to be seen as confirmed. Young religious think of children as “important” one and a half times as often as their non-religious contemporaries. Still we can do further research from here, checking if this higher willingness manifests itself in larger numbers of children in reality.

At the University of Tübingen Carsten Ramsel, Sven Graupner and I evaluated the data of the German ALLBUS-study of 2002 placing emphasis on the question how many children had been listed by contemporaries from the eastern and the western part of the country aged between 35 and 45 years, who at the same time estimated their own “religiosity” on a 1 to 10 scale.



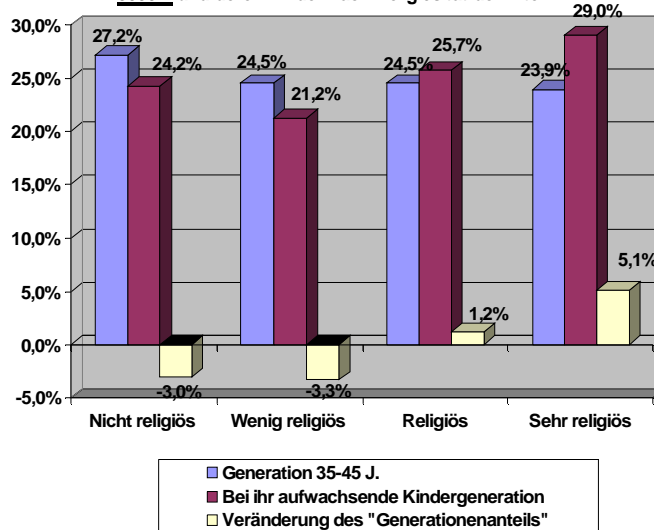
Verteilung Generation 35-45 J. und deren Kinder nach Religiosität der Eltern (ALLBUS 2002)



A view on the results: 29,6% of the interviewees considered themselves decidedly non-religious. But upon them fell only 27,6% of all the interviewees' children. Similarly the lowly religious lost 1,4 and those of the middle and upper range lost 0,7 percentage points. The only group being able to raise its contingent on the coming generation was constituted of those who considered themselves "very religious". Upon only 23,9% of the interviewees fell 27,9% of all children, a plus of 4,0 percentage points.

Beyond this we checked the results in relation to the educational background and income-class. Not only did the effect persist but even tended to intensify. So the group of the very religious with an earning of more than € 3000 almost reached the population sustainment limit of 2,1 children and therewith almost one and a half times the quantity of that recorded for the overall populations.

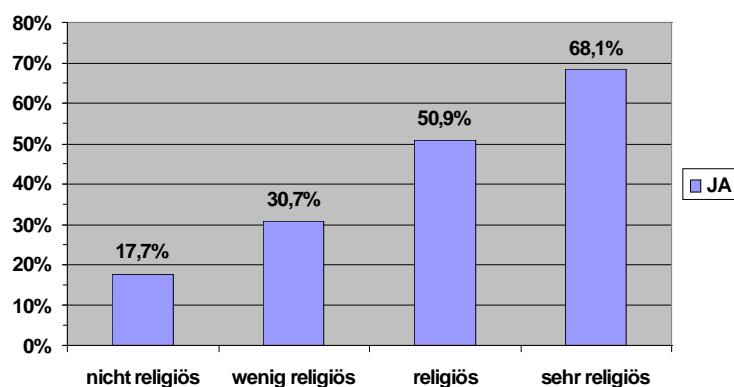
Verteilung Generation 35-45 J. mit Haushaltseinkommen ab 3000 € und deren Kinder nach Religiosität der Eltern



Interestingly enough among the interviewees from households with a monthly income of more than € 3000 “less” non-religious were recorded than in the overall group. This may partly be due to still existing east-west-discrepancies but nevertheless suggests that wealth does not necessarily have to be a factor against religiosity and a large number of children. 27,2% of the upper income-class considered themselves non-religious. Upon these fell 24,2% of all children, a minus then of 3,0 percentage points. In contrast again 23,9% of the high-income earners assessed themselves as very religious and had 29,0% of all children, a plus of 5,1 percentage points. The gain-loss-gap between religious and non-religious people had thus increased from the overall group to the high-income earners: from 6,0 to 8,1 points. This corresponds with the thesis saying that obliging religiosity gets the more important in terms of reproduction the more security and options the environment is offering.

Let us remember: Hayek had warned not to overestimate human rationality but instead advocated regarding all the more traditions and transcendental motivations. Concretely this can be rephrased in the following question: Do you only renounce actions when there exist rationally comprehensible reasons to do so? Or do you also sometimes simply say “no” when a certain action is declared as “sin”, if necessary with a transcendental substantiation (e.g. God does not countenance this!).

ALLBUS 2002 - Verteilung Unterlassung einer Tat, weil sie Sünde sei, nach kategorisierter Religiosität

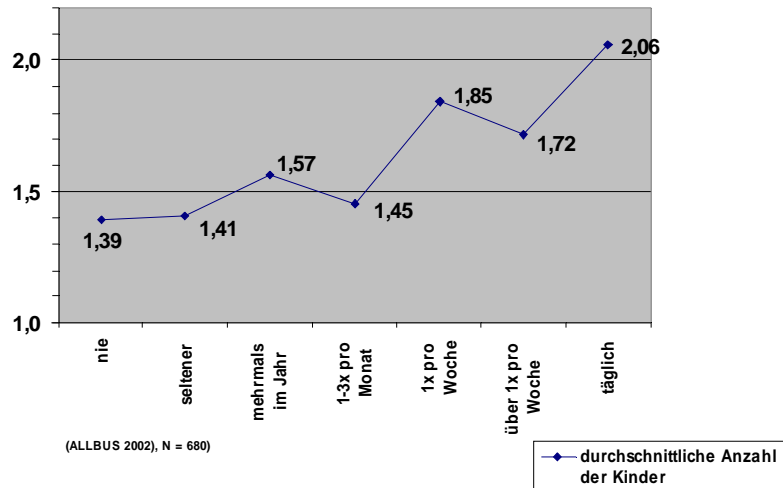


Kindly ALLBUS 2002 has posed this question – and here the results confirm the assumption as well. Not those are the reproductively most successful who scrambled for maximal freedom from the often rationally elusive commandments of religion and tradition, but those who choose voluntarily a religious abdication of certain options. We get the same picture when regarding the interviewees according to their praying practice.



## Germany – ALLBUS 2002

Verteilung durchschnittliche Anzahl der Kinder nach Bethäufigkeit

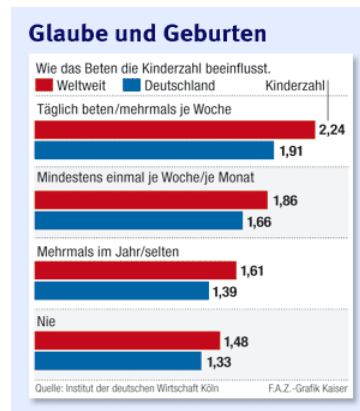


Below we will have a look at the results alongside the prayer frequency after which the average number of children of the same interviewees is not depicted according to self-assessment within the scale but in dependency on the remembrance of concrete religious praxis.

Interviewees of the age group mentioned before who stated that they would “never” pray reached a number of 1,39 children on average. Those who prayed daily reached the peak value with a number of 2,06 children. At first the wavelike ascent seems to weaken the thesis.

But by taking a closer look the concurrence of the higher values with those time rhythms regularly predetermined by religious groups for praying (annual, weekly or daily celebrations) becomes obvious. The somewhat weaker numbers of children again fall upon the “approximate” statements several times a month or more than once a week. This even enforces the assumption that religiosity affects reproduction mainly when it obligingly and systematically accompanies the performance of life.

## World Value Survey 1984 - 2001 Evaluation Dominik Enste, iwd 2007



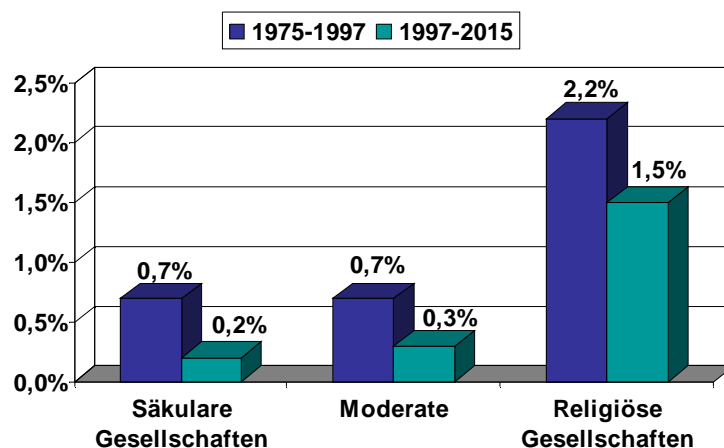
N world wide: 267.870

N Germany: 7.499

But let us also preclude that German special conditions determine the results. Economic ethicist Dominik Enste from the Institut der deutschen Wirtschaft Köln (IW) has compared more than a quarter of a million standardised surveys from now 82 nations on every continent in the context of the "World Value Survey" in a path-breakingly interdisciplinary way. For Germany as well as on a global scale also here the insight is: devotionally praying persons have considerably more children than non-praying contemporaries.

## Annual population growth

(Norris & Inglehart 2005: WVS - 73 nations. 25 sec., 24 mod., 24 rel.)



Data including migrational movements!

American political scientists Ronald Inglehart and Pippa Norris have independently from Enste evaluated the same survey on the the level of societies which they divided into a secular, medium and religious third each and correlated with the population development following United Nations data.

These data are not only unambiguous, but even weakened by migration effects from religious into secular societies.

The Westerners' impression that immigrants mostly feature above-average religiosity is partly based on the fact that now globally almost only religious populations have children to dispense. Of course poverty is a factor, but not a determining one. Thus several eastern and south-eastern European societies like the Russian or the Bosnian are comparatively poor but mostly secular, and prompt they document rapid birth deficiency. Other societies like that of the United States or Ireland by contrast reach high levels of religiosity and numbers of children, despite notable prosperity. (We will later on come to exciting cases in France and Poland, promised!)

Still at this point we do not want to be satisfied. Surveys too uncommonly provide numbers of participants big enough to guarantee for instance the comparability of smaller religious denominations among each other.

The Swiss population census performed decennial and lastly in the year 2000 with more than 7 million Swiss inhabitants serves the purpose and fortunately contained also the question for the belonging to a religious denomination – differently from the German situation where as an alleged “alternative” to the population census it is still common only to ask decidedly for public corporations and to sum up the rest (including Islam) under miscellaneous and non-denominational. Let us see, by regarding the age-reassessed birth rates alongside all religious categories distinguished by the statistical office, if the reproductive advantage of religious collectivisation persists with the contemporary *Homo sapiens helveticus*.



## Population census Switzerland (2000)

Religious affiliation	Live-births per woman (position)	Reproductive advantage compared to „no affiliation“
Hindu associations*(Hin)	2,79 (1)	+151,4%
Islamic denomination* (Isl)	2,44 (2)	+119,8%
Jewish denomination (Jüd)	2,06 (3)	+85,6%
Other Protestant Churches (ÜpK)	2,04 (4)	+83,8%
New Pietist-Evangelical communities (Npt)	2,02 (5)	+82,0%
Pentecostal communities (Pfg)	1,96 (6)	+76,6%
Evang.-methodist Church (EmK)	1,90 (7)	+71,2%
Other Christian denominations (Acg)	1,82 (8)	+64,0%
Eastern Orthodox Churches* (CoK)	1,62 (9)	+45,9%
Other Churches and religious communities* (ÜKR)	1,44 (10)	+29,7%
<b>Switzerland altogether (ScG)</b>	<b>1,43</b>	<b>+28,8%</b>
Buddhist associations* (Bud)	1,42 (11)	+27,9%
Roman Catholic Church (RkK)	1,41 (12)	+27,0%
New Apostolic Church (NaK)	1,39 (13)	+25,2%
Reformed Church (ErK)	1,35 (14)	+21,6%
Jehovah's Witnesses (ZeJ)	1,24 (15)	+11,7%
Old Catholic Church (Christkatholische) (CkK)	1,21 (16)	+9,0%
<b>No affiliation (NoA)</b>	<b>1,11 (17)</b>	-

Notice: Denominations marked by \* are still prevalingly formed by immigrants.

Let me call the result clear and unambiguous. All religious categories distinguished by the Swiss federal office for statistics denote on average considerably more children than the group of the non-denominationals with yet only 1,11 live-births per woman. And this is already age-reassessed – among non-denominational women between the age of 35 and 45 in Switzerland in the year 2000 the number shrinks again on 1,04.

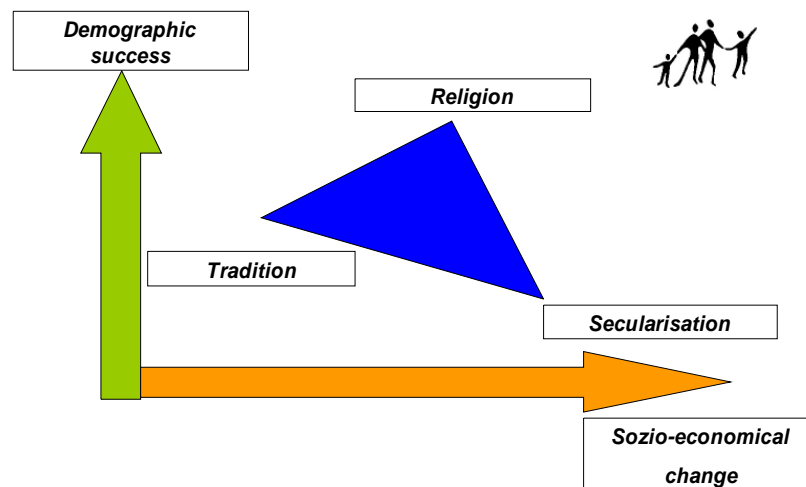
The Jewish denomination, who just as well as the "Other Christian denominations" records a higher percentage of townspeople, academics and leading professions than the non-denominationals do, has got almost twice as many children. Also New Pietists and Pentecostals have about 2,0 children, groups who are on average younger than the non-denominationals, feature focal points in and around congested urban areas and include a considerably less percentage of immigrants.

If even this empirical results still face doubts allow me to ask a last question, especially with regard to the demographical success of the Swiss Jewish community despite its peak values in urbanity, education and occupational achievements: Are we really able to explain the high numbers of children persistent for centuries among the Jewish, Hutterite or Amish communities without any reference to religion? And please keep in mind how successful these collectives have arranged with different situations: Jewish communities with life in big cities, Amish and Hutterites strictly with life in agrarian milieus. If then religiosity provided reproductive-adaptive advantages at least in some cases, biological and also cultural transfer is almost compulsively to be expected evolutionary-logically.

To Dr. Mürmel, a researcher from Leipzig, I owe the precious information that often also in deviant religious movements of the past and present a central preoccupation with strategies related to matrimony, family and reproduction has to be stated: up to the point of daring concepts of serial monogamy (the so called "Midgard Matrimony") in German nationalist-racist leagues, mass weddings of the Unification Church or the "cloning"-visions of the Raëlians. As an American pastor and friend once described the human core requests with regard to religion as "Hatching, Matching and Dispatching", he obviously expressed a widespread experience of religious institutions.

At the same time the Swiss data permits us something else: differentiating the demographical success along denominational criteria. And in doing so it becomes clear soon that the simple equation "more religious practice = more children" is not sustainable that linearly. Indeed all recorded religious categories are more successful in terms of reproduction than the non-denominationals, but some collectives exceedingly obliging and traditional-centralist in their organisation like Jehova's Witnesses or the New Apostolic Church come off decidedly below average. Contrariwise we can find collectives being authoritative but also partly modernising their lifestyle, like Pentecostal Churches and New Pietists, in the reproductive top flight. These are, according to the deserving analysis of the Swiss population census by Claude Bovay, not only composed of a very young following but also feature peak values in regard to maternal occupation.

## religion-tradition-tension



Now we have arrived at a point that also provoked Hayek to reason in one of his most famous texts: “Why I am not a conservative”. He thus reacted to people who had been very (and sometimes possessively) pleased by Hayek’s appraisal of the biological as well as of the cultural tradition and concluded rashly that he had maintained their absolute and eternal superiority and validity.

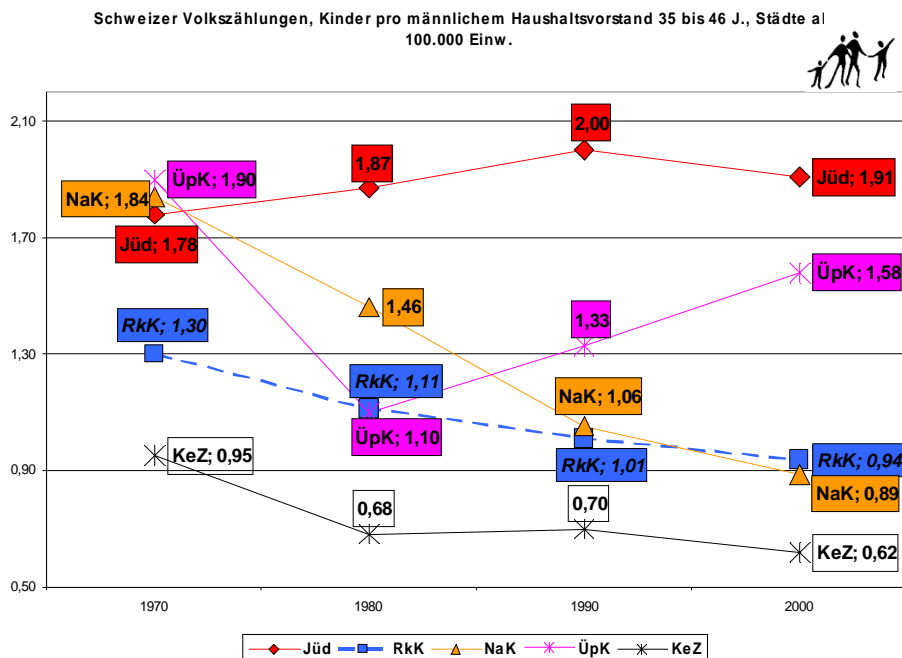
But exactly this is not the case. Hayek recognised that religious traditions have proven their adaptive worth not in absolute but rather in historical combinations. Under changed conditions they could forfeit their effect in large part, sometimes even becoming maladaptive. To Hayek, Tradition is the basis, but not an alternative to liberal (and thus competitive) advancement.

Let us take the Hindu tradition of the Brahman matrimony as an example. It traces back to a traditional religious concept prevalent in several regions of India saying that it is a greatly deserving act to raise a daughter and to couple her into a higher (e.g. Brahman) family and caste. The special religious significance of this act was emphasised by the fact that the bride’s parents had to refuse any direct gift in return offered for their daughter, not even accepting a meal in the bridegroom’s house and finally even paying a dowry on their part.

As this tradition and the appendant expectations began, promoted also by economical and medial modernisation processes, to spread among economically weaker social classes, its demographic effects reversed. Raising and coupling (provided with dowry) of girls may still be considered religiously deserving but simply cannot be afforded by poorer families. By means of infanticide as well as increasingly by means of prenatal diagnostics uncounted girls get lost in several regions of India.

National laws against the expected dowry have not been able to prevent this once often life-promoting tradition from becoming a terrible demographic obstacle under the new conditions. This tradition is to be reformed urgently and its consequences (like the deficiency of women) just begin to emerge.

Such an extreme example fortunately cannot be found in Switzerland. But also by means of the data of its censuses, whose records from 1970 until 2000 are available for research purposes as well, demographic-adaptive differences between various denominations can be detected.



The graphic compares the average number of children in households of men (with and without cohabitant) between 35 and 46 years of age in Swiss cities with at least 100.000 inhabitants.

Using the example of the Jewish communities (Jüd, red) we can see that successful adaptation to urban life has proven to be strong enough to resist the commonly falling trend even with a reverse disposition. Or reformulated that way: the decreasing of the family size is, even in large cities, by no means a natural law to which no religious and collective respond could be found. According to the population census from the year 2000 only 36,30% of the male urban population of Jewish believe between the age of 35 and 46 ( $N(m) = 595$ ,  $N(k) = 1136$ ) lived in childless households. Only 1,67% of their children grew up in an illegitimate household and only 5,72% without further children in the respective household.

The smaller ("remaining") Protestant Free Churches (ÜpK, pink) with predominantly local organisational structure show an exceptionally deep incision between 1970 and 1980 (the aftermath of the 1960s' protest movements?) but soon afterwards they regained their strength, obviously reacting successfully to the milieu change. It indicates a possibly continuing upward tendency that on the turn of the millennium only 35,48% of the male age and believe group ( $N(m) = 699$ ,  $N(k) = 1104$ ) lived without children. Only 2,45% of the children of householders with a Protestant-Free Church background grew up in an illegitimate household and only 8,5% did so as the only child in a household.

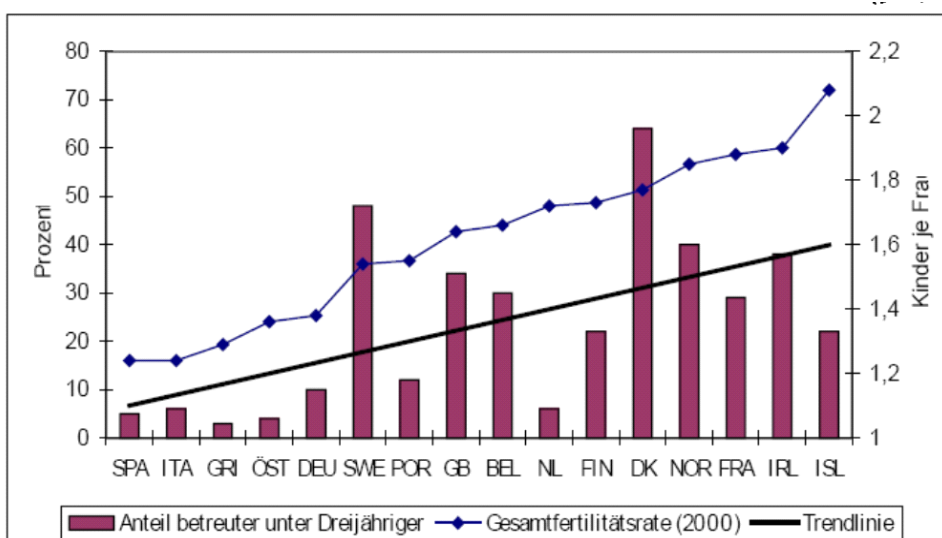


Completely different is the situation in the centralised-traditionalist New Apostolic Church (NaK, orange): Beginning on a high starting position (1970: 1,84) between Protestant Free Churches and Jewish communities the average number of children per male householder receded on 0,89 and thus below the Swiss total value and the Catholic average (2000: N(m) = 187, N(k) = 166). Wherever children were born it mostly happened within the traditionally favoured setting: only 3,01% of the children grew up in an illegitimate household and only 12,0% grew up alone. But 55,61% of the New Apostolic male householders between the age of 35 and 46 in Swiss cities on the turn of the millennium lived without children – a decided affirmation that also overreaching traditionally justified ideals can impede the foundation of families. Jehova's Witnesses showed an adequately linear demographical decline as well (1970: 1,78, 2000: 1,14).

The church-officially fundamental adherence to traditional family model from the times of the industrialisation (sole earner matrimony) also resulted with the urban male following of the Roman Catholic Church (RkK, blue) a continuous descent of the number of children even below par (2000: N(m) = 24.258, N(k) = 22.887). Around the year 2000 almost every second male Catholic householder (48,87%) between the age of 35 and 46 in a Swiss city lived childless. 5,12% of the Catholic householders' children grew up in illegitimate households, 17,9% without siblings.

Across all population censuses since 1970 householders without religious affiliation (KeZ, white) had children most rarely and altogether in smallest numbers. At the time of the population census of the year 2000 even almost two-thirds (64,95%) of the non-denominational male householders in Swiss cities aged between 35 and 46 lived in childless households (N(m) = 20.357, N(k) = 12.575). In the same year 10,67% of the non-denominational householders' children grew up in illegitimate household structures and 22,9% as the only child in a family, thus marking likewise the peak values of all included categories.

## Percentage of children aged less than 3 years in day care and births per woman (Europe 2000)



Source: Kröhnert, Steffen/ Klingholz, Reiner (2005): Emanzipation oder Kindergeld? Der europäische Vergleich lehrt, was man für höhere Geburtenraten tun kann. In: Sozialer Fortschritt (54), 12: 280-290.

A European comparison as well suggests the potentially opposing impact of formerly adaptive traditions and modern general conditions. States with politically influential and family-politically traditional (at the moment predominantly Catholic and Eastern-Orthodox) official churches like Spain, Italy, Greece, Austria or Germany (equally Poland, for example) provide low infant child care quotas and low birth rates. France, similarly Roman Catholic by the majority, has after a long phase of demographical shortcoming and the military defeat of 1870/71 instead disempowered the church family-politically and adapted an active demographic policy as reason of state – obviously with noticeable success. Also the Scandinavian countries in which national politics as well as the Protestant official churches partly promote newer forms of family life achieve much higher birth rates. The reproductive advantage of Catholic Christians compared to their particular fellow countrymen which had been widely observed by demographic studies until the 1970s should thus not be reduced *although* the Roman Catholic Church tightened its traditional family-related and sexual doctrines – but *because* it did so. While *within* each society the religious persons maintain their *relative* reproductive advantage compared to their secular counterparts, owing to traditionalist-oriented family policies (and thus higher option costs) the *general* birth level lowers itself.

In fact the results do not only argue for Hayek's effect coherence but also for his pleading for freedom of religion and a continuous competition from which again and again creative and potentially successful life and family concepts as well as adaptive pressure on badly matched communities emanate. To states which want to find the way out of the demographical pit are recommended a family promotion geared to liberties of choice besides the preservation of freedom of religion and of religious competition.

Now that we are here in Leipzig and thus in a great city of Goethe I would like to take the liberty to put on the empirical verification of our thesis even at another independent position. Until now we regarded the number of children as measured value for the concrete parental deciding process.

The reproduction of mammals is decisively based upon a strong maternal investment and thus the female tendency to a “sexual selection” of those partners who participate in this investment. If religiosity has developed as an indicator for reproduction- and relationship-oriented commitment it could be assumed that human females primarily search for partners who believably signalise religious obligation. Let us then also ask the Swiss data this – the Gretchenfrage (Gretchen's question).

### **Religiosity as a signal in relationships?**



### **Prisoners' dilemma / Gretchenfrage**

In German the “Gretchenfrage” from Goethe's Faust has developed as a dictum for a crucial question that can hardly be evaded. It constitutes the main issue at the point where the story of Faust and the tragedy of Gretchen are connected. While Goethe for the creation of the protagonist Faust could utilise a fund of legends around a doctor of the Heidelberg University, he experienced his Margarete himself.

Susanna Margareta Brandt was the name of the young orphan working in a tavern in Frankfurt who got seduced by a transient who himself broke his vows of love and left her behind. In her desperation she killed the newborn. What, as we already heard, was (and partly still is) accepted as a means of birth control among hunters and gatherers had been avenged by death penalty in the world of the 18<sup>th</sup> century, nationally and religiously organised into a hierarchy. Goethe as a young lawyer experienced with dismay the murder conviction of the young woman and included his impressions into his work Faust.

By asking the Gretchenfrage, Margarete is testing Faust when he pushes for coitus. And she does not ask about bodily merits, income, popularity or academic degrees – but about religion. And Faust understands immediately that this question actually addresses his postsexual relationship constancy – he appeals to emotions (“My love is tender”) and promises his “blood and life”.

MARGARET

Promise me, Henry!--

FAUST

What I can!

MARGARET

How is't with thy religion, pray?  
Thou art a dear, good-hearted man,  
And yet, I think, dost not incline that way.

FAUST

Leave that, my child! Thou know'st my love is tender;  
For love, my blood and life would I surrender,  
And as for Faith and Church, I grant to each his own.

MARGARET

That's not enough: we must believe thereon

And so that no doubts remain, later Goethe's devil jeers:

MEPHISTOPHELES

I've heard, most fully, how she drew thee.  
The Doctor has been catechised, 'tis plain;  
Great good, I hope, the thing will do thee.  
The girls have much desire to ascertain  
If one is prim and good, as ancient rules compel:  
If there he's led, they think, he'll follow them as well.

By accepting Faust's mixture of non-denominationalism, agnosticism and pantheism, Gretchen brings her family to destruction, then despairingly kills her illegitimate child and finally gets executed. In the reproductive prisoners' dilemma (in which unidirectional cooperation gets punished if it is not being reciprocated), she has suffered maximal loss.

If religiosity as assumed by Goethe as well as by our thesis also affects human reproduction games of sexual selection, then

1. women would be more often be religiously oriented than men.
2. members of religious communities would show a mating behaviour visibly differing from that of the non-denominationals.

Both hypotheses can be validated empirically with regard to the Swiss population census from the year 2000.

In the following all those religious categories are listed ordered by their women quota whose members mainly were born in Switzerland. (See next page.)

We can see that *all* religious categories feature more female than male members. This also applies for denominations without church tax such as Jehova's Witnesses and for denominations with a lower average age than the non-denominationals – Pentecostal communities for example. The only category in which men constitute the vast majority is that of the interviewees without religious affiliation (NoA). The first hypothesis is thus confirmed powerfully.

Equally the second: In the non-denominational group we encounter most households without obliging marriage certificate, the lowest percentage of couples with children, the highest percentage of single households and despite lowest women and children quota the highest percentage of single parents.

Within the religious categories, women obviously know how to choose biologically prudently as well: if one correlates the women quota with the (high) percentage of marriages in relationships, then we get a very strong Spearman-rank correlation of 0,696.



## Gretchens prudence

	Percentage women (position)	Percentage of matrimonies in relationships	Percentage of couples with child(ren)	Percentage of single-person households	Percentage of endogamous matrimonies	Percentage of single parents
ZeJ	<b>57,4% (1)</b>	99,3% (1)	53,3% (4)	10,8% (3)	71,3% (2)	5,2% (6)
EmK	<b>56,4% (2)</b>	97,1% (5)	49,8% (8)	13,4% (5)	62,1% (5)	3,0% (1)
AcG	<b>54,9% (3)</b>	93,9% (6)	51,2% (6)	15,2% (7)	31,2% (11)	6,8% (7)
Pfg	<b>54,6% (4)</b>	98,5% (3)	63,8% (2)	10,4% (2)	69,9% (3)	5,1% (5)
ÜpK	<b>54,6% (5)</b>	97,8% (4)	59,4% (3)	11,4% (4)	66,4% (4)	4,2% (4)
NaK	<b>54,1% (6)</b>	91,1% (8)	44,6% (9)	15,6% (8)	55,4%(7)	5,9%(10)
CkK	<b>53,9% (7)</b>	89,4% (10)	41,7% (11)	17,6% (11)	28,7% (12)	5,6% (9)
Npt	<b>53,5% (8)</b>	98,9% (2)	65,6% (1)	9,2% (1)	76,1% (1)	3,4% (2)
ErK	<b>52,7% (9)</b>	88,2% (11)	44,0% (10)	16,7% (10)	53,3% (9)	5,4% (7)
RkK	<b>51,6% (10)</b>	89,8% (9)	51,4% (5)	14,2% (6)	60,6% (6)	5,5% (8)
Jüd	<b>51,0% (11)</b>	93,9% (7)	51,0% (7)	16,2% (9)	54,0% (8)	6,3% (11)
ScG	<b>51,0%</b>	89,0%	48,5%	15,4%	53,6%	5,8%
NoA	<b>45,9% (12)</b>	81,5% (12)	40,0% (12)	20,7% (12)	48,5% (10)	7,8% (12)
corr.	-	<b>0,696</b>	<b>0,622</b>	<b>0,434</b>	<b>0,629</b>	<b>0,378</b>

The correlation with the (high) percentage of couples with children amounts to 0,622, with the (low) percentage of singles 0,434 and with the (low) percentage of single parents still 0,378.

If thus educated women and men suddenly unsettle their secular environment by turning to religiously heavily obliging churches, Islamic communities or Synagogues, then certainly a biological rationality can be behind it in a manner of speaking. Inside these communities mostly men dominate the public spaces in which they internalise their religious commitment by experiences and thus pre-consciously also send out signals of relationship capability and exert social control on each other.

Women in these communities usually obtain less chances for self-development besides their own families and complimentary communal work but instead receive special appreciation as mothers and get better chances to be “chosen” by men, who are on average more relationship- and family-oriented. In terms of game theory, it even makes sense for them not to give possible rivals too much space for display, which is the reason why hopes for female reform alliances again and again break down because of conflicts of aims. The data show a weaker trend among women than among men to turn to liberal communities or non-denominationalism.

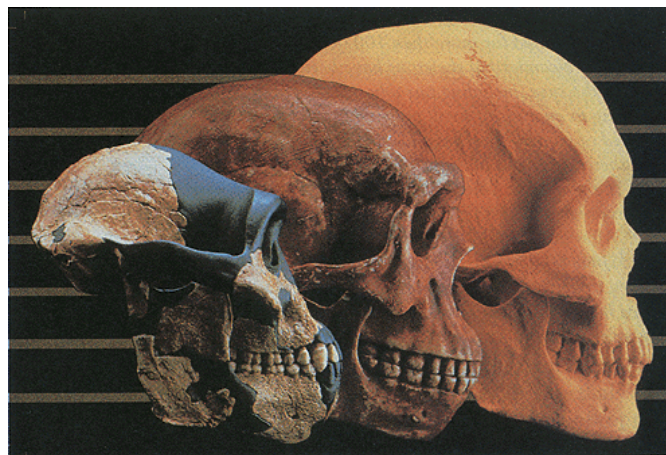
So in conservative Jewish as well as in Islamic communities women are exempted from attending the weekly communal divine service. At the same time their roles in the family are

valorised religiously as for example the Jewish Mamma is considered the spiritual heart of the family and the lighting of the Sabbath candles is entrusted to her care, or as the Islamic hadith cites as a demand and remark of the prophet: “Paradise is located under the heels of the mothers.”.

And all these observations of course do not imply that non-denominational persons would be per se less moral than religious persons. Religiously communalised persons simply access optional biocultural faculties permitting them to incorporate biologically and culturally grown and transcendently experienced behavioural motivations and to signalise them to each other. Eventually, for them the chance of getting more children than their not religiously communalised contemporaries increases.

In this respect the assumption that religious predispositions *have* developed in the course of the human evolution would not fully catch reality. At least under liberal conditions they obviously evolve continuously, outstripping people lacking religious musicality as well as too rigid traditionalisms. The fact that the European societies featuring shortening younger social strata now suddenly face creative and expanding religious youth subcultures of local and non-native origin, instead of the religions' dying off as it had been predicted by many, simply shows the effect of cultural and biological evolution in our time. Young visitors of the Church Days, mosques, temples and synagogues are hardly to be seen as relics of past times. They prove to be persons participating in culturally and demographically shaping the future.

## Brain development of the hominids



Australopithecus afarensis – Homo erectus – Homo sapiens

Let us then finally return to the initial question of this presentation: how and why could religion-related dispositions have developed in the human brain? About “when” we can make a statement because in the middle Palaeolithic, approximately 100.000 – 120.000 years ago, we can on the basis of sepultures detect the earliest assured forms of to some extent religious behaviour – indeed with the Homo sapiens as well as with the Homo neanderthalensis (in a simpler but likewise preserved form).

With increasing evolutionary dynamism especially within the last three hundred thousand years the human brain volume evolved. In the process our forehead has arched over the formerly (and on the apes continuously) protruding brow ridges. What after the Homo erectus developed with the Neanderthal as well as with the sapient was particularly the frontal lobe and here especially the prefrontal cortex shifting above the eyes.

Today's neurologists are able to explain quite accurately what the prefrontal cortex accomplishes among other things: with its help we are integrating information, related to our biographical identity for example, and practising impulse control. Here we are measuring decisions and handling moral dilemmas. Freud therefore already presumed the position of the Super-Ego to be exactly here. In the course of the frontal lobe's development our ancestors gained the ability to decide consciously on their reproduction – and through this came up to the necessity of transcendental reasons beyond the mere attainment of an adaptive potential unmatched until then.

The fact that early forms of religiosity, besides the growth of these brain regions, developed correspondingly with Sapiens and Neanderthals, thus on two distinct human species divided for thousands of years, gives another strong evidence that religion has emerged as an answer to these new abilities. Those who felt constrained to follow the ancestors' and later the spirits' and gods' doctrines and advices, who gained and believably embodied religious experiences, who eventually believed in afterlife and the necessity of being buried and provided by the own offspring, could then (and still can now) achieve above all reproductive and possibly also hygienic and social advantages for themselves and their relatives more often. Terminally I shall be permitted to provide the indication that the so far mysterious disappearing of the Neanderthal as opposed to the Sapiens also correlated with the by then more complex religiosity and greater reproductive success of the latter.

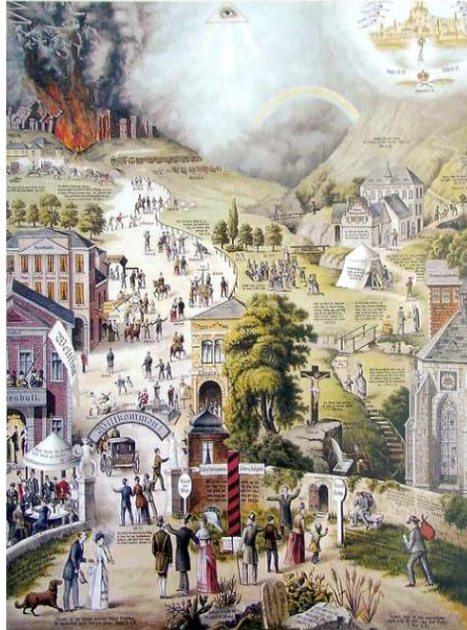
As religiously justified “streams of tradition” (Hayek) offer orientation individually and also socially in the plenitude of our biographical options, and as they divide the demanded and the forbidden in continuous dealing with changes, they have guided the Neanderthal for several ten thousands of years and our species up to the present day. The study of religions in my opinion may not be able, as long as it does not overlap theology or the philosophy of religion, to clarify whether at the beginning and at the end there is only coincidence or whether we are heading towards a transcendental destination on a fabulous pilgrim's path of life.

## Is religious sign-posting through the biographical universe – rational?

**Narrow & broad path**  
**(Christianity)**

**Halacha, from hebr. haloch**  
**„walk, stroll“**  
**(Judaism)**

**Shariah, from arab.**  
**„Path to wellspring“**  
**(Islam)**



**„Noble Eightfold Path“**  
**(Buddhism)**

**Tao, from chin.**  
**„way, path“**  
**(Taoism)**

**Shinto, jap.-chin.**  
**„way of the gods“**  
**(Shinto)**

But a properly understood approach of the biology of religion and a serious dialogue between natural and social sciences and the humanities, which Hayek and Frazer envisioned, might be able to bring about valuable and exciting insights. And it still couldn't take away each person's uniqueness, social contexts or individual faith-related decisions. The step into faith may altogether have been reproductively successful again and again – but it remains a severe pretence of knowledge either to forbid or enforce it.