

IMCZ NEWS



JANUARY 2017



PRESIDENTIAL DISPATCH

Contributed by IMCZ President
Roger Brooks

When we hear about the (capitalized) "Good News", especially around this time of year, it usually refers to the birth and sacrifice of Jesus Christ. Although many have suffered unconscionable cruelty in his name, the idea of a loving and forgiving God has indeed been good news for many others.

The good news I refer to, however, although it may be considered divinely inspired or even miraculous, is much less well-publicized, and is clearly attributable to human efforts. I refer, of course, to progress.

"Progress" is the title of a recent book (reviewed in the *Economist*) by the Swedish author Johan Norberg, who was recently interviewed in the *Sonntags-Zeitung*. Unusual as it is for me to endorse the views of a fellow of the *Cato Institute*, I find his message very important.

No News is Good News

It is well known that provocative, shocking and emotionally loaded reporting attracts more readers or viewers. As a consequence, bad news is the focus of much reporting. Despite all of our progress, there is always something bad happening somewhere. Thanks to the global reach of modern communication, we are continually inundated by bad news.

As Norberg points out, we are hard-wired by our evolution to look for problems. In view of all this, it is easy to forget how good we are at solving those problems, and how much is going right in the world. Here are some examples worldwide:

- Life expectancy has roughly doubled, and literacy has increased from 25% to 85% over the last century.
- Extreme poverty afflicts around 10% of the world's population, down from 60% less than 50 years ago.
- Malaria deaths are down by about half since 2000.



The Future isn't What it Used to Be

Some feel that these gains benefit only the developing world, and that the developed world is on the decline. Some even leverage this false perception into political capital. Of course, the most striking benefits are now accruing to those who have, until now, been left behind.

Nonetheless, Switzerland, despite being one of the most developed, continues to be rated **the most innovative nation in the world**. Here are some examples of progress in Switzerland:

- Traffic fatalities have fallen by 50% per decade for more than 50 years now.
- We use 17% less energy than we did 15 years ago.
- In the past 7 years alone, acts of violence have decreased by 15%.

We tend to take our progress to date, as well as its continuation, for granted, forgetting how much has been achieved. Our air traffic system is a remarkable example of economic, technical and political cooperation at a global level. I carry in my pocket more computing power than one could pack into an entire building fifty years ago. To quote the journalist Franklin Pierce Adams, "Nothing is more responsible for the good old days than a bad memory."

Much of the data informing Norberg's work can be found on [Max Roser's](#) website, [Our World In Data](#). An easily digestible summary of some of the major trends is presented in "[A history of global living conditions in 5 charts](#)". Another source for those needing a "fix" of good news is <http://humanprogress.org/>.

Hold Your Head Up

So don't let the bad news discourage you! Be proud of your humanity, and try to keep the ball of progress rolling along, even when you feel like Sisyphus!



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FUTURE EVENTS

- THURSDAY 12TH JANUARY 2017
Special Stammtisch on QROPS (Qualifying Recognised Overseas Pension Schemes)
18:00-20:00 hours City Garden Hotel, Zug, Sam Simpkin
- WEDNESDAY 18TH JANUARY 2017
Bowling at the Whiteline Bowling Centre Meierskappel, 19:30-22:00 hours
Stephen Butterworth
- SATURDAY, 21ST JANUARY 2017
The Annual Burns Night Dinner at Gasthof zur Linde, Steinhausen.
18:30-23:59 hours Bas Veenendahl
- THURSDAY 9TH FEBRUARY 2017
City Garden Hotel, Zug • Annual General Meeting AGM
18:30-21:00 hours Roger Brooks



Diet soda better than water for weight management?

Contributed by IMCZ member Remo P. Jutzeler van Wijlen, Head R&D Sponser Sports Food Ing. Appl Food Sciences, MAS Nutrition & Health ETHZ

Artificial sweeteners have a hard stand in the media, among conspiracy theoreticians, people generally sceptical about the food industry and also some scientists. The so-called non-nutritive sweeteners (NNS) have been perpetually accused of increasing appetite, inducing diabetes, causing cancer, or ADHD, and more recently, of altering the gut microbiome. Besides the safety concerns among the afore-mentioned people, the news mainly contains complaints about the uselessness of drinking calorie-free, artificially sweetened beverages regarding weight management and this has contributed to the notorious reputation of NNS. However, after many previous studies, two recent ones provide quite opposing evidence.

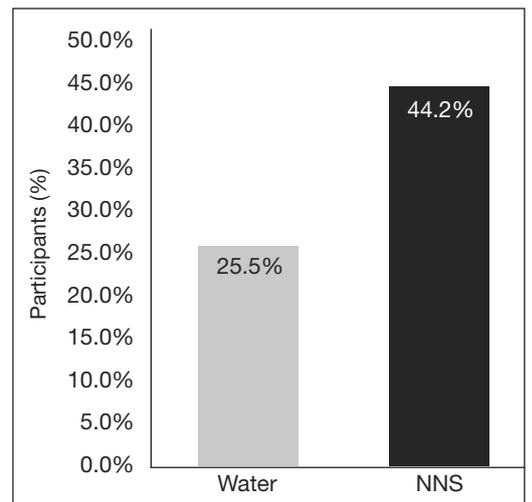
In a year-long trial, the effects of daily consumption of beverages sweetened with NNS were compared to water as part of a behavioural weight management program. The study, published in the journal *Obesity*, included a 12-week active weight loss program (Peters, 2014) and 40 weeks of weight maintenance (Peters, 2016). Of the 222 study finishers, the NNS group experienced greater weight loss during the initial 12 weeks, as well as more pronounced reductions in waist circumference than the control group, which consumed plain water! More precisely, 44.2% of the NNS participants versus only 25.5% of the control group maintained a weight loss of at least 5% at the end of the study. The regaining of weight in the NNS group was significantly less ($p > 0.001$). Also blood pressure, total cholesterol, LDL-cholesterol, and triglycerides were reduced, though, only the latter significantly ($p > 0.001$). Notably, participants in the NNS group reported decreased feelings of hunger compared to the water group, which clearly opposes the predominant public opinion about NNS. Claims voiced in the lay press and public opinion tend to accuse NNS of increasing feelings of hunger and promoting obesity by interfering with the normal mechanisms of energy balance. Based on the surprising outcome, the conclusion of this study was that NNS beverages were superior for weight loss and weight maintenance in a population of regular users of NNS beverages, who either maintained

consumption of these beverages or discontinued them and consumed water instead. This was observed during a structured weight loss program.

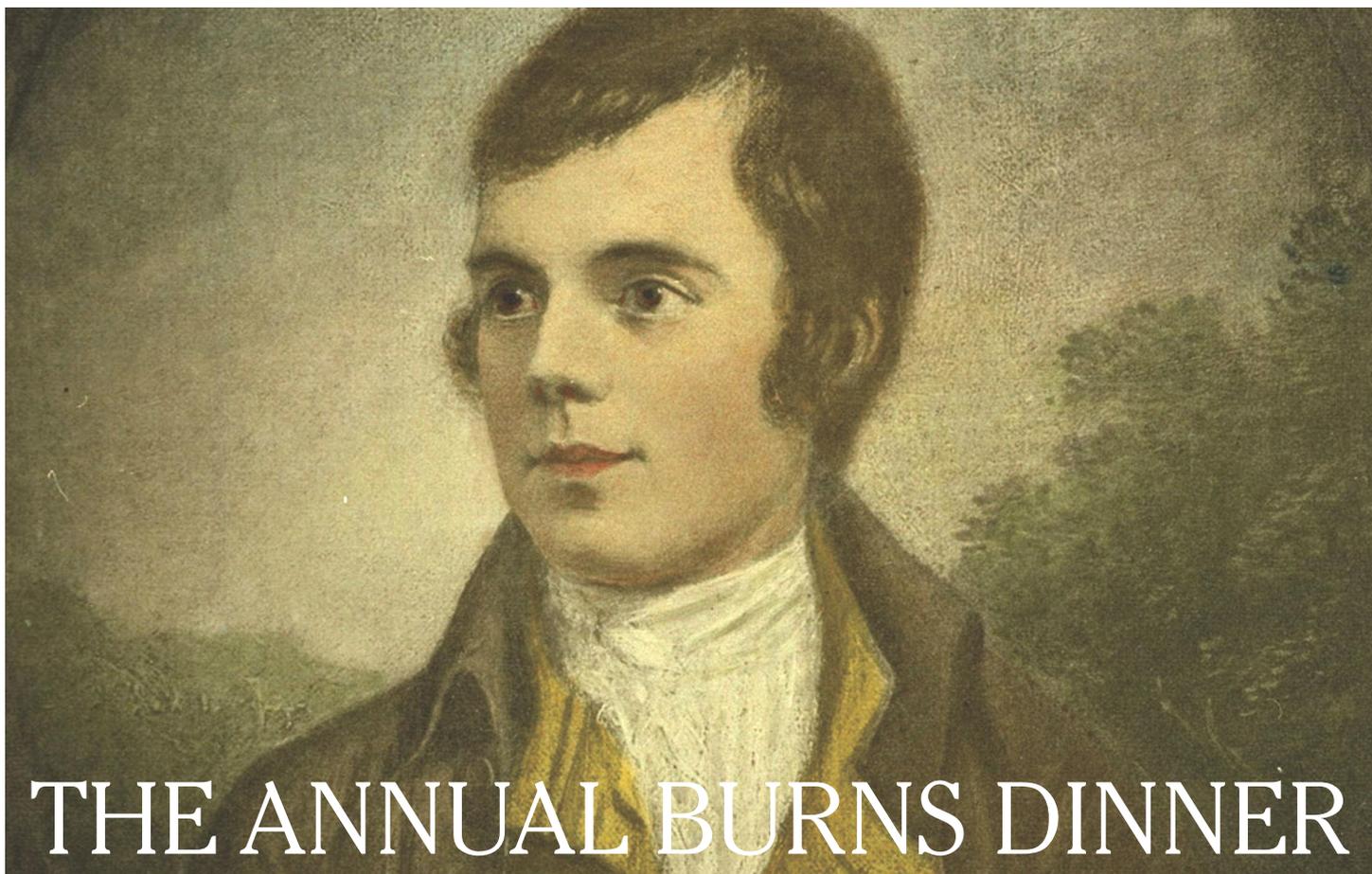
Mechanistically, the results of the above study may be explained by another recent publication in *Nutrition & Metabolism* (Sylvetsky, 2016). In this study, the researchers tested acute metabolic responses of NNS in isolation (in water or seltzer) and as used in diet sodas. It was already previously shown in humans, with and without diabetes, that diet soda with NNS administered prior to glucose ingestion, resulted in a 34% increase in glucagon-like-peptide 1 (GLP-1) compared to unflavoured carbonated water. GLP-1 is a gastrointestinal hormone, released in response to a meal and as a satiation signal involved in the control of meal size, the most studied aspect of the control of energy balance. In animals, GLP-1 has also been shown to increase energy expenditure, which would obviously also contribute to weight loss. The NNS were tested using varying amounts and combinations of sucralose, acesulfame-K, and aspartame. Now, what was very remarkable in this study, was that diet sodas with NNS augmented GLP-1. However, the sweetened water had no effect on the GLP-1 response, which remained unexplained. Nevertheless, the GLP-1 increase with NNS may at least partly be caused by sweet taste receptors, which are not only found in our mouth, but also in the intestine, where they modulate various gut hormone responses, including GLP-1. All NNS drinks also increased insulin after a subsequent glucose test - but the increase was so small that it is almost certainly physiologically irrelevant. Gastric emptying remained unchanged for all treatments, putting this option as a satiety enhancing mechanism aside. Also glucose levels were not affected. In summary, diet sodas with NNS augmented GLP-1 responses to oral glucose, whereas NNS in water did not. This in turn has been shown to play a role in limiting meal size and ultimately in energy balance.



The take-home message is thus, with the evidence from these studies at hand: there is no physiologically relevant acute effect of the tested NNS on either insulin or the glycemic response. If anything, there may be a beneficial increase of the "satiating" hormone GLP-1 by the ingestion of NNS compared to plain water, resulting in a welcome more sustainable weight loss and maintenance over time. Finally, we can also conclude that the association of NNS with overweight/obesity is not a causal one, but rather a consequence of overweight / obese individuals gravitating towards the consumption of sugar-free beverages with NNS, in the false belief that this alone would help them to lose weight or compensate for calories ingested from other sources.



IMCZ BOARD MEMBERS Thumbnail biographies of board members can be found on our website www.imcz.club under 'About Us' section	PRESIDENT Roger Brooks 079 583 9935 President@IMCZ.com	VICE PRESIDENT NEWSLETTER EDITOR Muthana Kubba 079 340 2592 Newsletter@IMCZ.com	SECRETARY Bill Lichtensteiger 079 378 6326 Secretary@IMCZ.com	TREASURER Iham Yüksel 079 955 2287 Treasurer@IMCZ.com
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THE ANNUAL BURNS DINNER

**Saturday, January 21st,
at 18:30 hours
Gasthaus zur Linde
Bahnhofstrasse 28
6312 Steinhausen**

- 100 m from village centre
- 450 m from Steinhausen station
- Buses number 6 & 8 stop in front
- Plenty of parking spaces

The apéro shall start at 18:30 hours, and the party shall continue until midnight. Calling all culture seekers... The IMCZ Burns Supper is the biggest Scottish event of the year. This is the 22nd year that the IMCZ will be celebrating the birthday of Scotland's National poet, Robert Burns. We will also be welcoming members of the ZIWC and their guests. It is a unique evening providing an opportunity to taste real Scottish atmosphere, formal and informal at the same time.

The evening will feature traditional Scottish fare, including the rousing sound of bagpipes from our guest piper, extracts from the works of Robert Burns (one serious, the rest funny) from our line-up of international guest speakers, people dressed in kilts and liberal doses of Uisge'beah (whisky). The menu starts with the traditional Scottish haggis as (optional) first course, but a vegetarian menu is also available.

For a whole evening of entertainment and a four-course dinner, with plenty of drams of the finest Scottish whisky, this evening is a "give-away" for just CHF 65 per person for IMCZ & ZIWC members and their partners, CHF 75 for guests.

We ask that the dress of the evening be in keeping with the traditions of the occasion so a kilt or something similar (or a jacket, tie, etc. if you don't have one) or, as Burns was a man of international outlook, your own national costume (or elements of it).

Remember, the number of guests is limited to 70 so please register now!
Registration is online.

The [IMCZ no-show policy](#) applies for this event.

FACIAL RECOGNITION

Contributed by IMCZ honorary member and Newsletter Editor Muthana Kubba

How to find one face in a million

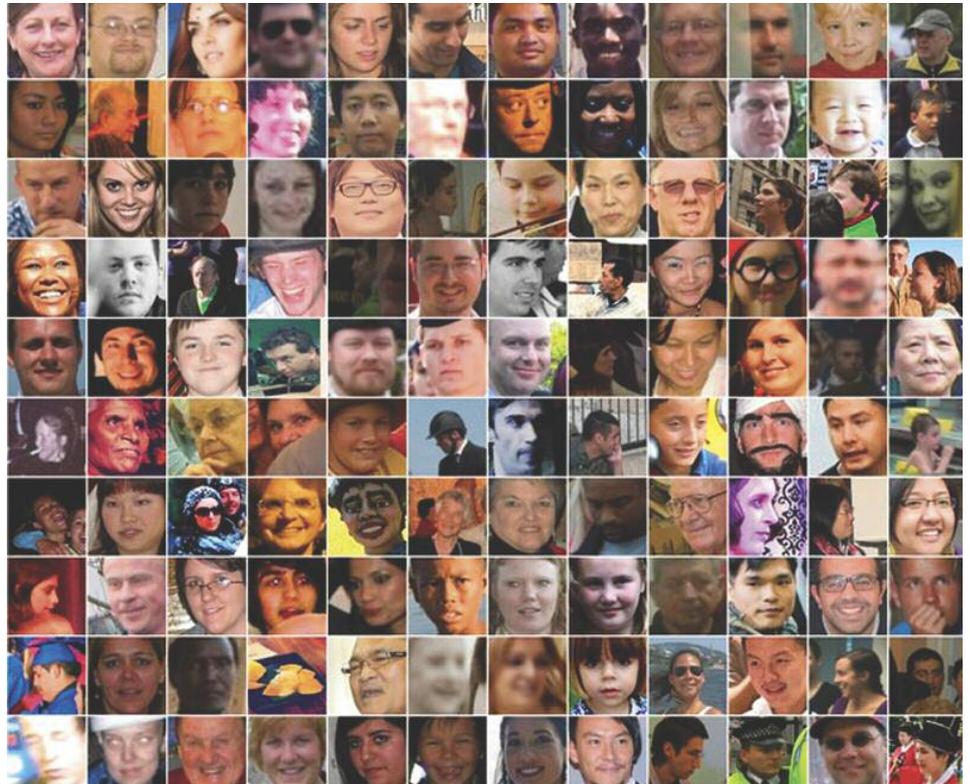
There has been a lot of hype in the media about facial recognition. Some claim that machines have become even better than people in recognising faces; others claim it is still a research curiosity. By any standard, the issue is of cardinal significance. For the secret services it is a bonanza. For ordinary people it puts a final signals the end of privacy. Imagine if a name can be put to any face by simply clicking on a smart phone, then this is the final adieu to privacy. I set out to find out the truth and the state of the art at present and in the near future.

During my last visit to London, whilst approaching passport control at Heathrow airport, there were long queues everywhere, but in one area there was no queue: "Biometric Passports". Having recently acquired a biometric passport, I decided to try it out. I was very surprised; I got into the United Kingdom for the first time in my life without someone asking me, "What is the purpose of your visit?" At first I was impressed, but thinking about it, it was hardly a case of facial recognition. All the machine had to do was to compare my face with the one stored on the chip in the passport. I wonder if it would have worked, had I grown a moustache.

The case we are trying to investigate in this article is the following. Could the passport machine compare my face with a million other faces, establish my stored identity and compare it with the one shown on the passport?

How does Facial Recognition work?

Whenever and wherever this question is raised, the word "algorithm" pops up. There are different methods to carry out Facial Recognition; they differ only in the algorithm they use. So what does this mysterious word mean and how is it used?



Algorithms are simply a set of step by step instructions, to be carried out automatically to achieve a given result. In fact we all use algorithms of one sort or another all the time without even realising it, e.g. for deciding upon medical treatment, using a knitting pattern, or operating household gadgets.

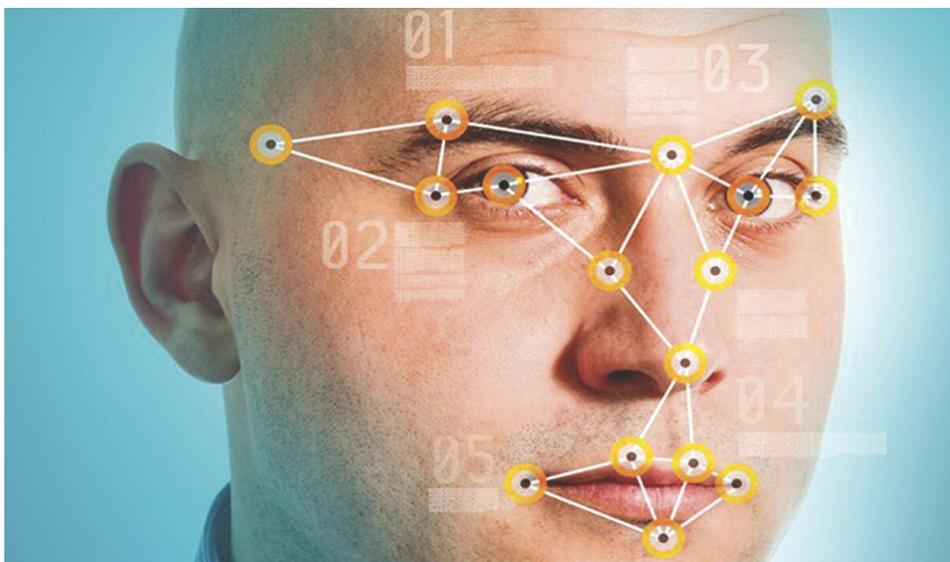
In facial recognition, a passport photo typically has 500x400 pixels. So the problem breaks down to how do we handle these 200'000 pixels and come out with an accurate answer? Human brains are fantastic at pattern

recognition, but still can't compare one photo with a million others and come out with an answer in a few milliseconds. Furthermore, we are not attempting to build a machine that mimics the human brain, but are trying to find a way to automatically process these 200'000 pixels, and compare them with a millions or so similar sets of pixels, and find out which ones match.

Basically, all current systems, try to extract some parameters from those pixels and then use different algorithms on these parameters to extract unique features which can be compared with similarly processed photos in order to find matches.

First attempts to extract parameters, concentrated on identifying facial features e.g. position, size and shape of eyes, nose, cheekbones and jaw. These parameters were then used to find a match within a database. This method was soon abandoned and replaced by neural networks in which the pixel sensors are connected in a pattern similar to the connections of the neurons in the brain. (See article in May 2016 Newsletter). As you may surmise from the simplified illustration below, 45 parameters are extracted from a photo of 8 x 8 pixels. In a full size model of 200'000 pixels, more reduction stages are used and 45 parameters would be again extracted from the image.

Facial Recognition is thus reduced to how to handle and process these parameters in order



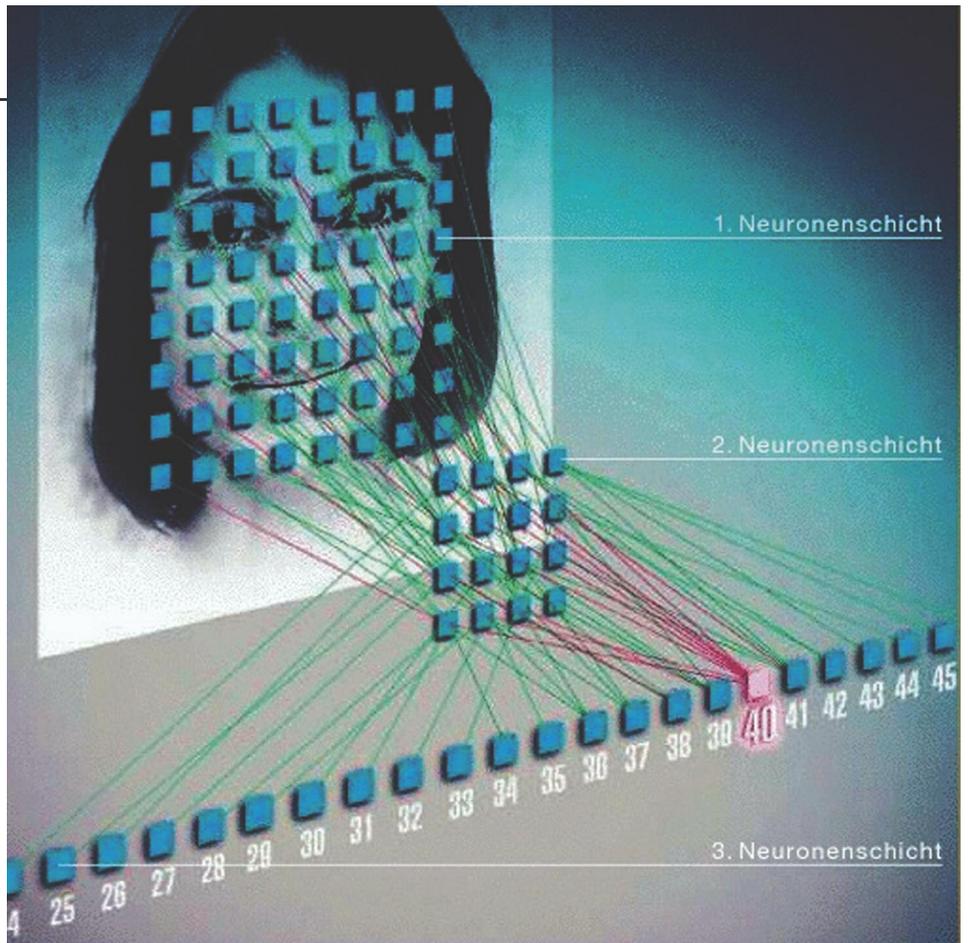
to recognise faces. Our famous algorithms refer to different methods for processing these parameters so that they give the same result for the same face no matter how that face is oriented, or the hair changed in colour or shape.

Current State of the Art

According to the IEEE (Institute of Electrical and electronic Engineers), the **currently available technologies** fall short in recognising faces when the database is one million or more. The best facial recognition algorithm available at present, **Google Facenet**, performed almost perfectly on a five figure database, but the accuracy dropped to 75% on a one million faces database. Other algorithms performed much worse, with the accuracy dropping down to 60%.

It is easy to fall into the trap of thinking that the problem of facial recognition has been solved, when several available algorithms give near perfect results on five digit databases. In the real world, however, systems must work accurately on much larger databases in order to be of any practical use. Correct identification is paramount in security verification and law enforcement applications. Imagine a scenario where one known suspect has to be picked out from hundreds of thousands of surveillance camera pictures, and all that possibly on-line!

Of course, we all know that it is only a matter of time until a system with 99% accuracy evolves independent of database size. At the present time, we are not there yet.



Further reading

https://en.wikipedia.org/wiki/Facial_recognition_system

https://en.wikipedia.org/wiki/Face_detection

<https://arxiv.org/abs/1503.03832>

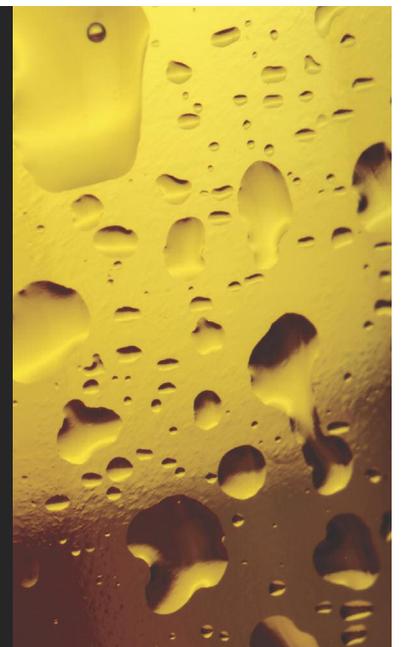
http://www.luxand.com/facesdk/?gclid=CN_7jcvDmdECFUKVGwodzkcPmg

<http://www.sciencedirect.com/science/article/pii/S026288569700070X>



STAMMTISCH

Every Thursday
from 18:00–20:30
At the City Garden Hotel





Investment Commentary, January 2017

Contributed by IMCZ member Christian Wagner

ECONOMY

The beginning of a year is always estimate time, and money managers are hoping to get a sense of the financial markets' direction. Although the effects of fiscal policy measures soon to be announced are still unclear and have a time-lag to become evident, the world economy has good prospects. Modest but steady growth in the industrialized world, with the USA surprising on the upside, and economic slowdown in several emerging countries are to be expected.

BOND MARKETS

As anticipated, the Fed raised its Fed funds rate by +0.25%, and the ECB left its reference interest rate unchanged. While Fed Chairwoman Yellen implied several, small rate hikes during the coming year, ECB Chairman Draghi remained expansive by extending his bond buy-back program till end 2017. Current expectations notwithstanding, a reversal of the ECB's stance over the next 12 months should not surprise and be considered a possibility.

EQUITY MARKETS

The less time spent by the media on pejorative reporting on anything or anyone associated with Donald Trump the better. Despite negative prejudgement of most high-ranking officials (Secretary of State a friend of Putin, head of EPA denies global warming, too many from the military or Goldman Sachs), markets seem quite satisfied. Although first earnings estimates are probably too high and valuations will get even higher, there is not enough (yet) evidence for a bubble.

CURRENCIES

There are a number of reasons for USD strength. On one hand, better economic prospects and an advantageous interest rate differential are obvious; on the other, short-covering by countries/companies with large USD-debts also contribute to its strength. It is important to note that the Fed will certainly have FX considerations on its mind when deliberating over further interest rate hikes, and that the last prolonged period of USD-strength (in the early 1980's) resulted in the Plaza Accord in 1985.

FOOD FOR THOUGHT

Despite the prevailing negative sentiment concerning the world in general, it is time to be more courageous with regard to equity markets. As a consequence, the large cash position is reduced by 15% and invested in equities of the favoured themes defense and luxury goods. Bonds are either unattractive (USD), not worthwhile (EUR) or outright dangerous (currencies of emerging markets). The asset allocation of 20% cash, 70% equity is supplemented by a 10% gold position to guard against unforeseen turmoil.

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GRAPHICS / PHOTOGRAPHY / VIDEO

GRAPHIC DESIGN _magazines, flyers,
newsletters, booklets, ...

PHOTOGRAPHY _portraits, headshots,
architecture, product photography, model portfolios,
stock images, event/party, ...

VIDEO _music videos,
corporate interviews, event coverage...

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Where to Ski in Switzerland: *It depends . . .*

Contributed by IMCZ Sports' editor Joseph Dow



People constantly ask me, "Which is your favorite ski area?" Well, I don't have a favorite because I enjoy variety and it depends on what type of skiing I want to do or with whom I'm skiing. And, my favorite area may not be your favorite or even a good choice for your level. A lot of factors come in to play, especially current snow conditions at particular areas and even time of year. So, to help you choose where to ski this season, I've decided to give you a list grouped into some specific categories.

Absolute Beginners / Very Small Children

Raten – This is a slope with a rope tow above Oberägeri. But, it has a snow playground and nice scenery, is close to Zug, and has a snack bar and a great restaurant.
skilift-raten.ch

Zugerberg – Right above Zug (*I have seen but not skied this one*)
zbb.ch/winter/skifahren

Rigi – A small children's area right up on the Rigi (*I have seen but not skied this one*)
rigi.ch/en/Experience-Enjoy/Winter/Families/Skiing-with-kids

Close Proximity

Stoos – A nice little area, near Schwyz, with pretty views at the top
stoos-muotatal.ch/en/page.cfm/winter/winter-sports/ski-snowboard

Hoch-Ybrig – A little bigger area, near Einsiedeln
hoch-ybrig.ch/winter/

Hochstuckli – Another small area, at Sattel (*I have seen but not skied this one, but it is probably the most popular ski area for people from Zug*).
sattel-hochstuckli.ch

Novices with some ability

Airolo – Just on the other side of the original Gottard Tunnel in Ticino. Fantastic area for beginners with a nice bowl up on the mountain with a long magic carpet lift, a rope tow and button lift. A full-service lodge is at the base of these lifts.
airolo.ch

Arosa-Lenzerheide – Arosa has its beginner area right up in the middle of the ski area on the mountain, which gives the newcomer a great introduction to real skiing, instead of being in some area off to the side, near a road.

arosalenzerheide.ch

Lenk – This area, on the Adelboden side, has a delightful, long, wide run that will thrill and build the confidence of any beginner.
lenk-simmental.ch

Andermatt – I mention this one because our member, Peter Widdup, is the director of Alpine Sports Andermatt, one of the ski schools in town and he is a fantastic teacher. He taught me some useful techniques in a single lesson. If you are serious about improving your skiing skills, take some lessons at his school.
anderematt.ch
alpinesportsanderematt.com

Great Relaxing Cruising

Aletsch Arena – Everything here is moderate pitch and great for letting the skis run.
aletscharena.ch

Crans Montana – The wide slope at Aminona is fantastic for maximum speed.
crans-montana.ch/en/ski

Scuol, Motta Naluns – The main run is a cruiser's delight.
engadin.com/ski-mehr/skigebiet-motta-naluns/skigebiet/?R=1&S=2

Belalp-Blatten – Right across from Aletsch, the Sparrhorn chair (longest in Switzerland, maybe even Europe) gives access to a myriad of nice smooth speed runs.
belalp.ch

Davos – The Parsenn is a cruiser's paradise.
davos.ch



World Class Resorts

(also the places that are snowsure at the beginning/end of the season, along with Saas Fee)

Zermatt – This resort has it all: historic village with top restaurants and shops, great cruising, unmatched scenery, some steep challenging runs, and international opportunities with Cervinia, Italy. matterhornparadise.ch

St. Moritz – The ultimate in luxury with three ski areas. The skiing is mostly intermediate, but there are many runs from which to choose. The top of Corvatsch is high-altitude and steep. stmoritz.ch

Sporty

Flims Laax – Challenging, but not too tough. It and Jakobshorn at Davos are also the top snowboarding locations in Switzerland. laax.com

Challenge

Verbier – some serious steeps and moguls, probably the toughest in Switzerland with the probable exception of “the Swiss Wall” at Portes du Soleil. verbier.ch

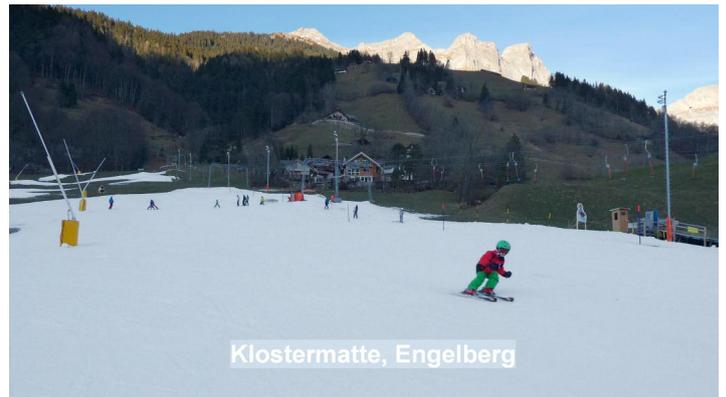
Veysonnaz – consistently steep. It’s not death-defying, but a week here will exhaust you. veysonnaz.ch

Engelberg-Titlis – The yellow Rotegg slope and the black runs from Stand have substantial steepness. titlis.ch

Andermatt – Great off-piste and even the marked black run off the Gemstock feels like the backcountry andermatt.ch

Gorgeous Natural Scenery

Zermatt – With the peerless Matterhorn and the magnificent Weisshorn, it is unrivaled. matterhornparadise.ch



Klostermatte, Engelberg

Jungfrau Ski Region (Grindelwald, Wengen, Mürren)

– The Eigerwand and Schreckhorn are extremely impressive. jungfrau.ch

Bellwald – This little, out-of-the-way area is breathtakingly gorgeous. bellwald.ch

I hope that gives you some ideas of where to ski and explains why I don’t favor a single area! *Don’t fret about lack of snow at the moment. It will come, just like last season. There is always snow to be found in higher elevation resorts. A couple of weeks ago, I went to Aletsch. Even at the very end of the tram ride, all I could see was brown. Yikes! When I walked to the lift I saw thin ribbons of white. Modern snowmaking is a true miracle, despite what the greenballs tell you. The conditions on the pistes were perfect and I had a sunny day essentially to myself with no rock hits. So, **think snow!!!***

Additional Information:

Where to rent equipment, especially for kids: proskirental.ch/en

Snow Conditions: snow.myswitzerland.com/snow_reports

SBB Snow’n’Rail:

sbb.ch/en/leisure-holidays/day-trips/snowrail.html

Weather: meteocentrale.ch • meteo.search.ch



Last game this year

Organised and compiled by
IMCZ honorary member Stephen Butterworth

For the last event of this year, we ended up with 9 players, with one excused unable to come. Boy did we all have fun, even though the scoring was marred a little by lots of Splits and unreliable lanes counting the incorrect number of pins. The alley was overbooked, so we started a little late, but eventually managed to settle down. Then interruption towards the end of the second game ruffled feathers and sent scores tumbling a little afterwards.

Anyway one can see the close scores on the bowled figures 299, 321, 323, 324, 325, 326 - the last 6 were that close! The handicapping is working very well. The night of course was Jake's with no one close!

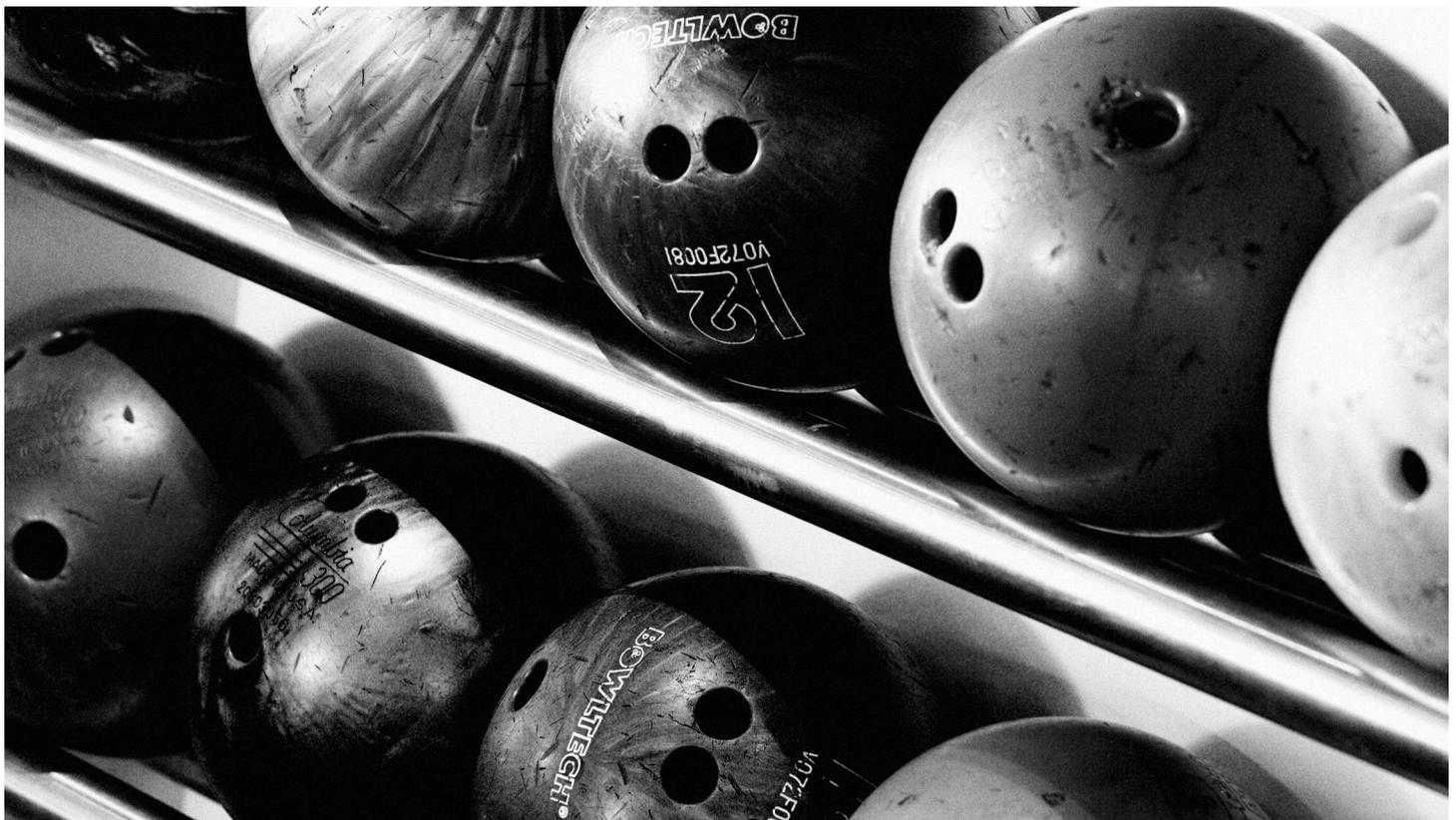
Hopefully we will have the first 3 events of 2017 soon booked up - I will, of course, give further information as and when those events are booked.

A short and sweet account then to end the year. A year of tumultuous changes in the world and one which we can only hope and pray improves just a little next year.

Happy Christmas and a healthy new year to all those bowlers that come regularly and of course to the rest of the club members!

First Name	Surname	Game1	Game2	Game3	Bowled total	overall_avg	STRIKES	SPARES	Split
Jake	Frazer	149	172	168	489	163	6	19	
Stephen	Butterworth	109	120	114	343	114	3	6	
Phil	Woodford	117	124	89	330	110	2	8	5
Christian	Wagner	108	118	100	326	109	3	7	3
Gary	Bull	98	135	92	325	108	2	5	2
Janis	Meier	88	112	124	324	108	3	7	3
Otto	Steuri	100	103	120	323	108	3	5	1
Roger	Dixon	131	87	103	321	107	2	7	5
Barbara	Harris	75	105	119	299	100	3	4	2

First Name	Surname	Game1	Game2	Game3	Handicapped	overall_avg	handicap	STRIKES	SPARES	Split
Jake	Frazer	149	172	168	621	163	44	6	19	
Barbara	Harris	75	105	119	560	100	87	3	4	2
Christian	Wagner	108	118	100	542	109	72	3	7	3
Stephen	Butterworth	109	120	114	541	114	66	3	6	
Phil	Woodford	117	124	89	528	110	66	2	8	5
Gary	Bull	98	135	92	526	108	67	2	5	2
Roger	Dixon	131	87	103	525	107	68	2	7	5
Janis	Meier	88	112	124	507	108	61	3	7	3
Otto	Steuri	100	103	120	458	108	45	3	5	1



Letters to the Editor

Small Modular Reactors (SMR)

I have had the pleasure of attending one of your "Stammtisch" gatherings while visiting Switzerland some years ago as the guest of your able and tireless Dr Muthana Kubba; our friendship goes back many years and we also share interests in science and technology. Since my visit and for many years now, Dr Kubba has put me on the readers list as a kind of "country member" I guess. I have often sent my comments or questions to the articles that appear in your magazine; but this time the article on Small Modular Reactors (SMR's) and the "the mini URENCO Reactor" has touched a special area of personal interest.

I read the Science & Technology article in your December Newsletter with great interest. URENCO is situated here in Ermelo and is a world leader in the processing of nuclear fuel and had been enriching Uranium and Plutonium for years. Their centrifuges are the most advanced in the industry; for that reason alone I am sure they are not dreaming!! The technology of the small ceramic coated pellets is well known to URENCO as well as to the German Nuclear Institutes in Karlsruhe where several decades ago they used similar technology in the Pebble Bed type reactors. The PWR type mini reactors now proposed by URENCO would be the ideal option given almost half a century of experience in PWR technology. The reactor pressure vessel needs to be opened perhaps once a year to shuffle the fuel around in a scheme designed to maximize "burning" rather than produce plutonium (as was usual in the first generation reactors in the USA / UK / USSR) for use in nuclear weapons; currently the stored tons of Plutonium obtained from disarmament agreements have become more of a burden and an environmental hazard and designs are at hand to "burn" the element commercially. With some knowledge of the Fuel Cycle gained at Bradwell Nuclear Power Station, elaborate programs will be required to optimize both the level of "burning", the number of movements to shuffle the fuel and the age of the cassettes. A major advantage of using the proposed TRISO (Tri Structure Isotropic) type fuel, which is lightly enriched with U 235 at 6%, would be in eliminating the need for hazardous and costly fuel reprocessing .

The design is interesting, but as they say "the devil is in the details". What I am missing of course are the details relating to the overall size which has to be large enough to contain several times the critical mass of around 7 kg of enriched Uranium to make sure of continuous chain reaction plus several multiples to achieve power generation

in the form of heat. The material of the casing / the cassettes is not mentioned, probably complex duplex steels to withstand the temperatures and the deterioration / weakening in the material caused by a phenomenon known as Neutrino Transport ; Neutrinos generated in nuclear reactors travel through matter and in general, undergo a process analogous to light travelling through glass and the deterioration process analogous to internal corrosion sets the limit to the lifetime of the casing.

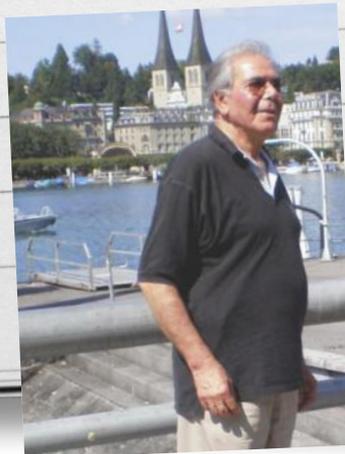
However the claim by the designers, that the reactor can be started and shut down quickly is physically impossible. This is due to a phenomenon called Xenon Poisoning. Xenon is a fission product and a huge absorber of neutrons. Its slow build-up even after shut down (euphemistically called Excursion!) will not allow restart until its half life has expired, about 7 or 8 hours if I can recall from memory. Several nights were spent at Bradwell waiting for the Xenon to die out so that we can pull the rods and get started.

The other claim by the designers that the nuclear reactor can be buried and operated remotely is more science fiction than reality; no licensing authority will allow such a power plant to be operated and controlled by instrumentation only!. Several tiers of controllers and monitors with their finger on the button will be imperative to minimize any risk. Of course the heat exchangers, turbines generators and the power transmission have to be located above ground close to a water supply source.

The buried power plants, for reasons of safety, need not only to be connected to the National Grid but also to above ground power sources such as Emergency Gas Turbine / Diesel Generators and Storage Battery Banks to ensure continuous power supply to the instrumentation and control systems.

Thanks to IMCZ News for bringing back the pleasant memories in Zug and to Dr Kubba for re-invigorating the grey cells. I wish your club great success, many enjoyable evenings and worthwhile articles in your magazine.

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Dialogue

Soon after a couple got married the following conversation took place between them:

Husband: At last! I can hardly wait!
 Wife: Do you want me to leave?
 Husband: No! Don't even think that.
 Wife: Do you love me?
 Husband: Of course! Always have and always will!
 Wife: Have you ever cheated on me?
 Husband: No! Why are you even asking?
 Wife: Will you kiss me?
 Husband: Every chance I get!
 Wife: Will you hit me?
 Husband: Hell no! Are you crazy?!
 Wife: Can I trust you?
 Husband: Yes.
 Wife: Oh my Darling!

After 10 years the same conversation took place, however, it started at the bottom upwards.



Driving under the Influence

A guy gets pulled over by the police, "Step out of the car" says the cop, "I am going to need you to take a breath analyser test." "I can't", the guy says. "I have very bad asthma that can set off an attack."

"Alright," says the cop, "then you're going to have to take a blood test." "Can't do that either," Jim replies, "I am a haemophiliac, if a wound is opened, it won't stop bleeding, and I could bleed to death."

"Okay," the cop answers.
 "Then I will need a urine sample."
 "Sorry," says Jim. "I also have diabetes, that could push my sugar count really low." "Fine, so just come on out, and walk a straight line for me."
 "I can't do that either," responds Jim.
 "Why not?" asks the cop.
 "Well, because I'm completely drunk! I could go to jail!"



Treasure Trove

An old man and his wife had been married for more than 60 years. They had shared everything. They had talked about everything. They had kept no secrets from each other, except that the little old woman had a locked chest on top of her closet that she had cautioned her husband never to open or ask her about.

For all of these years, he had never thought about the chest, but one day the little old woman got very sick and the doctor said she would not recover.

In trying to sort out their affairs, the little old man took down the chest and took it to his wife's bedside. She agreed that it was time that he should know what was in the chest. When he opened it, he found two crocheted dolls and a stack of money that came out to about Sfr 20,000.

Confused, he asked her about the contents. She replied: 'When we were to be married, my grandmother told me the secret of a happy marriage was to never argue. She told me that if I ever got angry with you, I should just keep quiet and crochet a doll.'

The little old man was so moved; he had to fight back tears. Only two precious dolls were in the chest. She had only been angry with him two times in all those years of living and loving. He almost burst with happiness.

'Honey,' he said. 'That explains the doll, but what about all of this money? Where did it come from?' 'Oh!' she said. 'That's the money I made from selling the other dolls.'



Period

A class was given a homework assignment to find out something exciting and relate it to the class the next day.

When the time came to present what they'd found, the first little boy the teacher called on walked up to the front of the class. He picked up a piece of chalk, made a small white dot on the blackboard and sat back down.

Puzzled, the teacher asked him what it was.

"It's a 'period'," he replied.

"I can see that," said the teacher, "but what is so exciting about a 'period'?"

"Darned if I know," said the boy, "but yesterday my sister was missing one, Mom fainted, Dad had a heart attack, and the boy next door joined the Navy."





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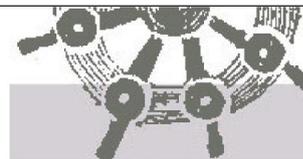
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