

An aerial photograph of a city model, likely made of wood or cardboard, showing a dense grid of buildings. A large, prominent tower with a spire is visible on the right side. The bottom half of the image is overlaid with a semi-transparent blue color.

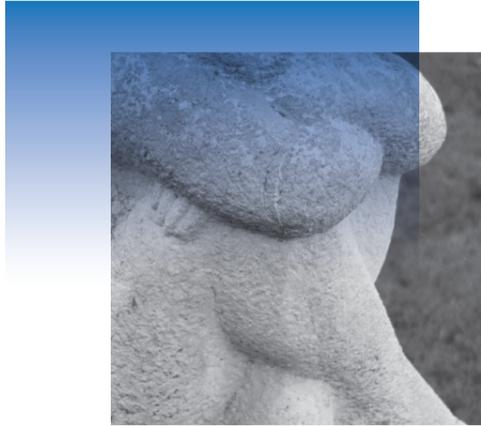
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Our mission has always been to combine the worlds of science and art. The emerging quality we have diligently been working on is academic content presented in an entertaining way. Over the last years we took several steps to reach this goal: the design is now fully in the hands of students from the *Minerva Art Academy* (this time with glorious photography showcasing highlights of Groningen!). Another step we have taken to pursue that quality is our partnership with *Studium Generale Groningen*. Recently, they hosted the Dutch premiere of *An Honest Liar*, a documentary film about James Randi, a stage magician who became a leading voice in the world of science and public education. Trickery used in the world of entertainment turned his eyes to the same skulduggery employed by pharmaceutical companies, or charlatans trying to fool scientists and the public. What better example than this to show how the worlds of art and science infiltrate one another? As part two to the Randi film premiere, Johan Braeckman gave a talk about critical thinking, a quality that cannot be emphasized enough in science and arts, and everyday life. As evident from his lecture (1), there are a number of cognitive tools you can use to think more reliably, some of them have already been discussed on the pages of *Honours Review*. Look no further than *intuition pumps* (hint: our interview with Dan Dennett in issue two). This current issue also includes an interview with a man who has a lot to say about blurring the lines of academia and arts — and in a different combination than Randi. John Merchant is a university professor, but worked with some of the biggest musicians

and even co-wrote a number 1 single. Now how about we take all of the above and mingle it together?

In the 1980s, a recording invention stirred a lot of discussion within the music industry and was even used on some major CD releases. Hugo Zuccarelli claimed he invented a system of recording sound that could replicate 3D acoustic-holograms produced by the human ear and thus produce lifelike audio recordings (2). He termed it *Holophonics*. Sounds strange? Well, the statement about holograms itself was not his own original discovery. The Institute of Audiology at the University of London was the first to record and report weak sounds emitted by the ear. But these sounds don't create holograms in the inner ear, rather being a seepage of biological energy from the very active sensory cells in the ear which react physically to the vibrations they detect (3). As to the rest, Zuccarelli did not present any empirical evidence that would be needed to support his model of the cochlea and its role in hearing, while also claiming to have invented a specific recording device that reproduced sound exactly as it is as a result of this theory.

Among many researchers who set out to clearly and convincingly question Zuccarelli's claims was Hero Wit, an audiologist from the University of Groningen. He concluded that there is no evidence to corroborate Zuccarelli's conjectures which he described as "a waste of time" (4). Kemp also questioned Zucarelli's claims in a rebuttal article: "Not since 1st April last have I read a 'scientific' article so devoid of scientific understanding, logic and rational thought (3)." These are of course only general dismissals, but once you delve into the full articles, you'll see how this is a triumph of critical thinking and science over baloney.

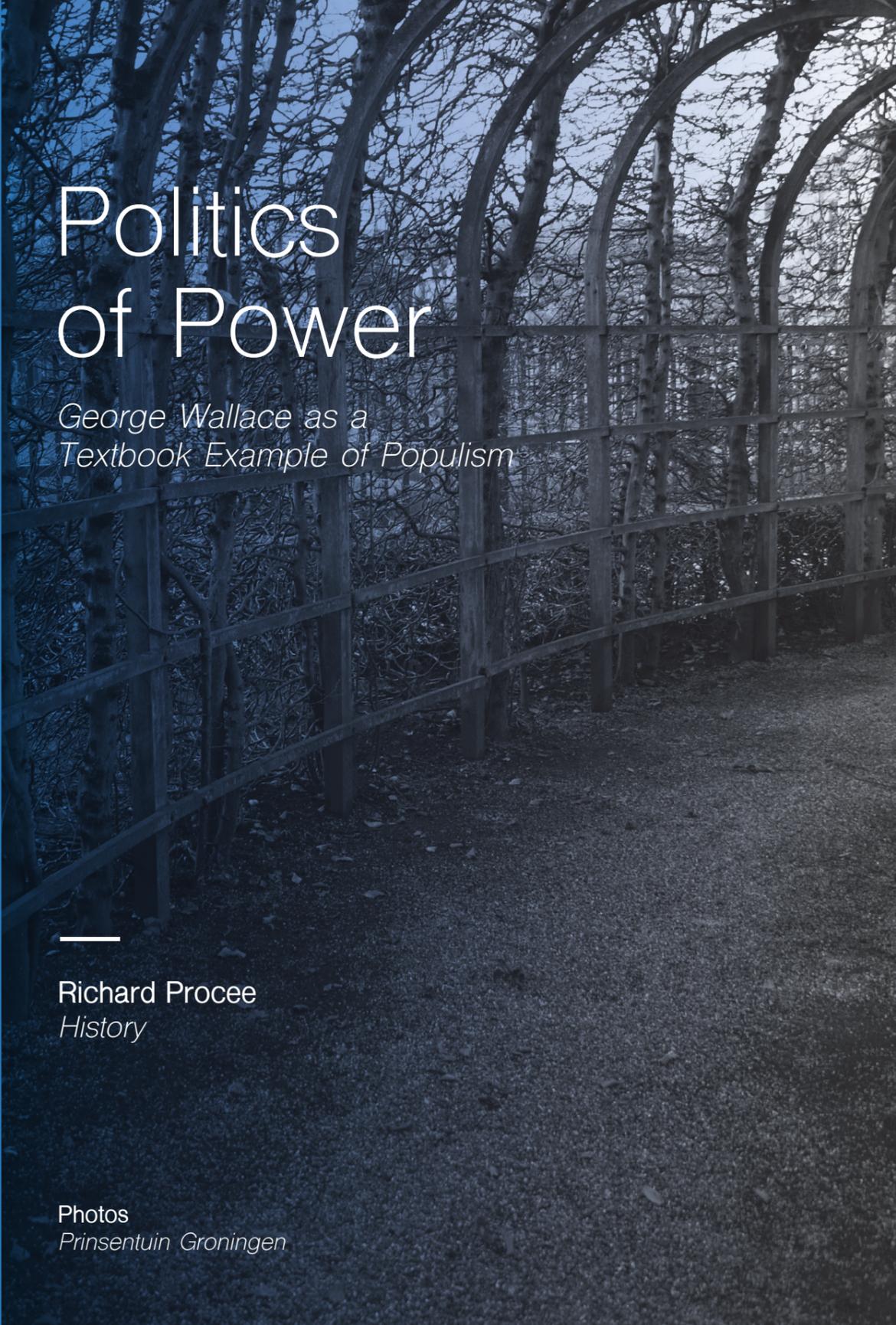
See which thinking tools are hammered here for full effect (yes, do it yourself. This is part of critical thinking, don't simply believe what I say!).

[APR](#)

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Politics of Power

*George Wallace as a
Textbook Example of Populism*

Richard Procee
History

Photos
Prinsentuin Groningen

In 1963, George Wallace, the influential American politician from Clio, Alabama, said during his first inaugural address: “Segregation now, segregation tomorrow, segregation forever” (1). However, in 1974, he completely reversed his earlier standpoint, when he told his audience about the segregationist institutions he had been defending a decade before: “It was not the kind of system we ought to have, it’s gone forever, thank goodness” (2).

From these words it becomes clear that Wallace had undergone a radical transformation during his career in the sixties and early seventies of the 20th century. In the first part of this article, Wallace’s career will be used as a historic case example to show how politicians may benefit from populist and opportunist political agendas. In the second part, his politics will be embedded in a more general account of populism, based on theories from the fields of sociology, political theory, psychology and history. Wallace is chosen as the subject of this article because of his influential role in American politics. He was mainly active in Alabama, where he was Governor during four installments in the sixties, seventies and eighties. Wallace not only dominated the political scene of Alabama for three decades, but also played a pivotal role in American national politics; he competed in the Democratic primary elections for the presidency three times and he participated in the presidential elections of 1968 as the candidate for the American Independent Party. The transformations that George Wallace underwent during his political career are what is most remarkable about him as a person and politician.

Wallace began his political career as the pupil of the liberal and populist politician James ‘Big Jim’ Folsom. It is important to note

that in this article, the word liberal is used with its American meaning. So, liberalism will refer to a progressive political ideology based on equality and civil rights for all citizens. Wallace’s political views in his early career were liberal and racially moderate just as that of his mentor. However, after he had lost the 1958 elections against a very racist politician, he made his first conversion, acquiring worldwide fame as the most racist and conservative politician in the United States. Racism and segregation in America were institutionalized in the judicial system during the first half of the twentieth century when judges applied it in their verdicts (and when the Supreme Court agreed with this policy). Blacks were seen as inferior by the common white southerner and widespread violence was directed against them. Organizations like the Ku Klux Klan (KKK) and the Citizens’ Councils were very popular at that time. This resulted in a distinct and unique political culture in the South, and during a certain period in the fifties it was nearly impossible for a racially moderate politician to be elected for public office. Another important aspect of this political culture was the dominance of the Democratic Party. This Party ruled the entire South, in what was virtually a one-party system. Historians have called this the ‘Solid South’ of the Democratic Party (3).

Two racist organizations. The KKK is the more violent and lower class organization, while the Citizens’ Councils are organizations of local influential people aiming to economically and politically repress blacks.

During this period Wallace became a part of this political culture, as he adhered to what historians have called ‘massive resistance’, a phenomenon that occurred between the end of

the fifties and the early seventies in the South of the United States. It entailed massive political resistance against desegregation. It was primarily aimed against the desegregation of the educational system after the Supreme Court in *Brown vs. Board* (1954) had ruled segregated schools unconstitutional (4). That Wallace adhered to this became visible during his political campaigns, as well as in his policy as Governor in the sixties and the early seventies. During this period, he gave two famous speeches in which his political agenda became particularly clear. The first was his inaugural address of 1963, during which he pledged to defend the state's segregated school system, uttering his famous phrase: "segregation now, segregation tomorrow, segregation forever" (1).

*Segregation now,
segregation tomorrow,
segregation forever!*

The second example is the speech he gave in 1963 at the University of Alabama when the federal government tried to forcefully integrate the university. In this speech, he condemned this integration and pointed at the sovereignty of the state of Alabama and its state's rights (5).

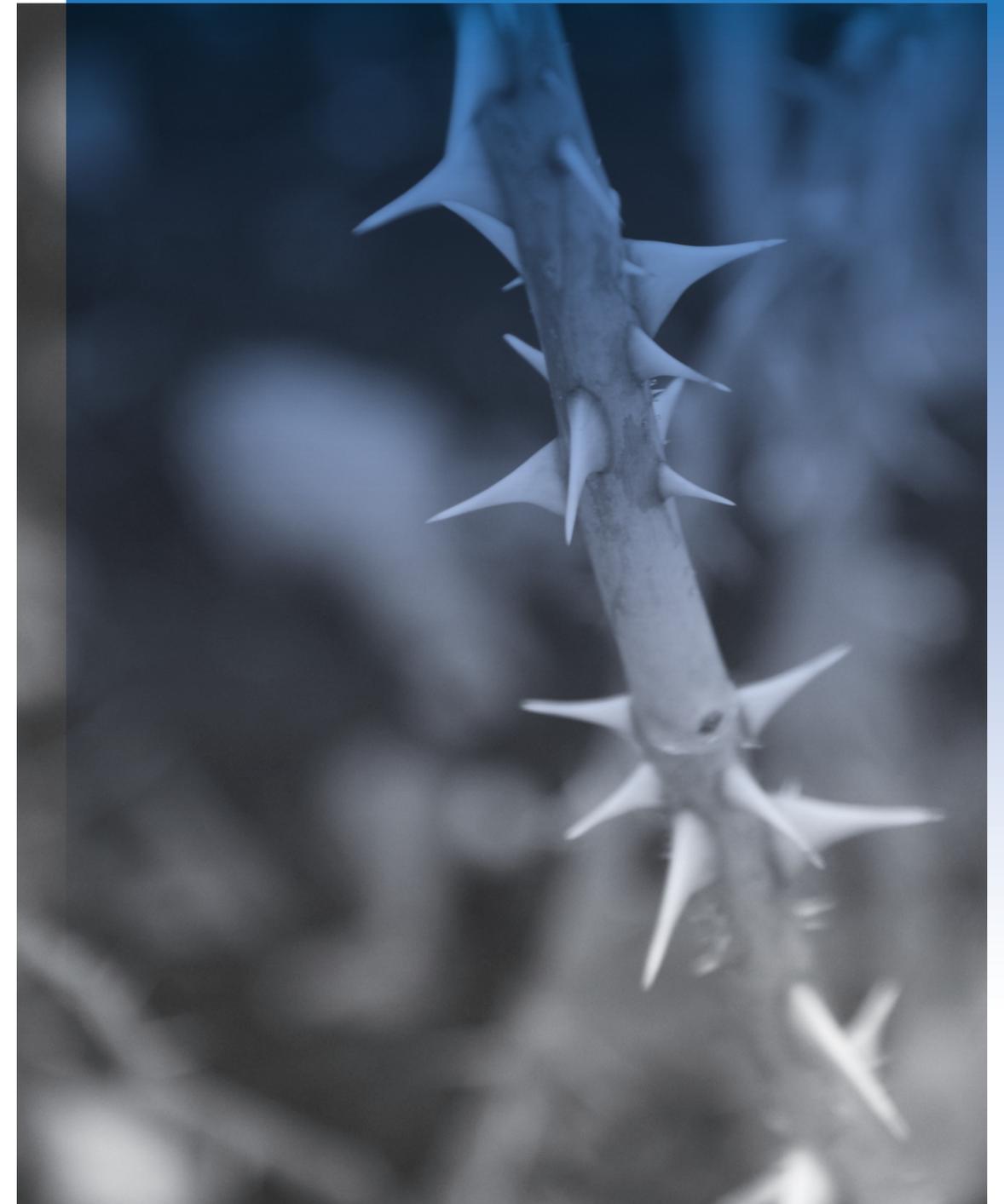
In this second speech, Wallace was already less racist and more cryptic; he spoke in more covert words about segregation. This development can be seen even better further on in his career, when Wallace became more moderate under pressure of national publicity and national aspirations. During his presidential campaigns he was less radical than before, in order to attract votes amongst moderate Democrats in the North. Furthermore, he had to appear like a decent and serious contender

for the presidency to the entire country. This led to an astonishing contradiction, because Wallace, in his campaigns within Alabama in the sixties and seventies, radicalized even further as a racist proponent of segregation.

States' rights concern the rights of the sovereign American states towards federal government. This concept was used by conservative southern politicians at the time of the massive resistance as a euphemism for the system of Jim Crow and segregation.

This culminated in his gubernatorial campaign against his former ally Albert Brewer in 1970, during which he combined blatant racism with very dirty personal attacks on his adversary. This campaign was so extreme that it was named the most controversial and dirty political campaign in American political history (6). When Wallace campaigned inside Alabama he was a completely different politician than when he was active on the national stage, because he had to keep the different wishes of his different electorates in mind.

Other causes for Wallace's transformation were new developments in the American South during the sixties. The Civil Rights Movement had advanced, blacks had gotten civil rights (most importantly voting rights) and the Republican Party had emerged as a serious contender to compete with the Democrats for the Southern vote (7). As a reaction to this, Wallace apologized for all the things he had done in all the years before (2) and started forming so-called biracial coalitions, which consisted of both white and black voters. After the South had changed, Democratic politicians from the South used them frequently. George Wallace can be seen as a precursor to these politicians, because he used similar strategies



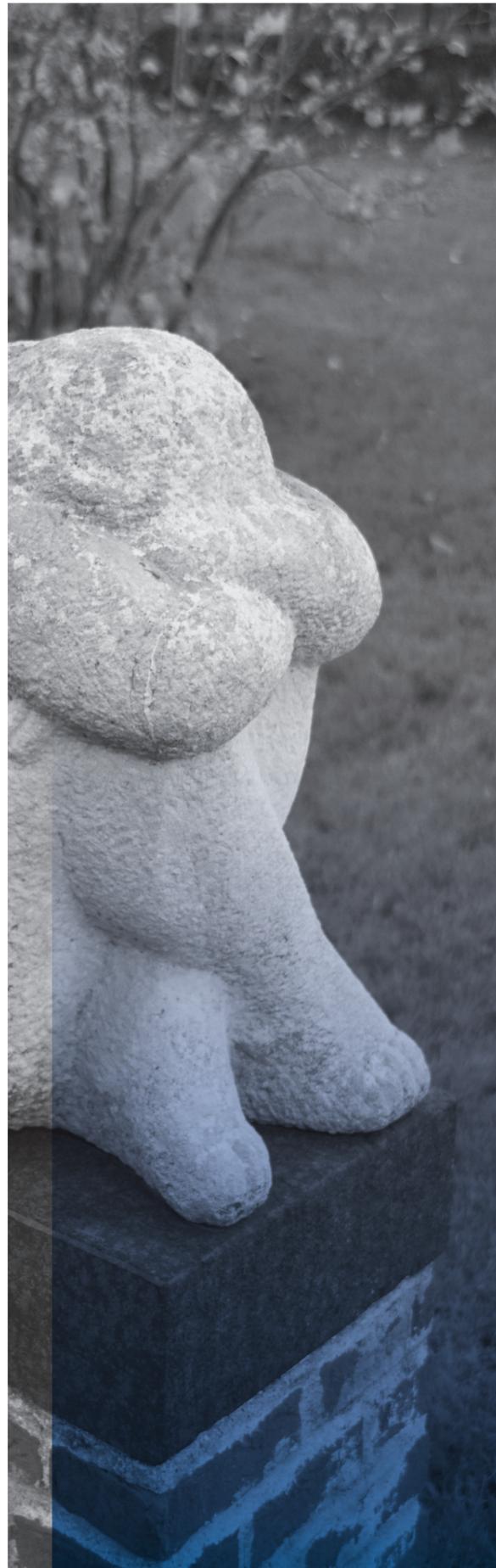
and the black voters were important for his election in 1982 too (6). Wallace formed these biracial coalitions by pleading the case of poor and lower middle class citizens of both races. When he became Governor of Alabama for the last time in 1982, he won for a large part because of the black votes he attracted. During his last period as Governor, Wallace did a lot for the poor people of the state; he

improved the state's infrastructure, developed policies to help the poor farmers and advanced the educational system. Especially the black people of Alabama (who were mostly very poor) profited from this. Lastly, he appointed more blacks to high positions in the state government than anyone had done before him (8). With these transformations a certain circular composition becomes visible in Wallace's career. He started

his political career as a very liberal and racially moderate politician, followed by a decade of being a very racist politician defending segregation and, lastly, he ended his career the way he started. The reason that Wallace reacted so directly to the changes in his political surroundings (i.e. the political culture of the area in which he was active) and why he so radically changed his political style, rhetoric and policy multiple times, was caused by his desire to be in high-stake politics. He was so strongly influenced by his electorate and his political surroundings that he even fared two radically opposing political courses at the same time, in order to please two different electorates with conflicting wishes. In this respect, Wallace was certainly a very opportunistic politician, a populist led by his will to be in power.

In the second part of this article, George Wallace's politics will be discussed in a broader analysis of the concept of populism. Daniele Albertazzi and Duncan McDonell, two influential political scientists, defined populism as an ideology that "pits a virtuous and homogeneous people against a set of elites and dangerous 'others' who were together depicted as depriving (or attempting to deprive) the sovereign people of their rights, values, prosperity, identity, and voice" (9). This definition of populism is widely accepted and other definitions share most of its key characteristics.

A central feature for all populist politicians, and George Wallace in particular, is the use of the notion of 'us against them.' In psychology, this concept is called in-group favoritism. Throughout history this notion has been used to such a large extent that we could even call it a sociological basic feature of humankind. The first feature of



Wallace was certainly a very opportunistic politician, a populist led by his will to be in power.



this phenomenon is the appeal to the common identity of the 'own group.' For Wallace this was his southern identity and the according values he defended. Wallace was proud of his humble origins and always emphasized his southern identity; he used this to connect with his audience. He, for instance, referred to important figures and key events from southern history to legitimize his own political agenda in his inauguration speech of 1963. In this speech he also glorified the southern people. The second feature is the establishment of 'the other,' or a scapegoat against which the own group is differentiated. George Wallace, for example, raved against the (leftist) political elite from the North, or sometimes against the black population of Alabama, and at other times against the 'bloc-vote' of progressive white and black voters who combined their powers to battle against him. This antagonizing aspect of identity was, and is, so important for populists, that historian Chris Lorenz called "the need of a 'negation' in articulating one's own identity" central in all identity building. (10) Wallace argued in his speeches and interviews that he had to defend segregation, southern values and the southern identity against attacks from liberal and leftist politicians from the North. This is very clearly in accordance with Albertazzi's and McDonnell's definition of populism.

An American historian, Michael Kazin, connects George Wallace with America's long history of political populism (11). In the 1890s and 1900s, this American populism was embodied by the People's Party (or Populist Party) of the United States. This was an alliance of farmers, laborers and lower middle class citizens who had been pushing for a more equal distribution of wealth in the United States, because the income divergences increased dramatically since the Industrial Revolution and the modernization the country had experienced. This party was quickly followed by individual politicians defending the poor and middle class citizens in a populist way.

»Let us rise to the call of freedom loving blood that is in us and send our answer to the tyranny that clanks its chains upon the South. In the name of the greatest people that have ever trod this earth, I draw the line in the dust and toss the gauntlet before the feet of tyranny ... and I say ... segregation today ... segregation tomorrow ... segregation forever«

»If you want to save Alabama as you know it REMEMBER! The Bloc Vote (Negroes and their white friends) nearly nominated Gov. Brewer on May 5th. This white and black social-political alliance MUST NOT DOMINATE THE PEOPLE OF ALABAMA! This spotted alliance must be defeated! This may be your last chance. VOTE RIGHT! VOTE WALLACE!«

Even though they did not form any significant party like the People's Party, they certainly had significant influence. An example of a politician from this school is Wallace's mentor James 'Big Jim' Folsom.

Politicians in America always had to combine this kind of leftist populism with conservative elements, because America was such a highly conservative country. This is connected to another characteristic of populism: it cannot be placed within the traditional political spectrum of left-wing and right-wing politics. Populist politicians appeal to the people and not to a particular political ideology. This is also the case with George Wallace; on the one hand he bared characteristics of leftist and socialist populism, because he defended the lower and middle class citizens of his state. On the other hand, Wallace also made use of a completely other kind of populism, namely conservative and racist populism. Hence, he clearly had both left-wing and right-wing populist standpoints. This resulted in his nickname 'the poor man's segregationist', given by the American historian Alexander Lamis (12). During certain periods in his political career, Wallace was more of a segregationist and at other times he was more of the 'poor man's politician.' Notably he always used a combination of these two elements in his rhetoric.

In conclusion, George Wallace was a textbook example of a populist. One of his most remarkable qualities as a politician was to feel what an audience expected of him and to deliver accordingly. He is only one example of a populist politician, but what his career has shown us is very important, since populism is something which always has been present in politics all over the world, and remains to play an ever more important role today. Wallace's career clearly illustrates how favorable his tactics were for him and how easily the electoral public accepted them. His political career therefore demonstrated how

opportune it can be for politicians to listen to their audience and to act accordingly – in other words, to be a populist.

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To Join or Not to Join

A Choice for Turkey

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The decision at the Helsinki Summit in 1999 to grant Turkey candidacy status marked the start of an enhanced political dialogue between a country situated on the outskirts of Europe and the European Union (EU). However, in 2006 the communion already came to a halt. The European Council concluded that further accession negotiations would not be opened on eight chapters, and no chapter would be provisionally closed due to Turkey's refusal to apply the Additional Protocol of the Ankara Association Agreement to Cyprus. The political discrepancies between the EU and Turkey are subject to numerous debates, and the discussions about EU membership are, as a consequence, primarily of political nature. They include, among other topics, the promotion of democracy, the human rights record and civil society. Nevertheless, the EU is still first and foremost an economic union with political integration lagging far behind.



Turkey is a candidate state destined to join the Union (1).

To consider Turkey's potential accession to the EU in light of its economic integration, this article focuses on the current state of the Turkish economy and in how far it has already converged to those of the current EU member states.

Theoretical Framework

The study of the economic implications of a potential EU membership for Turkey is based on the Theory of Optimum Currency Areas (OCA), based on contributions by Robert Mundell (1961) (2), Ronald McKinnon (1963) (3) and Peter Kenen (1969) (4).

■ An agreement made in 1963 between Turkey and the EU aiming towards the accession of the former into the latter.

The basic argument of OCA theory is that regions exposed to symmetric shocks as well as regions possessing appropriate adjustment mechanisms for the absorption of asymmetric shocks, may find it 'optimal' to adopt a common currency. This theoretical framework was chosen, because when a country accedes to the Union it seems likely that it will also join the European Economic and Monetary Union (EMU) at later stages, due to the strict application of the membership criteria (5).

● Supply or demand shocks that are similar across one region to another. An example of a supply shock would be the rising oil prices that make it expensive to use oil during production.

The Theory of OCA has become a popular approach for analysing the costs and benefits of monetary integration, in particular with regard to the EMU and the eurozone. In order to assess the expected gains from adopting a common currency, a set of adjustment mechanisms as well as characteristics that countries should preferably share were established.

According to Mundell, factor mobility - the ability of means of production such as labour to move across borders - is the key criterion. In the event of an asymmetric demand shock, one that does not affect all currency union members to the same extent, a mobile workforce can restore equilibrium. Under a flexible exchange rate regime, countries would normally adjust their exchange rates to either stimulate or dampen aggregate demand.

However, as a consequence of adopting a common currency, member states gave up their monetary independence. Thus, as the ability to conduct monetary policy no longer rests with national authorities, factor mobility can alleviate the cost of asymmetric shocks. The greater the propensity for labour to flow from depressed to prosperous regions, the less the need for different policy responses (6).

■ Total demand for finished goods and services from the perspective of the entire economy at a given time.

Hence, Mundell defined an optimum currency area as an area with perfect internal mobility of factors (7).

In reaction to Mundell, McKinnon argued that the degree of openness of a country's economy, defined as the share of exports to Gross Domestic Product (GDP), could affect the potential costs and benefits of a monetary union. Countries for which trade accounts for a high proportion of domestic output, those that export and import a large share of their GDP, can profit from participating in a currency union. These states will most likely benefit from the trade increase brought about by the adoption of a common currency.

■ The market value of all finished goods and services within a country's borders in a given year.

Together with Mundell and McKinnon, Kenen's point regarding product diversification constitutes the classical groundwork for OCA. Kenen states that economies exporting well-diversified products are less vulnerable to sector-specific shocks. A country that has a

wide range of products will experience a smaller decrease in production in the event of an asymmetric demand shock, because any particular good that can be potentially affected by a shock weighs relatively little in total production. Therefore, economies with a broad spectrum of goods and of similar structure may find it beneficial to form a currency union.

The general framework of OCA theory is usually regarded as a subset of criteria to decide whether or not to form a monetary union, and not as a clear-cut procedure that can be based on empirical evidence. As a consequence, the actual operationalization of OCA criteria has followed different approaches. One procedure was put forward by Jeffrey Frankel and Andrew Rose, arguing that "a country's suitability for EMU entry depends on the intensity of trade with EMU members, and the extent to which its business cycles are correlated with those of other member states" (8). The following case study adopted this approach and examined the degree of trade integration and business cycle synchronization.

Case Study – The Turkish Economy in Comparison to the EU Member States

To evaluate the current state of the Turkish economy vis-à-vis the EU economies, the evolution of trade integration, the degree of openness of the Turkish economy in comparison to those of several other EU member states, and the convergence of business cycles need to be examined.

Trade Integration

Countries participating in a currency union are confronted with significant costs and benefits

arising from the integration of monetary policy. Benefits include reduced transaction costs that will make intra-community trade relatively cheaper, raising national income. Therefore, countries with intensive trade relationships with other member states are likely to gain relatively more than those with weaker trade links and a lower degree of economic integration. In this respect, a parallel can be drawn to McKinnon who argued that the degree of openness of an economy is positively related to the expected gains from a currency area.

For decades Turkey's international trade has been dominated by EU countries. The Union constitutes the main trading partner of the Republic and accounted for 37,0% of its total imports and 38,8% of exports in 2012. In this respect it is important to mention that within the EU, the EU15 contributed the major share to the trade flows. During the last ten years Turkey diversified its trade relations towards the rest of the world, in particular other Asian

the fact that the trade volume kept increasing continuously. It follows that Turkey and the EU did not pursue further trade integration as expected after the creation of the Customs Union in 1996 (9). The percentage shares of both imports and exports are even below the levels during the years prior to the agreement.

EU member states prior to the accession of the candidate countries on 1 March 2004, including Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

When considering future steps towards deeper political and economic integration, these findings should be taken into account in order to assess the actual costs and benefits for Turkey. The anticipated positive economic effects are possibly smaller than assumed. With respect to economic openness, in compa-

does not solely depend on trade policies, but also on a variety of other factors such as the sectoral structure and the size of the economy (10). Furthermore, one should note that Turkey exports relatively little to the EU compared to earlier candidate states. Lejour et al. (10) argue that trade integration is in part less advanced, because various barriers to trade remain in place. They underscore that to integrate into the EU market, Turkey still has to implement measures concerning the removal of technical barriers to trade, to harmonize commercial policy, align itself to the preferential customs regime, and abolish state monopolies and state aid as required by the economic accession criteria (11). Thus, there still is potential for further economic integration. However, the

decreasing shares of exports to the EU and imports from the Union give reason to doubt whether it is actually in the Turkish interest to pursue increased economic integration with the EU.

Business Cycles

The term "business cycle" refers to economy-wide fluctuations in production, trade and economic activity in general, appearing as the upward and downward movements of the levels of GDP. They are usually measured by considering the growth rate of real gross domestic product, the annual growth rate of GDP volume. Whether the trends in production of the EU and Turkey are related or not is of

For decades Turkey's international trade has been dominated by EU countries.

countries (9). In 2003, products from the EU still represented over 50% of all Turkish imports and accounted for nearly 60% of export destinations. However, between 2012 and 2014 the share of imports from the EU dropped by 13%, and the percentage of exports to the EU decreased by nearly 17%, despite

risson to other EU countries, Turkey is least open to trade. A relatively low degree of openness implies that a trade increase due to the accession to the internal market of the EU will have less effect on the total economy than for countries with a respectively higher export to GDP ratio. But it is important to mention that openness



particular importance for Turkey. Relatively low rates of correlation indicate that country-specific shocks may still have significant effects. Co-movement of business cycles and national output suggests that economies are closely integrated and are subject to quite similar demand shocks. Thus, similar business cycles constitute favorable preconditions for integration and the creation and stability of a currency area (12).

In case of a monetary union, the stage at which Turkey is compared to the EU's business cycle has significant implications for the Turkish economy. When, for example, the EU undergoes an economic expansion with high real GDP growth rates, it is natural that the European Central Bank will increase interest rates to dampen aggregate demand. However, if Turkey were to simultaneously face a contraction in industrial output, the high interest rates would further reduce production, causing major harm to its economy. Over the years, Turkey experienced high, but volatile, real GDP growth rates. In comparison to the average EU and the German business cycle (which is often used because it is known to dominate the European business cycle), Turkish rates exceed those of the European countries at nearly every point in time. Hence, in regard to a possible EMU membership in the future, pooling monetary sovereignty will most likely result in costly policy mismatches. Turkey should treat EMU accession with caution and should carefully weigh up the costs and benefits involved with EU membership.

Concluding Remarks

The results of the case study raise considerable doubts about whether the Turkish economy

has integrated sufficiently with that of the European Union, and whether it is actually in Turkey's interest to pursue further integration. Against all expectations, the country diversified its trade away from the EU and its degree of openness is less than that of earlier accession countries. Moreover, it is important to keep in mind that Turkey experiences high, volatile economic growth rates that in general exceed those of the EU, and that it has a low degree of business cycle synchronization with the main EU partners. Consequently, it may be problematic to unite both parties under a common monetary authority due to Turkey's trade diversification, its low degree of openness and the business cycle mismatch. These findings should be taken into account when assessing the prospects for Turkish integration into the

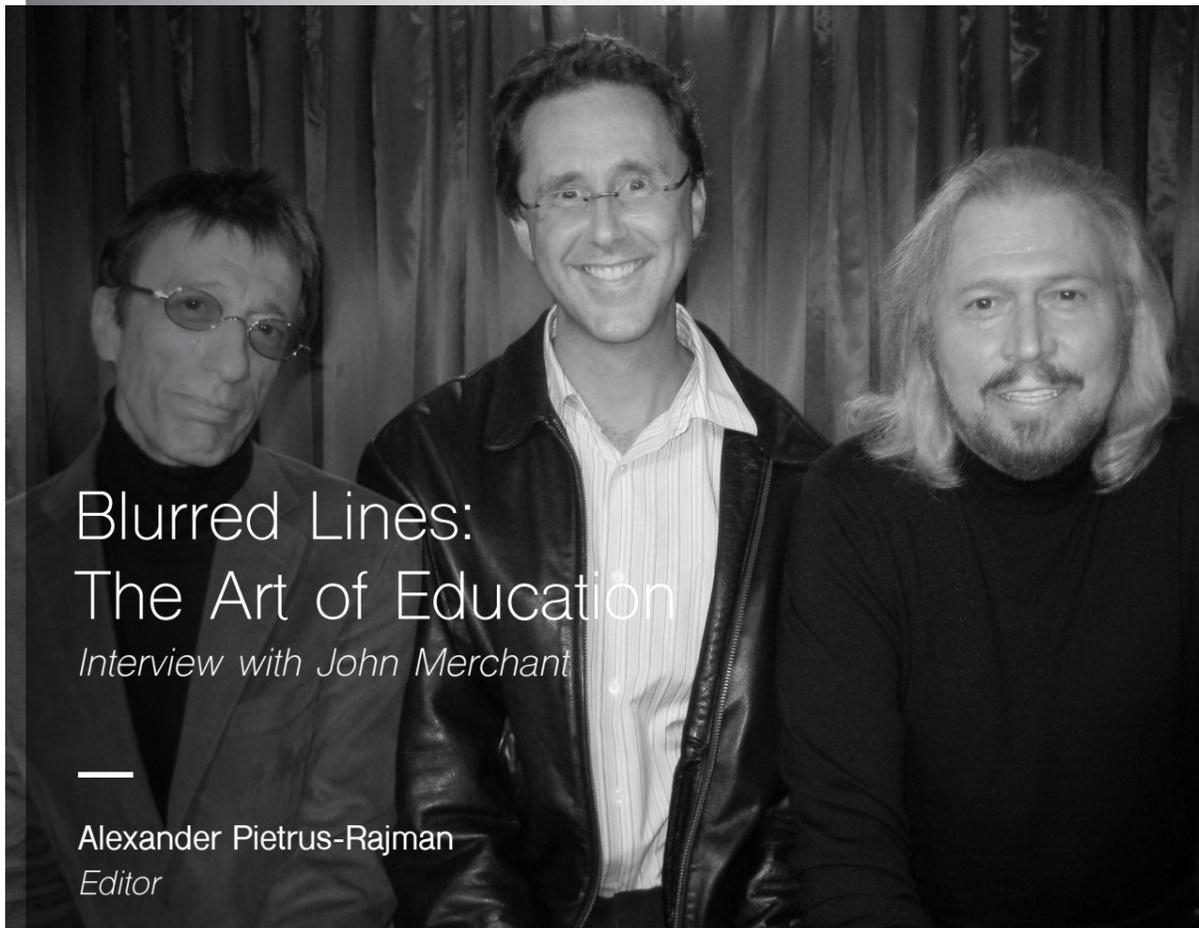
It may be problematic to unite both parties under a common monetary authority.

EU; however, they should not be considered as absolutes, since the economic situation may change significantly over the coming years.

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Blurred Lines: The Art of Education

Interview with John Merchant

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“This course should be required in order to graduate – it’s that informative. Merchant is the best professor the department has to offer” (student rating at koofers.com). What if that professor also happened to be a Grammy-nominated producer and recording engineer? “I feel like the guy that slipped into a great party, and I’m still waiting for the day I get that tap on my shoulder... ‘Alright buddy, it was a good run. Now back to Virginia!’. It keeps you on your toes,” says John Merchant.

🎧 Middle Ear

It seems that kids who dream of working with music usually aspire to be musicians. Few appear to make plans of conquering

🎧 John Merchant is Associate Professor at Middle Tennessee State University, and a recording engineer whose credits include the Bee Gees, Michael Jackson, Cliff Richard, and Celine Dion. He co-wrote the number 1 single "Grace Kelly" by Mika.

the world working behind the scenes of music production. “It chose me,” says John. He always loved music, but calls himself a recovering trombone player (read: he was a pretty poor player). At the same time Merchant was good at math and science, and then one summer a high school counselor suggested audio engineering. “The clouds parted, and the angels sang. ‘Yes, this is it! I wanna do that!’” His father, a university professor, wasn’t particularly excited to hear about these plans. Yet John decided to follow his heart, and the

University of Miami offered a scholarship. He loved the city and it was where he personally made contact with the Bee Gees in 1988, working at their Middle Ear Studios as an intern.

“I was just stupidly lucky. I wish I could tell you it was a calculated act... I was writing an article for a class, about hardware called the WaveFrame (a digital sampler).” To see one up close was quite difficult, because they were made in Colorado. Luckily, it turned out there was one in Miami at the state-of-the-art studio compound owned by the Gibb brothers, and the company people offered to put him in touch. He got to spend some time interviewing the engineers and had hands-on time with the gear. But the revelation came when, for the first time seeing the inside of a world-class studio, Merchant realized this was where he wanted to be and that this was his chance. “I was a little bit bold and said ‘I would love to work here. Have you ever had an intern?’” They answered they never had one before, but asked if he was any good with computers. At the time there was no software that did simple delay calculations (such as offsetting two tape machines by 8 bars), only big sheets of paper with rows and rows of numbers. To write a program that could automatize this process was his first task. “And it was my way in. I spent the next academic year in class during the day, and doing studio work in the evenings. It was eye-opening to see how much time would be invested on details that as a student you might just gloss over. Nothing went unconsidered, unexamined, or unexperimented with before it made it onto tape.” His life was about to change even further.

The Bee Gees were going on tour for the first time in 10 years, and offered their intern a keyboard tech position (today synthesizers run on a laptop, but in the 80s digital equipment

was in its infancy and found innovative ways to fail everyday, hence the need for a dedicated engineer in charge of just the keyboard rig). Although John remembers he couldn’t say yes quickly enough, there was a problem: the tour was scheduled to begin two weeks before he was due to graduate. He went to all his teachers and explained the situation. All of them, except one, agreed to give him the final exams a little early. “So I finished that very last exam, and a couple of hours later I drove to the airport and flew to London for production rehearsals. If you put it in a script nobody would believe that, but it happened that way!”

Merchant says he has a lot of students who come to him now and say they can’t wait to graduate and start their career. But they have it completely backwards. “I tell them their career started the first day on campus. The connections that you make, the work that you’re doing will be the foundation for your career. Your education started your first day at work.”

🎧 Back to School

Since that first internship, John spent 17 years helping musicians focus on what they do best by freeing them from the burden of dealing with complex technology. By 2005, he was riding high in his professional life, but family life suffered from the late nights he was spending at the studio. The next best thing he could do, he reasoned, was to teach. He sent out job applications to a number of universities... without much luck. “Finally someone from one of the schools politely called me back and said, ‘look, you can’t just start teaching, you need to have the academic bonafides of an upper level degree!’” So Merchant enrolled in a university program

instead. He remembers it felt awkward to hold a pencil again and go to class. But when other graduate students were listening for information, John was mostly observing how to command a room, or how to start a lecture that is immediately engaging.

It doesn't mean he didn't benefit from a purely educational point of view. At the height of his popularity, Al Pacino famously used to take beginner's acting classes every year. "And now I see why, it's interesting to go back and remind yourself what the essential elements are." John came to realize that the studio was such an instinctive place that theoretical aspects learned at school simply fell away. "But now I understood that, if taught the right way, you can start making connections between the theoretical and the practical. The best work in the studio, all things being equal, tends not to be going by intuition – where you might get it right or you may not – but doing it properly. Of course if you bring out a protractor in the middle of a session, nobody will take you seriously. But even in something as simple as using stereo arrays, drawing strongly from the science allows you to capture the sound as you intend to."

 Loud is Good, but
Dynamic is Sexier

"I did a talk with Bob Ludwig a few years ago. The first digital console that he bought was Neve DTC, it cost a quarter million dollars, and half of it he had to pay upfront! It was painfully basic, no dither, maybe one EQ..." Mere years later, the tools available for the same laptop one may use to surf the web are breathtakingly remarkable. But it is a blessing in disguise: there is so much control

that things can end up losing their humanity.

Take pitch correction software Auto-Tune, these days generously plastered onto almost every vocal. "It's not a Sudoku you can solve. If I do aggressive tuning on Barbra Streisand's voice, I'm not just messing around with a waveform, I'm changing how the world is perceiving who she is. It's like Photoshop, a little bit can make it flattering and wow-so-great, too much of it is horrifying."

Another example is digital limiting (such as Waves L1) that has allowed to make recordings extremely loud. John's favorite example is Michael Jackson's "Man In The Mirror". "If you listen to the original 1987 version of it, it builds and grows until the last chorus. It gets progressively louder up till the big finale. The song is a masterpiece from a technical standpoint. But if you listen to the recent remaster (2012), the first cross stick in the first pre-chorus is as loud as the choir at the end of the song! They made everything so loud at that early point, that whenever a new element comes in, there's no room for it anymore. It's dreadful." According to Merchant, hypercompression leads to loss of dynamics, removes sense of depth, adds a whole bunch of distortion, and tends to make vocals more sibilant. So he's hopeful it will soon be a thing of the past. "In the same way we listen to mixes from the 60s with drums on one side and vocals on the other, we'll be listening to hypercompressed mixes and consider them dated, and think to ourselves 'didn't anyone notice?'" Despite his optimism about overcoming the issue, John cautions that you are what you eat. The up and coming generation of musicians and engineers consumes music that is extremely loud, his students often having a



"Leading a session, Michael Jackson would say 'let's call that a candidate, let's set it aside, and see what else is there.' It was the most graceful way of getting the best out of everyone."



preference for loud mixes. He adamantly tries to convince them that "loud sounds good, if done well. But dynamic is way sexier!"

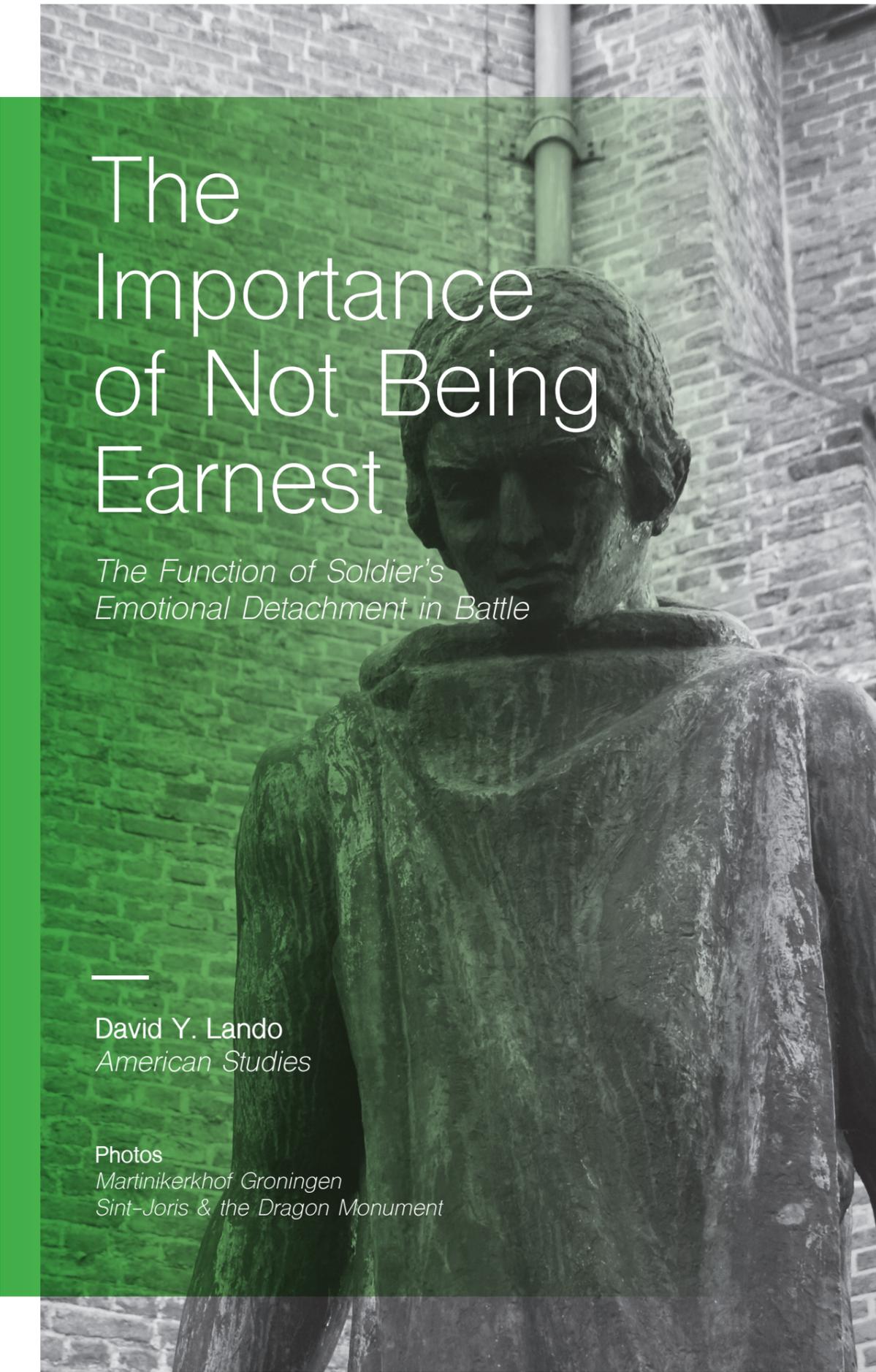
Then there's another aspect to the legacy of the digital revolution that John attempts to bring across in his teaching. A person can be a master at Pro Tools and still not be armed with the skills required for a successful career. "I'd rather have someone who has good communication skills and an open ear, than someone who knows all the key commands in a DAW. The first person can figure out how to capture their ideas, the second person has no ideas, they're too technologically focused." John stresses the importance of developing soft skills: how to speak, collaborate and work with others. Fittingly, he remembers working with Michael Jackson. "If he didn't like something, he'd say 'let's call that a candidate, let's set it aside, and see what else is there.' It was the most graceful way of leading a session and getting the best out of everyone." Merchant says maybe the greatest danger of the digital revolution is you can do so much in isolation. "In the classroom, so much of it is, 'ok the right answer is in the back but don't look. And don't look at each other's papers either, because that's cheating too.' In the real world, that's collaboration, and we should inspire that. Other people are maddening, they can challenge

you and won't accept 'good enough'. They can push us to do much better work than we could do on our own."

 I've Gotta Get a Message to You

For John, it was definitely a loss of status from working with high power artists to grading papers (though he still regularly works in the studio), but he says he wouldn't have it any other way. "I get to hang out with 20-year-olds all day and help them become the professionals they are destined to be." Because teaching audio engineering is still fairly new, he hopes to have an influence on how it is done by trying to draw academia and the real world a little bit closer.

That is certainly evident when I ask him about his favorite academic and musical memories. He responds that there are way too many, but in Fall 2013 they all culminated in one. "I asked Barry to come here (Gibb is the sole surviving member of the Bee Gees and one of the most successful songwriters of all time). He agreed and did a lecture on campus. The theater was packed to capacity, and we filmed it for other people to study. It was so great, I get emotional just thinking about it. That was the place and time when it all came together."



The Importance of Not Being Earnest

The Function of Soldier's Emotional Detachment in Battle

David Y. Lando
American Studies

Photos
*Martinikerkhof Groningen
Sint-Joris & the Dragon Monument*

War was and still is an incredibly important challenge for individuals and societies. The 100-year anniversary of World War I (WWI) was commemorated in September of this year. The vast interest this remembrance drew from all over the globe serves as a strong reminder of how intriguing the concept of war is, and how much work and research it still requires. One point of remarkable interest is the dichotomy about war conflicts between those who have been involved and those who have not. Literature and arts are an excellent mean to bridge the incongruity, as they expose the effects of war on those involved to a wider audience. In contrast to research, literature and arts can portray the feelings and conflicts of self-understanding and identity that war produces in a way that might be impossible otherwise. Hollywood films, for example, have shown such effects in a range of movies such as *Platoon* (1986) and *The Deer Hunter* (1978); literary pieces such as Chris Hedge's *War Is a Force That Gives Us Meaning* (2002), have also brought the war consequences to pen and paper. In all these descriptions, there are two important characteristics of the war effect that are worth paying attention to: on the one side the understanding of war as a force. Being a force confers war the qualities of an active agent, which means that it is capable of influencing everything it comes into contact with, sparing no one. On the other side, however, war can be seen as an exogenous fact that will cause an individual effect on each soldier and produce specific transformations during, before, and after battle. While the examples given above mainly represent war as a force and speak of the emotional stress it exerts on soldiers, books such as Hemingway's *Farewell*

to Arms (1929) and *For Whom the Bells Toll* (1941), and Karl Marlantes' *What it is Like to Go to War* (2011) portray the emotional transformation an individual soldier undergoes as a conscious coping-strategy for the extreme circumstances which accompany war and thus shift the agency of change to the soldier himself. Although both approaches can be true at the same time, war cultural texts and films commonly neglect the approach that portrays emotional detachment, or deliberate emotional numbness, as a premeditated psychological shield. This article will argue that the emotional detachment characteristic of the protagonists in *A Farewell to Arms* and *For Whom the Bells Toll* is an important strategy used by real soldiers to cope better with the extreme emotions that emerge during battle and that it should never be neglected in any war related record.

Ernest Hemingway, the renowned modernist American author, explored the subject of war devotedly in real-life and in his novels. Hemingway's portrayal of warfare and soldiers acquires special significance when considering his personal background. Hemingway volunteered to the Italian military in WWI, where he served as an ambulance driver. Similar to Fredrick Henry in *A Farewell to Arms*, Hemingway was injured and decorated during this war (1). He also experienced war outside of his military service. He was war correspondent who covered the civil war in Spain in 1936, the place that inspired him for the plot of *For Whom the Bells Toll* (1). It is evident that Hemingway did not merely imagine his stories, but was constantly inspired by reality. It is possible to argue, then, that the novels' characters offer valuable insights about soldiers' reality in battle.

The protagonist of *A Farewell to Arms*, Fredrick Henry, demonstrates emotional detachment when he is in the battlefield. For example, shortly after being injured in battle, Henry starts a conversation with an English officer keeping almost perfect composure (2). Shortly after, Henry must shoot down a deserter. He behaves mechanically and consciously knows this, as he says “I opened up my holster, took my pistol, aimed at the one who had talked the most, and fired” (2). These calculated movements may be interpreted as acts of courage and self control; however, when talking to this lover, Fredrick reveals how much he actually feels and how much is actually shown to the rest:



“I don't know. He was probably a coward” she said. ‘He knew a great deal about cowards but nothing about the brave. The brave dies perhaps two thousand deaths if he's intelligent. He simply doesn't mention them.’ ‘I don't know. It's hard to see inside the head of the brave.’ ‘Yes, that's how they keep that way.’



In other words, the protagonist states that if the brave were conscious of his true thoughts during battle, he would not remain brave long. The brave is brave, because he creates a division between his inner thoughts and feelings and what he demonstrates to the world (thereby shielding the inner self), to be able to act according to what is expected. Briefly, the brave is just someone who conceals his emotions better than others.

This portrayal of soldiers as individuals who suppress their feelings is also evident



The brave is just someone who conceals his emotions better than others.



in Hemingway's *For Whom the Bell Tolls*. The novel's protagonist, Robert Jordan, demonstrates a similar emotional detachment to that of Fredrick Henry in *A Farewell to Arms*. However, here, the dichotomy concerns the soldier's identity rather than how society perceives him. In one of his contemplations, Jordan describes his idea of how to be a good soldier. While supervising a military operation, he starts to anticipate the possible complexities and then stops abruptly noting that “he had only one thing to do and that was what he should think about and he must think it out clearly and take everything as it came along, and not worry. To worry was as bad as to be afraid. It simply made things more difficult” (3). This self-meditated detachment from feelings of fear is evident throughout the novel. In another instance, for example, he starts to ponder about fallen comrades, and how “damned few of them were left.” Again though, he stops in his tracks, and thinks to himself: “if you keep thinking like that, my boy, you won't be left either. Turn off your thinking now. You're a bridge blower now. Not a thinker” (3). Thus, Jordan is creating a dichotomy between being a competent bridge blower and being a thinker, which he considers irreconcilable. For Hemingway, to think during battle is to die; a good soldier must create a distinction between his thinking- and feeling self and his soldier self.

This dividing logic has also been observed outside of captivating stories, when



studying real-life military institutions. Research concentrating on military mental health revealed that traditional psychological care of soldiers was focused on treatment (4). After the war in Iraq in 2004, however, there has been a growing inclination towards preventive and protective psychological methods (5). One of these is military indoctrination. Military indoctrination is a process by which civilians are transformed into military service members (4). It includes five main stages that are designed to help newly recruited soldiers to cope better with the stress of battle. The first two stages involve the soldier himself, while the later stages refer to the way the soldier perceives the enemy. The first stage is that in which the recruit is “softened up,” it “involves an attempt to decrease emphasis on the unique aspects of an individual’s identity(4).” This approach shows that current psychological military training considers that the unique emotions of one soldier are redundant and that they can be harmful in battle. To prevent this, the soldier has to acquire tools that enable him to detach himself.

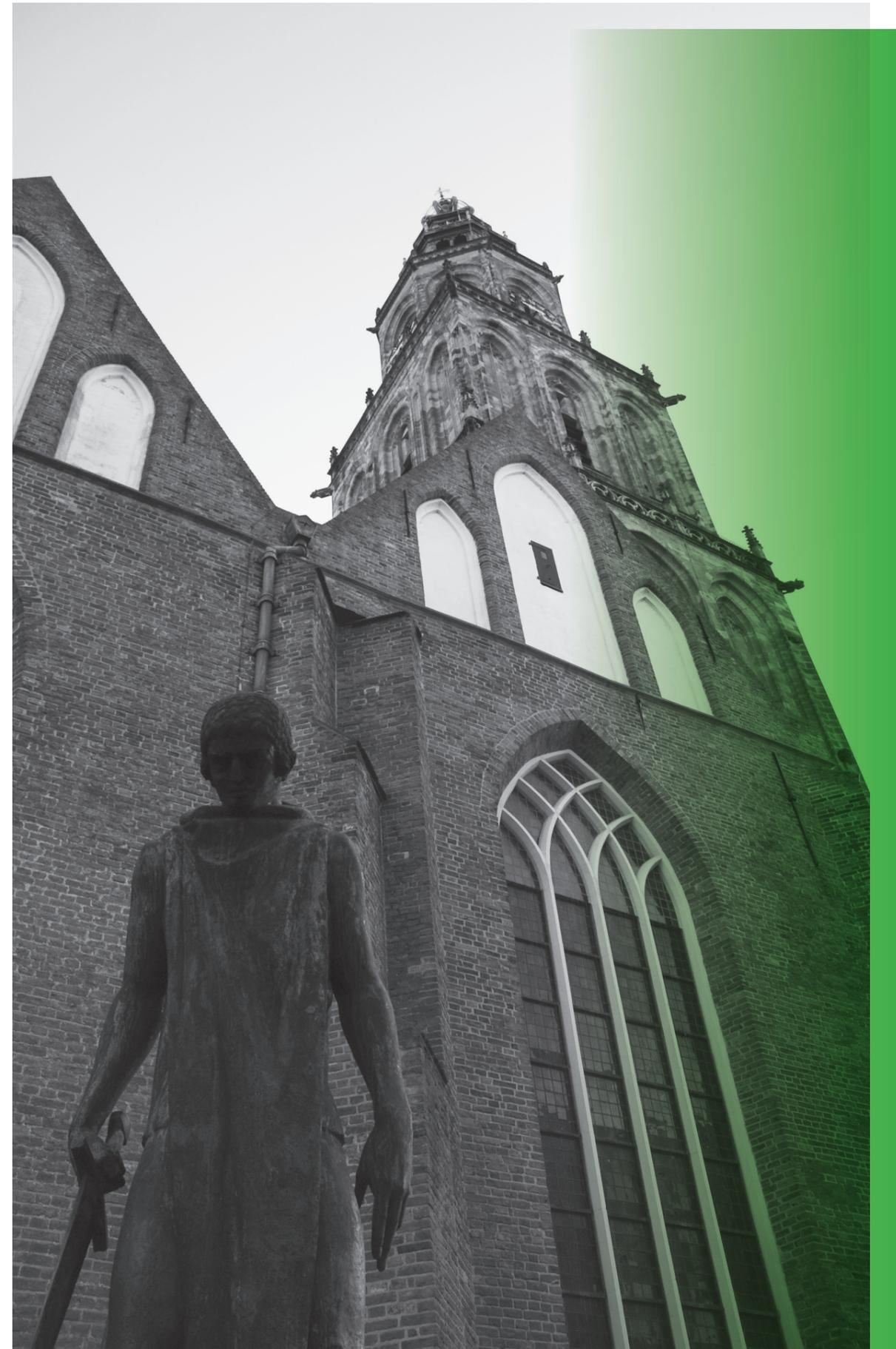
Karl Marlantes, an American author and a U.S. army veteran, stresses in his book *What It Is Like to Go to War*, the function of distinguishing between a soldier’s identity in the battlefield and his identity in civil life. Marlantes claims that not being detached may be dangerous to the soldier, because “the more blurred the boundary is between the world where they [combat soldiers] are acting in the role of God and the world where they are acting in an ordinary societal role, the more problematical the reintegration becomes (6).” Thus, a combat soldier has to maintain the distinction between his civilian self and his soldier self in order to be able to reintegrate later on. Furthermore, Marlantes

notes that “numbness protects us.” He has reservations, however, as too much numbness can be dangerous and that “compassion must be elicited consciously in warfare (6)”, in order to balance numbness and emotions.

The duality of soldiers’ identity is also evident in Margaret Bourke-White’s report from the Italian theater of war in WWII, *Over the Lines*. Bourke-White, an American war correspondent, accompanies a piper cub mission to detect enemy artillery in her report. When arriving at the base where she is to join a pilot on a mission, she notes the pilot is “plump, pleasant, and easygoing (7).” However, she finds that the pilot’s character



In order to be successful and survive, a soldier has to create a psychological shield in the form of emotional detachment.



changes when confronted with extreme battle emotion, as Bourke-White notes, his easygoing and pleasant character “faded as soon as the enemy was in sight (7).” The pilot’s composure in front of the enemy surprised Bourke-White because she thought he looks “more like” a “tractor and hay-machine demonstrator (7).” In battle he started acting on cold instinct, and embraced characteristics that are vital to his survival and for the completion of his mission.



Sentimentality may be admirable in civil life, however, in battle my friend’s sentimentality and emotional involvement is what led him to psychological strain.

sentiments of fear seemed unusual to me. A few days later armed terrorists ambushed us, and from the shock of battle my friend became mute and to this day he is speech-disabled. My friend did not keep his emotional distance from battle; he could not find a way to connect with his soldier self, or to disconnect from his civilian self. Sentimentality may be admirable in civil life, however, in battle my friend’s sentimentality and emotional involvement is what led him to psychological strain.



The common notion that soldiers are merely civilians in uniform is thus only partially accurate. Soldiers acquire different characteristics that do not necessarily fit into civilian life. When a soldier experiences battle, he connects to a different side of his identity and neglects traits he may have possessed prior to being a soldier. In order to be successful and survive, a soldier has to create a psychological shield in the form of emotional detachment. This notion is not only evident in literature. In my days as a combat soldier, this was something that now in hindsight is apparent to me. I remember that a friend of mine from the platoon approached me before we went on a high-risk military operation and admitted he was afraid. I did not know how to calm him, and felt his fear was strange and out of place. Although to the bystander fear may seem the appropriate response at these moments, it is rarely evident among combat soldiers. Therefore my friend’s



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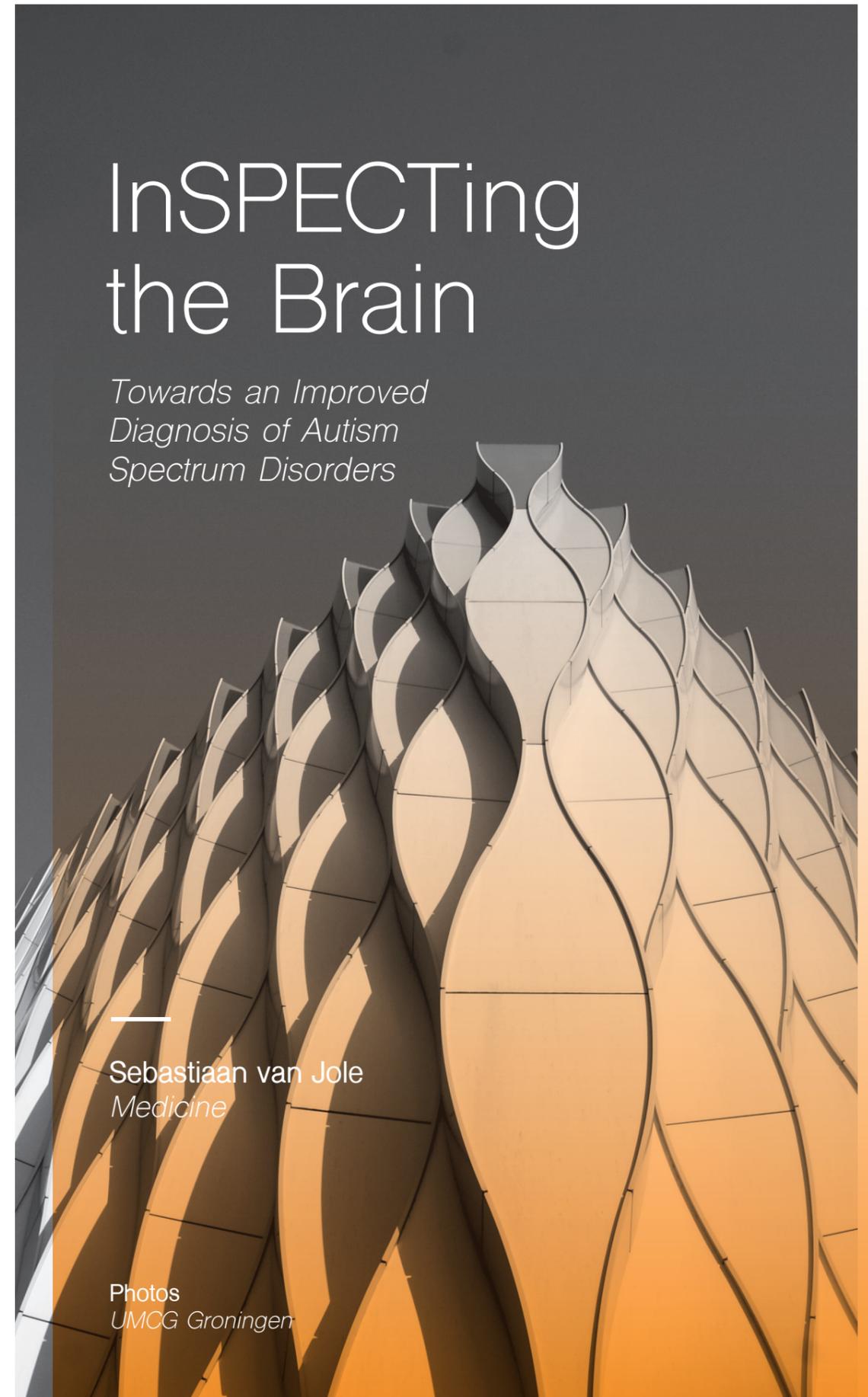
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InSPECTing the Brain

*Towards an Improved
Diagnosis of Autism
Spectrum Disorders*

Sebastiaan van Jole
Medicine

Photos
UMCG Groningen



Autism spectrum disorders (ASD), first described by Leo Kanner in 1943, cause severe impairments in social communication and social interaction (2). Psychiatric tools guiding diagnosis consider three core features of ASD: impaired social interaction, impaired communication, and stereotypical and repetitive behavior. Clinical presentations vary between severely affected and intellectually disabled persons, to the high-functioning individual who has peculiar social mannerisms and narrowly focused interests.

It is estimated that 1 in 62 children will be diagnosed with ASD, a number that has been rising steadily since 1943 (3). Medical treatment options vary, with patients typically going through more than a couple of choices before finding the most suitable one. These options include antipsychotics, anticonvulsants, antidepressants and stimulants (4); however, they are all mostly effective against irritability and aggression in social interactions, doing little to improve problems with communication or repetitive behavior (3). Pressure has been created over the medical system to improve the treatment options. Nonetheless, some have started to argue an innovative diagnostic tool is needed that allows to separate ASD patients in useful categories to understand their disorder better and provide more accurate therapies.

The Netherlands has one of the best public health care systems in the world. When it comes to psychiatric disorders, such as ASD, the Dutch spend millions of euros on prevention and often ineffective treatments (5). In the case of ASD, one single patient costs society on average 1 million euros, most of which is spent in confirming the diagnosis and finding the appropriate treatment. Making

The traditional concept of “autism”, as envisioned by Leo Kanner, included developmental disorders that originate in inability to develop relationships with other people, extreme aloofness, delays in speech development, and lack of communicative skills. We know today that these characteristics are not uniform among autism patients; hence, a better characterization of particular disorders has been developed, all of which are included in the global category of ASD (1).

the diagnostic criteria more effective, one may therefore reduce the total economic burden of ASD. Furthermore, a correct diagnosis will help patients to envision their future better, which may have far-reaching benefits for their emotional well-being.



For example, patients of the addicted neurologist Ernst Jansen Steur committed suicide after they were incorrectly diagnosed with a terminal illness (6). A more accurate diagnosis might have prevented their death and increased their life satisfaction.

It would seem obvious that the place to look for better diagnostic markers for any disorder is the organ in which it originates. Developmental disorders, such as ASD, originate in the brain, so this should be the focus point of any new diagnostic criteria. However, traditional medicine has insisted on classifying patients according to behavioral alterations, which has significantly delayed the creation of better diagnostic tools. Luckily, some physicians have started to realize this and began looking into the underlying brain function of ASD patients.

»» *It would seem obvious that the place to look for better diagnostic markers for any disorder is the organ in which it originates.*

One great example is the work of the Indian neurologist Adithi Shankardass. With her team at Harvard University, she began to use electroencephalography (EEG) to measure the electrical brain activity of ASD children. EEG is an external measuring technique in which electrodes are placed on several areas of the scalp to record the electrical activity occurring in the underlying brain during different tests. Various patterns of abnormal brain activity have been correlated to epilepsy, sleeping disorders, and multiple other cognitive alterations (7). In the case of ASD, doctor Shankardass' team discovered that some of these patients had

Ernst Nicolaas Herman Jansen (aka Ernst Jansen Steur) was a Dutch neurologist who developed a sedative addiction after a hip fracture. To get the drug, he started forging his colleagues' names and faking prescriptions. He commonly misdiagnosed patients and to justify his errors he forged diagnostic questionnaires and laboratory results, and swapped X-rays and other images. Most of these cases took unnecessarily strong medication, and some even underwent brain surgery. He finally resigned in 2004 and was eliminated from the Dutch medical registry.

concurrent epilepsy that was mimicking the symptoms of ASD, thereby confusing the diagnosis. Changing the treatment from that of ASD to that of epilepsy improved the patients' conditions considerably (8). Nowadays, we know that ASD and epilepsy occur together frequently; techniques such as the EEG allow neurologists to observe this association and prescribe a better treatment to these patients.

Another potential technique for diagnostically accurate functional brain imaging is Single Photon Emission Computed Tomography, or SPECT. This technique consists

»» *Traditional medicine has insisted in classifying patients according to behavioral alterations.*

of a series of injected markers that interact with gamma ray beams, resulting in 3D images of the observed area. Results allow visualization

of the blood flow, oxygen consumption, and general metabolism of multiple brain regions (9). Mental disorders have been associated with metabolic alterations in particular areas, showing that this technique has the potential to aid physicians in making more accurate and objective diagnoses. Furthermore, this is an ideal technique to identify functional alterations related to behavioral symptoms, providing a potential explanation for emotional and communicative differences seen in ASD (9).



Luckily, some physicians have started to realize this and began looking into the underlying brain function of ASD patients.

EEG and SPECT are not the only techniques used to explore the underlying basis of ASD. They are just examples of a greater truth: our current diagnostic approach to ASD is flawed. It leads to misdiagnoses and subsequently to a high burden on individuals and society. Moreover, the case of ASD does not stand on its own. Most psychiatric disorders, such as schizophrenia, attention deficit and hyperactivity disorders, anxiety disorders, and depressive disorders, are poorly understood and often misdiagnosed and treated; patients typically have to go through multiple experts and treatments before finding the therapy that best suits their condition. Fortunately, the case of ASD also demonstrated the other, more positive side, of the story. There is a growing interest in thoroughly understanding psychiatric diseases and in providing better treatments for them. Research techniques, such as EEG and SPECT, have provided tools that are changing the way

we think about ASD and psychiatric disorders in general. Instead of seeing these patients as strange and weird, we are starting to look at them as cases of different brain function. This is not completely new; prominent neurologists and psychiatrists throughout history have used mental disorders to better understand normal brain functioning. Today, however, we have imaging techniques that actually allow us to see what is happening in the brain in real time (10), thereby opening new windows.

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Tampering with Mother Nature

Why are we Afraid of Genetically Modified Organisms?

Julian Mutz
Psychology

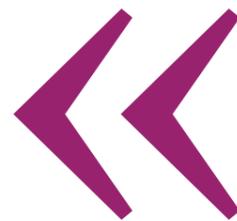
Photos
Farmers' Market Vismarkt Groningen



“**N**ein zu Gen-Food und Gen-Pflanzen [No to gene-food and gene-plants]” (1). This statement can be found in the 2010 party manifesto of Alliance ‘90/The Greens, a German green political party, and is just one of numerous examples warning against genetically modified food that can be found in political and private agendas. If you belong to the great majority of people, you might have had thoughts that resonate with the view that there is something negative about genetically modified organisms (GMOs). But have you ever contemplated the reasons why it may be dangerous to consume genetically modified food? Given that a large proportion of the food available nowadays has been genetically modified (i.e. it has been estimated that about 32% of the maize crop worldwide has been genetically modified in 2011; (2)), it may be reasonable to look at the associated risks and benefits.



Have you ever wondered why it may be dangerous to consume genetically modified food?



This article gives a brief introduction to genetic modification of food and some of the positive and negative consequences that

come along with it. Furthermore, it looks at two psychological concepts, the availability heuristic and uncertainty avoidance, which may underlie criticism and negative attitudes towards genetically modified food. It is argued that educating people in a more balanced way about the potential risks and benefits of GMOs, as well as introducing them to the technological procedures involved in the genetic modification of an organism may lead to more informed attitudes towards genetically modified (GM) food.



Genetic modification is a biotechnological procedure that is commonly used to alter the genetic components of organisms such as plants or animals. For instance, rearranging genes that are already present within an organism is a method that is frequently used by geneticists. An alternative to this is combining certain genes

from different organisms, a process referred to as recombinant DNA technology. If an organism has undergone one of the aforementioned procedures, it is labeled ‘genetically modified’. In 1946, researchers first discovered the mechanisms involved in DNA transfer that occur in nature. However, only in the years after 1983 did they start to use this knowledge for a broad array of purposes, ranging from making plants resistant against certain viruses to letting them produce vaccines for various diseases. The range of current applications is immensely broad and it may be left to the reader’s imagination as to which purposes such technologies may be used for in the future. Currently, genetically modified foods include fruits and vegetables, vegetable oil and sugar (3). The development of such technologies has led both to considerable interest and worldwide public controversy (4).

Interest in GM is sparked, first of all, because of the economic benefit associated with GMOs. In Hawaii, genetically modified papayas were successfully introduced during the early 1990s (and now make up about 80% of the state’s total papaya harvest) and led to the prevention of a collapse of the state’s papaya industry, which back then was threatened by a deadly papaya ring spot virus (5). Generally speaking, there are less production costs involved in harvesting genetically modified food, as a great proportion of it is ‘naturally’ resistant against pests and insects. As a consequence, there is no further need to spend money on pesticides and insecticides, and the resulting decrease of chemical use is beneficial for the environment. Furthermore, as GMOs tend to grow faster, there is an overall increase in annual productivity leading to more food being available, which may be a new milestone



Last year a research article came out mentioning the transfer of complete genes from food to human blood. In this highly controversial article, the authors state that complete genes (for instance from GMOs) may be taken-up by our body and, even more so, may result in an increased risk of inflammatory diseases (14). While food related gene fragments are known to float around in our bloodstream, the idea that complete genes may transfer to and actually harm our body, goes against virtually all related dogma's in the field of molecular genetics. Consequently, several rebuttals showed up. They mainly highlighted the lack of incorporating negative controls to offset the observed measurements (15) (16). It is therefore highly likely that the published findings are simply the result of contamination of the examined blood samples by DNA from the lab environment. Indeed, just lab contamination.

While several other aspects of the article were refuted later as well, soon after publication, the original article was picked up by large-scale media. The general public thus only read that there was irrefutable proof that GMOs might be dangerous. This way, public opinion about GMOs is shaped by bad science.

It should be noted that this example is not meant to influence one's attitude towards GMOs, since a more precautionary attitude towards GM might be desirable (17). Nor is it meant to criticize the way large-scale media report scientific news. It just illustrates how our opinion may be shaped by mediocre research, which would not have been published when properly peer-reviewed.



in the fight against world hunger. In line with this, GMOs are able to withstand unfavorable climate conditions and weather extremes so that they can be grown in areas in which food is usually scarce. There are even more benefits associated with GMOs: many of them contain greater amounts of nutrients, have a longer shelf life and have even been reported to taste better. In addition, on both an individual and societal level, GMOs that eliminate properties causing allergies may reduce costs related to health care. Currently, researchers are even working on food that may alleviate certain disorders and diseases (6).

However, it has been reported that a substantial share of the population is decidedly against them (6). The major issue that raises concerns among individuals is that much remains to be learned about genetic modification

and there are most likely many unknown risks of GM food. For example, at the moment, not much is known about the long-term effects of GMOs on the human body. It has even been hypothesized that as a consequence of "tampering with mother nature", diseases may develop after consumption of GM foods that are immune to antibiotics (7). Another concern regarding GM food that comes to mind is that it may potentially cause allergic reactions. If specific allergenic proteins contained in products such as milk, eggs, nuts, wheat, legumes or fish (which are responsible for 90% of all food allergies), are transferred to another organism that usually does not possess such allergenic proteins, people may unwittingly consume it. This may result in potentially life-threatening allergic reactions (8). However, such risk factors can usually be assessed before

public consumption. Another closely related issue is that through recombining DNA, new proteins with unpredictable allergenic effects can be synthesized. Studies have, for instance, shown that genetically modified bean plants expressed proteins that were highly allergenic (9).

Even though there are several possible risks associated with GMOs, it is unlikely that most people in the general public have accurate knowledge about these risks. In a study by Magnusson and Koivisto Hursti (10), the researchers looked at the attitudes of Swedish customers towards genetically modified food. They found that the majority (62%) of participants in their study regarded the consumption of GM food as being against their principles and even considered it to be morally unacceptable. About half of the participants reported they would experience feelings of guilt if they ate GM foods. But what precisely causes these widespread negative beliefs about GM food?

Two psychological concepts, the availability heuristic and uncertainty avoidance, may at least partially explain why many individuals have negative attitudes towards GMOs. The availability heuristic can be defined as a mental shortcut (i.e. heuristic) that is used when individuals make judgments about the probability of an event by considering the ease of retrieving an example of the event to be an accurate estimate of its probability (11). As the example given in the introduction of this paper illustrates, negative publicity regarding GMOs is omnipresent. Consequently, people may easily think of negative information related to GMOs and thus believe that there must be something negative to them.

Another concept that may help to

explain why people tend to have negative attitudes towards GMOs, is Hofstede's cultural dimension of uncertainty avoidance. This can be defined as the degree to which a society tolerates uncertainty and ambiguity, or to what extent people in a society feel uncomfortable with this lack of predictability (12). As a lot remains to be learned about genetic modification and especially about the associated risks, one may argue that cultures that score high on this dimension may not accept GMOs and the uncertainty surrounding them. This, again, is illustrated by the fact that statements such as the one mentioned at the outset of this article can be found quite

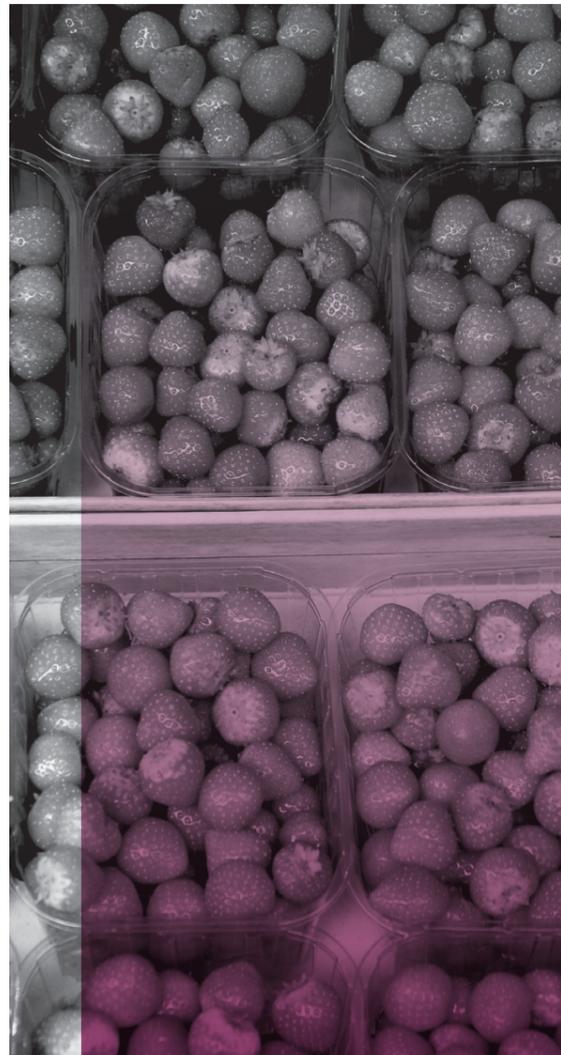


*Negative publicity regarding
genetically modified organisms
appears quite frequently.*



frequently in the German media, a country that scores reasonably high on uncertainty avoidance (13). Since this is rather speculative, it would be interesting to see future studies addressing this issue by directly comparing countries' levels of uncertainty avoidance with public attitudes towards GMOs.

Knowledge about these two psychological concepts may be used to enable individuals to develop more informed attitudes towards GMOs. By educating the general public about the potential risks and benefits in a more balanced manner, it may be possible for them to think of positive aspects of GMOs as easily as negative ones, thereby altering the



influence of the availability heuristic. Moreover, educating people more about the underlying processes of genetic modification might reduce the uncertainty surrounding GMOs. Applying both concepts may therefore create greater public acceptance and be beneficial for further development of GMOs. However, future studies need to address whether these proposals are both feasible, and whether they yield the expected results.

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Philae

*There
Where mornings are not welcomed
By the Sun
Years express distance
And seasons
Are none*

*In that unthinkable void
Our endless orbit
Stops
Stone cold*

*Since – At Northern Taurids peak
Vexed by my existence
I give life to thee*

*Agile
Like an arched bow
Setting an arrow
Free*

*To explore
Nothing more
Than a lumpy leftover of my being*

*Decipher! Poor Philae
Child of Champollion – Dearest companion
For you shall return
Never more
To me*

Rosetta

Colophon —

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