PHENOMENON

The Magazine of the World Intelligence Network

Edition 27

EDITED BY GRAHAM POWELL AND KRYSTAL VOLNEY

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INTRODUCTION

As befits the World Intelligence Network, this is a magazine that has a cosmopolitan flavour to it, with some esteemed academics being interviewed (see below), plus members of the meta-society we commonly call "The WIN" having produced diverse work with great artistic expression.

Ever since the first edition of the WIN magazine, the "Genius to Genius Manifest" back in May 2004, we have tried to maintain the tradition of dates which have numerical significance. The first magazine was released on 6-5-4, hence this edition of the magazine was supposed to come out on 2nd November 2023 (2-11-23), but changed to 17th November 2023 (17-11-23) so all prime numbers equally spaced apart: **2**,*3*,*5*,*7*,**11**,*13*,*17*,*19*,**23**. Perhaps we'll break with tradition next May and produce a twenty-year anniversary edition? We thank Scott Douglas Jacobsen for his interviews, WIN member Anja Jaenicke for her artwork, Artist Daniel Jean-Baptiste for contributing his amazing artwork to this issue and all of those who added anything else.

Whatever, your participation is warmly welcomed as reader, artist, philosopher, and musician – however you choose to express your appreciation of the World Intelligence Network. Please enjoy this little offering brought to you by the WIN editors, Graham Powell and Krystal Volney.

Featured (clockwise) on the cover are:

Lena Roman, Artist Daniel Jean-Baptiste, Professor Christopher Cameron and Professor Albert Berghuis.

Conversation with Professor Peter Singer Animal Ethics: Ira W. DeCamp Professor of Bioethics, Princeton University

Author(s): Scott Douglas Jacobsen

Scott Douglas Jacobsen: What would you consider the stronger arguments coming against the ones that you tend to make in Animal Liberation, Animal Liberation Now, and in animal ethics in general?

Prof. Peter Singer: I think the best argument specifically against the claim that you ought not to consume animals at all, or at least put aside consuming clearly sentient animals. I think the best argument against that is one that focuses on animal products from animals who are not factory farmed living good lives outdoors. So, the argument says that these animals would not exist at all. They get killed. They get killed to get eaten. Their lives are short. Is that worse than no life at all? Arguably, a short good life is better than no life at all. So, I find that quite a difficult argument. It gets you into deep philosophical questions quickly about whether bringing a new animal into existence to live a good life can replace, somehow justify, killing the animal living a good life, but could have lived many more years if they hadn't been killed. So, I think that's a tough argument for somebody who is trying to argue for being a vegetarian, to me. From my point of view, as it is still only a factory farming argument, it goes most of the way to where I would want to go; it doesn't quite go all the way. If somebody told me,

“We could wipe out factory farming altogether, but double the number of animals living in more traditional farms in social groups that meet their needs”. I’ll say, “I’ll take it”. Yes, the suffering in factory farming is so much greater than the suffering or the slaughter through the fact of the shortening of the animal’s life; I think that would definitely be worth eliminating factory farming to let that continue.

Jacobsen: What would you consider the strongest argument for eating less meat?

Singer: I think the simplest argument for eating less meat is the climate change argument. Every reduction you make is a good thing, clearly. It reduces greenhouse gases in the air and supports the growth of plants and vegetables, which are much more efficient in the fallout of greenhouse gas emissions, particularly beef and dairy. Also, it is much better for animals reducing the amount of factory farming or contributing to reducing the amount of factory farming and reduces pandemic risk as well. I think the idea that if you are not prepared to eliminate animal products, then the argument to reduce them is a pretty sensible and sound idea.

Jacobsen: How do you deal with the arguments around climate change? One argument countered against it is the supernaturalistic one. “You are interfering with God’s Will. God will sort it out for us”. It is similar to the ones found in anti-abortion arguments where God is bringing life into the world at conception, sort of thing. How do you tend to grapple with those arguments where the frame of reference isn’t even used in the same sphere of reference, empiricism? Jerry Seinfeld has this one metaphor in a different context where you’re playing chess and the board is made of water and the pieces are made of smoke.

Singer: [Laughing] Of course, God is elusive like that. You can’t quite grab it.

Jacobsen: Sean Carroll says God is a bad argument because God is a poorly defined concept.

Singer: Right, one thing you can do is ask the person, “Why do you believe there is a God at all?” You can get the concept of God that they have. The idea that God will fix climate change seems [Laughing] to me – let’s say – a high-risk strategy.

Jacobsen: [Laughing].

Singer: Which seems to me probable that there isn’t a God, there is going to be no fix. I remember once, one of the best front pages of the newspapers I saw was the New York Daily News after a shooting. One of those school shootings I think it was. What they had around the whole of the side, the side of the front page, they had these little portraits of various politicians who had said, ‘Our prayers are with you’, to these parents of the kids. ‘We are praying for you.’ The headline in the middle of the page was, “God isn’t fixing this”.

Jacobsen: [Laughing].

Singer: Yes. It’s true. Lots of people praying that no more people will get killed in these mass shootings that America has been having. God doesn’t seem interested in fixing it, unfortunately. Right?

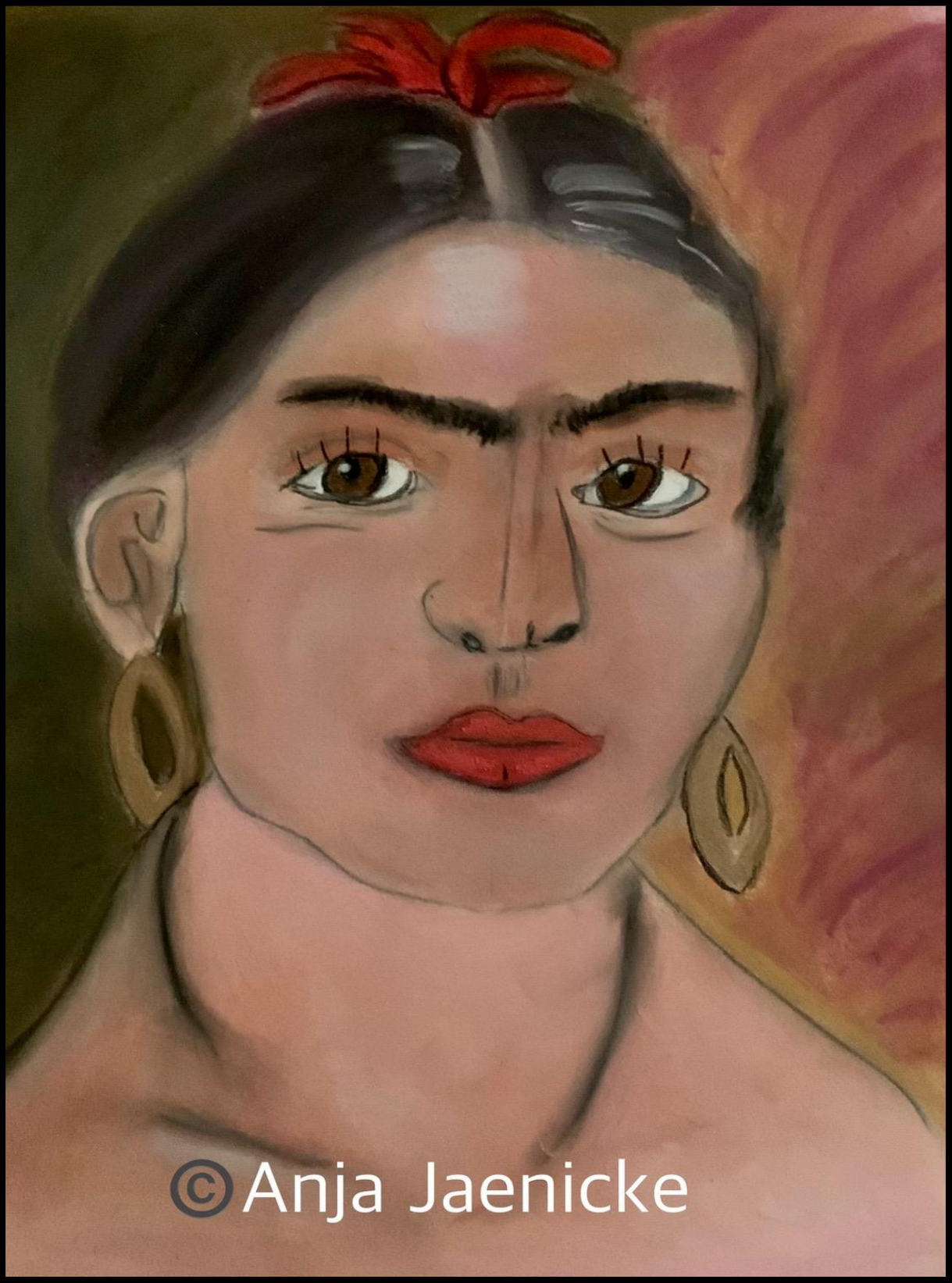
Jacobsen: Some of these high school kids come forward saying, to the effect, “We don’t want your prayers. We want policy change”.

Singer: We have to fix it ourselves in other words. That’s the same for climate change.

Jacobsen: Peter, thank you for your time today.

Singer: Thank you for holding out until the book is published. Thank you for that too.

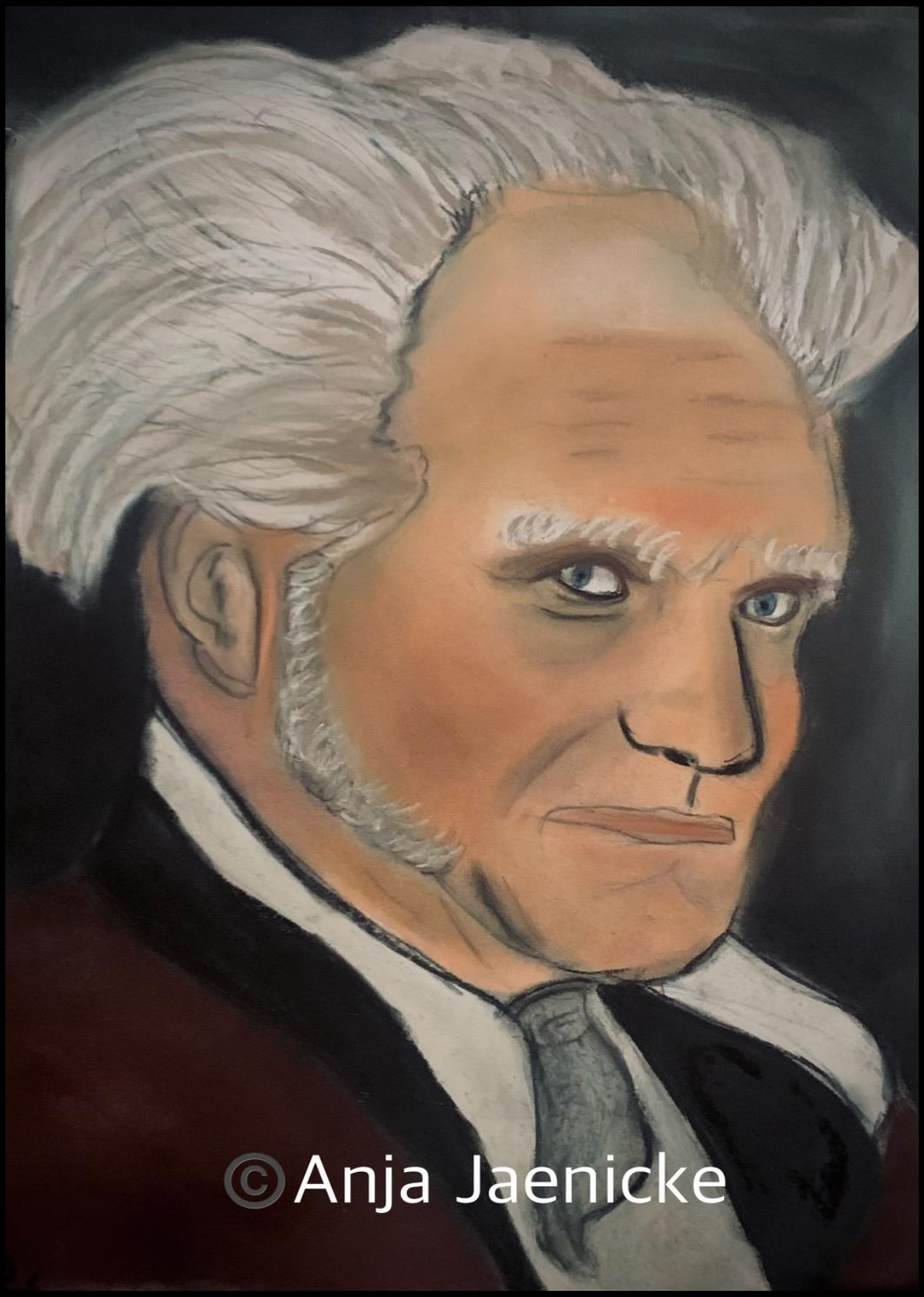
ART BY ANJA JAENICKE



‘Frieda Kahlo’ Artwork by Anja Jaenicke

‘Le Chef Abattu’ Artwork by Anja Jaenicke

Elisabeth I Artwork by Anja Jaenicke



Arthur Schopenhauer Artwork by Anja Jaenicke

‘The Boy’ Artwork by Anja Jaenicke

Professor Christopher Cameron on African American Freethought

2023-10-02

Author(s): Scott Douglas Jacobsen

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Christopher Cameron is Professor of History at the University of North Carolina at Charlotte. He received his BA in History from Keene State College and his M.A. and Ph.D. in American History from the University of North Carolina at Chapel Hill. His research and teaching interests include early American history, the history of slavery and abolition, and African American religious and intellectual history. Cameron is the author of To Plead Our Own Cause: African Americans in Massachusetts and the Making of the Antislavery Movement and Black Freethinkers: A History of African American Secularism. He is also the co-editor of New Perspectives on the Black Intellectual Tradition and Race, Religion, and Black Lives Matter: Essays on a Moment and a Movement. His research has been supported by the Gilder Lehrman Institute of American History, the

Massachusetts Historical Society, the American Philosophical Society, and the American Council of Learned Societies. His current book project, entitled Liberal Religion and Race in America, explores the intersection of race and liberal religion dating back to the mid-18th century and the varied ways that liberal theology has informed African American religion and politics in the 20th and 21st centuries. Here we discuss African American Freethought.

Scott Douglas Jacobsen: You have some interesting facets to work on American Secularism and African American religion experience and, in turn, atheism. Before this, though, there is, as always, an origin story. How did you grow up, e.g., family life and background, style of parenting, and community context?

Prof. Chris Cameron: I was born on an American army base in Heidelberg, Germany, where my mother Sylvie Cameron was stationed in the early 1980s. I am the oldest of five children and grew up primarily in New Hampshire. My Catholic and French Canadian family had migrated there in the early 1960s, and what little religious upbringing I had revolved around midnight mass on Christmas Eve or attending mass on Easter. I had a pretty turbulent childhood and moved around quite a bit between New Hampshire and the Bronx. I spent time in foster care and was even homeless for a while. I got into a life of crime pretty young and started dealing drugs at age 16, which would lead to my incarceration on multiple felony drug charges in 2001. Oddly enough, this was just the kick in the ass I needed to get my life together. I got my GED while I was in jail and started going to community college soon after my release in 2002. Within 8 years, I would have a BA, MA, and Ph.D. and my current job as a history professor.

Jacobsen: What sparked interest in African American religious and intellectual history?

Cameron: I began working in this area during my senior year of undergrad at Keene State College in New Hampshire. I read the autobiography of a formerly enslaved man in the 18th century, Olaudah Equiano, and was very fascinated by his use of religious rhetoric in making the case for the abolition of slavery. I wrote

a short research paper just on him but would continue working on religion and Black abolitionist thought in graduate school at UNC Chapel Hill, with the dissertation I completed there in 2010 eventually becoming my first book–To Plead Our Own Cause: African Americans in Massachusetts and the Making of the Antislavery Movement. I then turned my scholarly interest in Black intellectual history into the founding of a new organization in 2014–the African American Intellectual History Society. This organization aims to promote scholarship and teaching in this field and to support it financially with fellowships for graduate students and faculty as well as annual conferences.

Jacobsen: African Americans, in my conversations and interviews when it comes up, who identify as freethinkers tend to remark on a complex history with the American church. The important role of the church in community organizing during the Civil Rights movement while, at the same time, the use and abuse of the Bible, the church, male authority figures, slave masters, and the God concept, to enslave, abuse, whip, chain, castrate, rape, humiliate, and intergenerationally torture a people. Some see black identity, African American identity, tied to the church and the God concept, so, when rejecting them, one becomes a community and social outcast. What's your experience?

Cameron: My experience is actually very different from that of many Black freethinkers. I am mixed race and was raised by my white French Canadian family, primarily in New Hampshire. Religion was not particularly important in my family growing up. I actually embraced religion while incarcerated in 2001 and began to move away from it about 7 years later while I was in graduate school in North Carolina. Much of my peer group–fellow graduate students in the humanities–were already atheists so I felt welcomed and accepted. And when I started to be more public about my nonbelief, my family was fine with it. Even though most of them are believers, they rarely go to church and religion is just not a big part of their lives so it did not seem to matter to them that I did not believe. So I really lucked out in not being ostracized by my community for my lack of belief in God, but as you point out in the question, this situation is not the case for many other African Americans and they often have to choose between nonbelief and their families/communities. Many choose to stay silent about their religious identities for fear of ostracizing these groups.

Jacobsen: What seems like the greatest tragedy of the God concept and the Bible in advancement of European Christian colonial, institutional racism as a contingent fact for today?

Cameron: In my view it is the fact that the God concept and Christianity more broadly was used to enslave my ancestors and now the latter's descendants are among the most ardent adherents of Christianity today. That is not to say that Black people should not be religious but I think it is particularly ironic that we seem to be even stronger believers in the religion used to justify our enslavement than the descendants of those enslavers.

Jacobsen: What was the influence of African Americans on the Universalist churches of the 18th century?

Cameron: Universalism was just beginning in 18th century America and African Americans played important roles in those origins. A formerly enslaved man named Gloster Dalton was one of the founding members of the Independent Church of Christ, which was the first formally incorporated Universalist congregation in the United States. Dalton remained a member of this church until his death in the early 19th century and both his sons and grandsons would be prominent activists and leaders in Massachusetts. In addition to Dalton, a Black woman named Amy Scott was a founding member of the First Independent Church of Christ, a Universalist congregation in Philadelphia that was organized in 1790. Scott helped to form this congregation and participated in meetings that led to a general convention of Universalists in Philadelphia in May 1790, a meeting that helped shape both the theology and ritual practices of the emerging denomination. While both Dalton and Scott considered themselves Christians, they believed that religion must be in line with the findings of science and that God was a rational deity who would not damn humans to hell for eternity for finite sins. Their religious beliefs thus placed them squarely outside the bounds of orthodoxy at the time.

Jacobsen: How has American religious liberalism influenced, and been influenced by, African Americans and African American culture?

Cameron: In addition to their roles in founding the first Universalist churches in the 18th century, African Americans have played pivotal roles in American religious liberalism from the 18th century to the present. They were early believers in Transcendentalist philosophy during the 1830s and 1840s and influenced white Transcendentalists such as Theodore Parker to become more active in the abolitionist movement. Later in the 19th century, African Americans in Chicago such as John Bird Wilkins created the first Black Unitarian congregations and Joseph Jordan founded the first Black Universalist church, with both of these congregations starting in 1887. African Americans continued to found new Black liberal churches in the 20th century and then initiated the "Black Empowerment Controversy" within Unitarian Universalism in the 1960s, whereby they brought the call for Black Power into the church and demanded autonomy from whites. Under the leadership of Hayward Henry (now Mtangulizi Sanyika) they created the Black Unitarian Universalist Caucus that served as a model for a contemporary organization, Black Lives of Unitarian Universalism.

Jacobsen: Were there any challenges in being the founding president of the African American Intellectual History Society?

Cameron: Absolutely. I first worked on starting this organization in early 2014 by organizing a group blog. I probably reached out to 50 different scholars in order to get 7 positive responses from people who would agree to write monthly posts starting in July 2014. Then from there came the challenge of converting the blog to an organization. We got non-profit status easily enough but it was a challenge to grow the membership. Things moved slowly until our first conference in Chapel Hill in March 2016, which had about 100 attendees. After that event we received a lot of buzz and membership began to quickly pick up. But there remained challenges of fundraising so we initiated an email marketing campaign that saw positive results. But this was certainly a challenge because most of us involved with this were academics who were not trained in essentially running an online business. My wife Dr. Shanice Jones Cameron was really pivotal

because she did have this training and helped me every step of the way in getting the organization off the ground.

Jacobsen: Has the Black Lives Matter movement been influenced much by religious language and experience in its activism and work for equal dignity and rights?

Cameron: BLM has a wide variety of intellectual influences. Some of these are secular and the movement is much more accepting of secular activists than other civil rights organizations have been in the past. But many of the influences for BLM activists have been religious, including Islam, African Traditional Religions, and various forms of Christianity, including liberal Christianity. Some of the foremost activists in Black Lives Matter, including Leslie Mac, who founded the Ferguson Response Network, and Lena Gardner, one of the founders of the Minneapolis BLM chapter, are Unitarians who take their liberal religious perspective into their organizing work and take their political philosophy into their congregations. Indeed, Black Lives of Unitarian Universalism emerged out of a BLM convening in Cleveland, Ohio in the summer of 2015.

Jacobsen: As with much of American intellectual and activist history, much African American contribution, men and women, is hidden or downplayed. Who are the under-rated figures in African American freethought?

Cameron: There are many I can point to but I will just name 3 in different eras of American history. Fannie Barrier Williams was one of the founders of the National Association of Colored Women and a prominent speaker, activist, and intellectual during the late 19th and early 20th centuries. She moved to Missouri from New York in the early 1880s to become a teacher and the racism she experienced there turned her away from Christianity. In the 1880s, she would join a Unitarian church in Chicago led by a deist and freethinker named Jenkin Lloyd Jones. Her reasons for joining this church were rooted in its activist identity rather than an adherence to particular theologies. In the 1930s and 1940s, Louise Thomson Patterson was another important freethinker and leader. She was repulsed by Christianity after experiencing racism from white Christians in

Washington state in the 1910s. She went on to become a leading activist in New York's Communist Party and was a key figure in the Black Freedom Struggle for much of the 20th century. And finally, during the 1960s, Octavia Butler moved away from her Baptist roots and became an atheist. She would bring her secular perspectives into her novels and went on to become the most well-known Black sci-fi writer of the 20th century. I intentionally named 3 Black women because they have often been marginalized in histories of freethought, even more so than African Americans more broadly.

Jacobsen: How are atheists viewed in African American communities, in general? Are there areas in which there is a wider acceptance of these individuals outside of the work of a handful of significant organizations and individuals pulling a lot of weight for a neglected freethought group?

Cameron: Generally speaking, atheism is often seen as a "white" thing in Black communities. Probably most Black people believe in the central role of the church in the Black Freedom Struggle and believe that atheists are opposed to a key institution in Black culture. They also think secularism more broadly is something rooted in a western philosophical paradigm, a paradigm that has often tried to exclude Black people from the category of the human. In terms of where Black atheists are more accepted, it is generally in urban, cosmopolitan areas or areas with a large educated population, such as college towns like Chapel Hill, NC where I went to graduate school.

Jacobsen: What do African American freethinkers need in terms of support based on current contexts and historical examples? Interviews and exposure can help; finances can assist too. However, there must be more.

Cameron: As you note, interviews and exposure are great and I would not downplay the importance of financing Black secular organizations and causes. Also, larger secular organizations using their financial resources but also their reach through publications and large email lists can really be key in supporting Black freethinkers. Here I'm thinking of organizations like Freedom from Religion Foundation using their email lists to host a fundraiser for a group like Black

Nonbelievers. It would not necessarily be FFRF giving BN money but helping them raise it, or even publicizing events that Black secular orgs put on.

Jacobsen: Race and sex intersect in American equality activist history. The work to give equality to white women was seen as priority over black women because this was viewed as an impediment if pursued at the same time. Why?

Cameron: I think a large part of this viewpoint boils down to racism and jealousy. White women activists such as Elizabeth Cady Stanton were incredibly angered after the Civil War when they saw Black men getting the right to vote before them, and that resulted in racist tirades from women like Stanton and Susan B. Anthony against Black people, which inhibited making common cause with Black women. When prominent Black women leaders heard and read these racist remarks, it turned them off from working with white women and they founded their own organizations such as the NACW that Fannie Barrier Williams helped to found.

Jacobsen: Following from the previous question, how are factors like this played once more when it comes to economic justice, social fairness, and legal equality, too?

Cameron: When activists separate themselves from one another and work in their own siloes, it makes it harder to achieve goals that should probably be common ones. Take the socialist movement. That really began to gain steam during the early 20th century, but major labor unions such as the AFL-CIO or IWW either prohibited Blacks from joining or marginalized them when they did. So too did the Socialist Party. This had very negative effects on the fight for economic justice at the time because a large portion of the working class, namely African Americans, were not involved in the organized movement for workers' rights. Instead, they formed their own major unions such as the Brotherhood of Sleeping Car Porters, led by socialist and agnostic A. Phillip Randolph. So the existence of racism, whether among white women activists or those in the white working class, certainly stymied what could have been very broad movements for economic and social justice. And that is exactly how the white ruling classes,

at least in the United States, have wanted it. As LBJ said in the 1960s, give the lowest white man someone to look down on and he'll let you pick his pockets.

Jacobsen: The life paths for black boys, African American boys, is much more precarious than for white boys, European American boys, statistically speaking. To those freethought boys and young men reading this, what is your advice for them, from either background?

Cameron: You are part of a long tradition of Black freethinkers that includes some of the most prominent thinkers, activists, and leaders in African American history, including Frederick Douglass, Fannie Barrier Williams, W.E.B. Du Bois, Zora Neale Hurston, Louise Thompson Patterson, James Baldwin, and Octavia Butler, to name just a few. Many of these individuals struggled with some of the same feelings that you might be wrestling with, including feeling out of place and ostracized for their beliefs. They nevertheless pressed on and achieved things that have profoundly shaped our modern world, and you can too.

Jacobsen: Thank you for the opportunity and your time, Prof. Cameron.

Cameron: Thank you as well for this opportunity and I hope your readers enjoy this.

Conversation with Professor Albert Berghuis on Antibiotics and the Only Synchrotron in Canada: Professor, Department of Biochemistry, McGill University

AUTHOR(S): SCOTT DOUGLAS JACOBSEN

Scott Douglas Jacobsen: So, let's start with the Canadian Light Source at the University of Saskatchewan. What is this like? Is this a research facility or institute?

Professor Albert Berghuis: Yes, what is that thing? The Canadian Light Source is a research facility, and practically speaking; it is a bunch of magnets put in a giant circle with lots of sophisticated instrumentation attached to it to accelerate electrons at high velocities through this ring that is going to – I don't know how fast you think, but they go incredibly fast. These instruments scientific instruments look a little bit like CERN, right? In Switzerland/France, where they use it, they use electrons and positrons, then bounce them onto each other. That's not what's happening here. They spin them around. Every time you make an electron want to go around a curve; it emits radiation depending on how fast it goes the kind of radiation that is generated at the synchrotron is X-rays. It is these X-rays that we are interested in.

So, you can take X-rays at your dentist or your doctor for an X-ray. That's just, a puny amount of X-rays we can have. We have instruments in our lab that are 1000 times more intense, and they are still puny compared to what a synchrotron can do so we use these X-rays to illuminate our samples. You put a sample in front of the X-ray beam. The X-rays go partly through there. Partly, they get bounced off through the samples, and the way they bounce off gives us information on what is in our sample. This is what is known as X-ray diffraction.

Jacobsen: And so, the main point of the research is always based around X-ray diffraction in terms of using that as the methodology.

Berghuis: Yes, or in a sense, a step further is that the main objective: we make these samples. These are biological samples as you saw in the article. We put the ribosome in a crystalline form in front of it to figure out the exact three-dimensional structure of the ribosome.

Jacobsen: Basically, you're doing 3D modelling through X-rays or structural analysis.

Berghuis: It is more that. We're using X-rays to see an object, right? Remember that to see an object; you have to use a wavelength that corresponds to the size of the object. We want to see atoms and how far atoms are apart. So, we have to use a wavelength in that range, about one to two angstroms, so light wavelength with one to two angstroms is X-rays. That's the kind of wavelength you have at that point. So we can see those atoms and molecules. So it is not modelling. We can see it.

Jacobsen: That's very cool.

Berghuis: It takes a lot of computational stuff because there is a little tiny problem in that this is well-known in X-rays. It is where the fundamental part we have a little bit problem of to see things,. Yu need a lens, right? Your eye has lenses, and there are no x-ray lenses. But that is a computational problem. Thankfully, nowadays, there is mostly some complex math involved in that. But in the end, we can still see those molecules.

Jacobsen: So, are you working with the math department?

Berghuis: No, no, not anymore. But the theory of how the scattering of X-rays can allow you to see things was all developed around 1900 and 1910. Very clever physicists were involved in figuring that out. Now that theory is firmly established, we don't need that anymore. Although, yes, clever programmers, because you can think they started with seeing the structure of salt. Now, moving that to the structure of the ribosome, that we solved with these 300,000 atoms. It is exponentially much more complex so computers come in, and indeed, some knowledge of computer programming can prove helpful once in a while.

Jacobsen: So, ok, you resist new antibiotics for some bacteria. So, how can you look at it, in some ways? It is quite a big jump. The evolution of this resistance to various antibiotics.

Berghuis: So, yes, it is good that we have some time here. So, we don't see evolution, right? We are in a time point here, right? We cannot turn the clock back and see how things were so much in the past. We can see, based on indices in general, when you think about molecular evolution or gene evolution, we see the current state and the diversity. We can rationalize that they started at a similar point and, therefore, pretend to turn the clock back of what that was like previously. But in the end, we see how resistance is now. I think another misconception. I'm sure this right. People think antibiotic resistance started when we started using antibiotics.

Jacobsen: That's right. Or a common phrase, my daddy ain't a monkey, this sort of thing. This standard objections to evolution. It is a similar idea.

Berghuis: Yes, but antibiotic resistance. Evolution works. Evolution, as most people think about it, does not work as fast; you don't see evolution at our time scales of human life. They know that that's not how things go, except for viruses. That's how we can see the evolution to the Delta variant, for instance, of COVID-19 or if under extreme pressure. But the kind of resistance out there for antibiotics is almost exclusively ancient, with ancient resistance that has been out there for thousands and thousands and thousands of years. They have been optimized over those thousands and thousands of year. What has happened since Fleming developed penicillin, and we started using them at quantities that are, from a biological point of view, like insane, where we're making kilograms, especially where you are in farmland. They're using an insane amount of antibiotics in husbandry, for instance, right? And that has resulted not so much in evolution as in selection that they entered the bacteria that don't have the resistance are disappearing, and the ones that do have the resistance are multiplying. So it is not evolution, but it is a selection we have been seeing since 1940, so that's the last 80 years. Does that answer a little bit of your question?

Jacobsen: It does answer a little bit of it.

Berghuis: Yes. Of course, with that is this nasty thing of bacteria that are very friendly with their neighbours and can give them all kinds of DNA presence, so, the genes encoding resistance have been spread around. This is not evolution,

but it is spreading helpful stuff to your friendly neighbours; hence, these things have spread across the globe.

Jacobsen: And so, this project you started five years ago?

Berghuis: Yes, well, in many ways, the grant idea started in 1995 when I became an assistant professor as all research is correct, you evolve and accumulate and build on previous results. But indeed, about five years ago, we made the decision. We've been studying this specific class of antibiotics. We knew that a new member of this one was about to be put on the market. The company had been developing that. We knew the company, we knew the compound, we knew the various clinical studies that have been done so, at that point, we say we like to see how this thing works at an atomic-molecular level already it was out, it was known from all those clinical studies. What kind of resistance exists for this, even this newest antibiotic? And so we said we also want to see how that clinical resistance works so that started putting that in place and making that all happen. That took about five years to get to the final result.

Jacobsen: Wow, what was the feeling when you finally got those results?

Berghuis: Oh, like I said, I started this, when I became an assistant professor; I had dreams about it. I said we could see both aspects and do the resistance as clearly as these molecules are not as big as the ribosome I was like, Yes, forget the ribosome. That's not going to happen now we made that happen. So, seeing the first results of that and especially how much we could see, I was beyond excited. Yes.

Jacobsen: So functionally, why must you know the three hundred thousand atoms to get the 40 atoms?

Berghuis: So the 40 atoms? But how do those 40 atoms sit in the ribosome? And to do that. I guess the analogy would be, what a steering wheel looks like. But if you want to know how the steering wheel sits in the car and how the whole car

works, knowing the steering wheel and maybe the shaft is not going to quite cut it, you need to know the entire car.

Jacobsen: Yes, that makes sense.

Berghuis: So, unfortunately, and especially when the steering wheel is inside the car if you want to take a picture of that, it does not work. You take a picture of the entire car.

Jacobsen: Yes. Were there any other research institutes that were deep collaborators for the long term on this particular project?

Berghuis: Yes. So the reason why we could do the ribosome structure is this built up very much on Nobel Prize-winning research of groups that solved for the first time the ribosome structure. So it is not that for the first time I've seen the ribosome. This was Nobel Prize-winning research. We see this whole giant structure with a brand new antibiotic bound to it, and it explains how this particular antibiotic works. But building on this ribosome structure of my colleague Martin Schwing, who is at McGill; it was a massive help with this, and he's also a co-author on the paper because he was a grad student and a postdoc in the two labs that got the Nobel Prize for this. So, having him in the lab made me think I could do this. Duplicating it is not really duplicating somebody else's work, but still, you're building on all that information; this was somebody who had been in that lab and done that kind of research, so it was finally possible for us to build on that research because we had the person in-house who could help us with it.

Jacobsen: When you break through a scientific barrier, something that was quite interesting that was noted in the information that was sent to me was that you have this research taking five years once that barrier is broken. With a new generation of antibiotics or a new antibiotic, it would take a tenth the time to get that same kind of result. So how does this have an entire order of magnitude reduction in the amount of time taken into the future by your estimates as an expert?

Berghuis: So, why? Right? Think of it it is really like studying these ribosomes. If I go into the lab of the groups that do these structures and study ribosomes daily, the expertise will be available. The right equipment is all out there. If you read a paper, there are all kinds of little issues that you'll have to struggle with and figure out yourself. Tiny things of organization. If you use this instrument, the optimal settings are slightly different than if somebody else in their setting with a slightly different version has that show. it is an awful lot of optimization so it took us five years to figure out all these optimizations. Remember, the ribosome is two parts. There are the 30s and the 50s. It also has a piece of mRNA in it. It has tRNA in it. We have to purify each of these tRNAs. We had the mRNA to synthesize which mRNAs to use. It takes a lot of optimization to pure those parts, then trying to get the right conditions in putting this all together into a form that can be used at the synchrotron.

You saw the equator, like, we sent so many samples over there, and only a few of those were of the right quality. We've done it in our lab. We know how to do this with our setup. We have the persons who are doing this in our lab. So that's why this will now be an awful lot easier. Also, taking the data from the synchrotron, typically 99.999 percent of the labs work on things that are, 100 times 1000 times smaller. All the software in the default values of how you deal with the data have been set up for that. We had to throw that out the door and come up with it. So we had to re-paramatize our programs to deal with things that are everything. When you make a structure ten times bigger, your probs become ten times bigger. This thing was several scales more significant, and I saw all our problems were several scales more significant. But we figured that out. We jumped the hoops. As I said, we went through there. Now we know what to do. Does that make sense?

Jacobsen: Yes. One hundred percent does.

Berghuis: So that's right. But trust me, if another lab in Canada wants to try to do this, even though we've described everything and you think I can follow the recipe, I guess it is the same right as your mother's recipe for a dish, if you try to make it, does it taste the same? Never quit. Right?

Jacobsen: Yes, that's right. As the particular drug was a plazomicin, is that correct pronunciation?

Berghuis: Yes.

Jacobsen: As I said, so when the phrase is used, emerging bacterial pathogens within the paper, what is the classification there that you're looking at in terms of these "emerging bacterial pathogens" that would prompt the need to use plazomicin or things similar in the future?

Berghuis: So, pathogens are, of course, by definition, bacteria that are harmful to us. There are lots of bacteria that are very nice to us, and we need them like in all our microbiota. Things like that. The emerging ones are the conventional ones. Antibiotics are not helpful because they do acquire more resistance mechanisms so those are the emerging bacterial pathogens that we aim for. I'm guessing I'm trying to think where we said this precisely in the paper, but that's the issue, right?

What's more, the ability to treat bacteria with current antibiotics is declining, and those are the ones that plazomicin has been geared to you to be used for. Partly, it was explicitly developed to circumvent a lot of the resistance tricks that are out there. So that's what made this one, in many ways; it is a potent antibiotic.

Jacobsen: Could a similar set of experiments be done to examine this kind of resistance when you don't use one antibiotic but use two? So you have this kind of overlap of effects to see, how did these interactions work on this particular structure?

Berghuis: So, yes and no, I'll give a complicated answer here. So, for aminoglycosides, this is not the case. There is what you're talking about: this combination therapy using two drugs to treat something. So, there are various versions of that idea out there. The most effective one, and this is even with

aminoglycosides very often used. So, think of a bacteria, right? It is a complex living machine with a couple of machines inside that make this bacterium duplicate and survive, and a number of them are essential. One of the essential ones is the ribosome because it makes proteins, and other essential machinery is the making of the bacterial cell wall. So what now? If you attack the bacterial cell wall and the ribosome simultaneously, you might be able to reason this out, like because you want to generally keep drug doses low. Maybe I don't need as much of either one of them if I use them both in combination. They might synergize. Lo and behold that is true. That is a very standard treatment with aminoglycosides. They use great aminoglycosides that attack the ribosome and beta-lactam antibiotics like penicillin and cephalosporin that attack the bacterial cell wall , they work together in synergy. You must use less of each to get more than double the effect.

So, that is one way of thinking of synergies because if you use two drugs together, you want to see the synergy that they work together in concert, that the effect is greater than the sum of the individual parts .On top of that is, of course, lowering drug concentrations [] toxicity, which is always a concern that works best. You would think of reasoning if the two targets were different. Yes. In this case, a cell wall and the ribosome. But there are also examples of within the ribosome that you can, because it is such a complex machine, you can target one part and another that will have a more significant effect and that, indeed, there is a relatively new drug. Although it was ancient in France. We have been studying that drug as well, and it has indeed two ingredients. Two drugs that work in concert on the ribosome and thereby cause the bacteria to die. But to your question, can you study simultaneously if it is different machinery? Do you do a different set of experiments to look at those parts again?

Jacobsen: And for practical applications of some of these areas of research. I mean, about antibiotic resistance globally, many populations can be at risk here. So how does this increase the efficiency of this technique or recipe, as you called it, reduce this problem? Is it a possibility, potentially into the 2020s? Not the far future.

Berghuis: So the far future, the 20 years. So, antibiotic resistance is a complex problem, which, the WHO has already identified. It is giving information out for

people, so they use it properly, giving out to doctors reduced use. All of these measures are ultimately aimed at using antibiotics as little as possible and only to the most beneficial effect that means misused, avoid misuse, proper use so that you don't create more antibiotic resistance. That's a whole public health aspect, especially when you think of places like India, which is notorious for the massive spread of antibiotic resistance because there you can buy antibiotics over the counter. You don't need the prescription drug; you go to your pharmacy. I feel I have a cold. I will take penicillin for this, even though it is a virus. It is pointless, right? Or I feel I am in this. One of my colleagues at McGill talked to me about this,. That it is widespread. That the production of antibiotics there is substandard therefore, even if you go, you take this drug three weeks or a whole week, seven doses, right? And you really should stick to that prescription. If you do that in India, it might well be that the doses only contain half of your antibiotic. So, there are all levels of complication in this, the global fight against antibiotic resistance that go well beyond…

We aim to facilitate the development of next-generation antibiotics, right? Provide the critical information to make that industry go faster. Of course, we're not in a position to do the vast clinical trials in all of this kind of stuff. So, the current modus operandi in antibiotic research, in general, is that. Research universities push the discovery and the development further and further as the industry is increasingly reluctant to pick up on these projects, and we'll see how far we have to push this forward before the industry picks this up. It used to be 10 or 15 years ago. We wouldn't have to push as far as we do now because the industry has become far more reluctant. A case in point is plus or minus in itself the drug. So this was the original idea of plazomicin does come out of Montreal, out of the University of Montreal, by a guy who studies these antibiotics. He started this 15 years ago, if not more. Through these compounds, we interacted at that time as well, so he finally got a company spun off. A company that was based in California to take this antibiotic, get investors to do all the clinical trials it took, in the end, so close to 10 years to pass through all of the things that. This is the way these things go.

You can't rush clinical trials. You have to do that properly. In 2018, they got this approved. But beforehand, they had two clinical trials, hoping to market this drug for urinary tract infections and skin infections. If I got the facts completely

straight in my head, but this is, hopefully, it is correct. The skin infection part was a raving success. The clinical trials, the urinary tract infections. The FDA wanted to see some more data, so it was not harmful. But they said we need some more data. However, all of the investors finally pulled out. The CEO put all his money stock back into the company to keep things afloat. But that only worked for so long. They had a couple of other drug development projects. They put that on hold, and despite all of his efforts, the company went bankrupt, at which point they sold the patents for plazomicin to two companies to pay off all their debts and things like that.

And so these are patent-holder companies that are producing it, one for China and one for the rest of the world, if I recall. But this is now a company that holds a patent and license for companies to produce it. But no more research and development is going on, and all the investors that invested feel burned; they will not invest in any antibiotic research and development whatsoever anymore. So this is another story of how, from the economic point of view, it is very, very difficult to bring a new antibiotic to market. Which means while we know everybody knows that, we need newer antibiotics, right? The resistance will only spread, so we need to come up with newer ones that have less resistance. Will that resistance be permanent? You can be optimistic or pessimistic about that.

Nonetheless, you will need some newer ones, regardless of how optimistic or pessimistic you are. But the industry is not investing in it. So that means places like my lab and all kinds of other labs have to push the research further and further, so that the risk level of a company gets smaller and smaller and smaller.

Jacobsen: When is that threshold usually?

Berghuis: Oh, it depends, where you are or what the disease is. I don't know if you've read it. I think this is a big issue at the moment in the States for a drug that's supposed to help with Alzheimer's. I don't know if you've heard that story.

Jacobsen: What particular drug is this?

Berghuis: Forget the name, but the drug for a year of treatment, I think it was $56 million or so per treatment. The efficacy of that drug is in severe question. They don't even really know if it does anything, and a whole pile of people at the FDA review board stepped down because they were not happy that it received FDA approval anyway. So, here's a drug that will make if it is approved. If people are taking it, it will bring the company vast amounts of cash, and it is not even clear if it will ever work. So there's a very different threshold over there compared to antibiotics. The same goes for a lot of cancer research. We have an elite compound that shows some efficacy in animal models that will already get you very far in the industry and will start to pick it up. This is economics, right? The problem with antibiotics is if you take them for a week or so, whatever the prescription is, you're done. You don't have to take it. Any different than with high blood pressure medication, cholesterol-lowering medication, or cancer medication. All of those are long-term treatments. As soon as they are approved, they are also approved for minimal things because the FDA wants to protect all agencies, and the WHO wants to protect them for as severe cases as possible, which means for a company, your market goes from this big to suddenly this big.

Jacobsen: When using the Synchrotron and trying to see the actual structure of what is happening with the ribosome with antibiotics. What are some of the difficulties that come along with having this happen? I did look it up. The Synchrotron was built in 2004. Yes, so, you have a 17-year-old machine that is still widely used and probably will be used well into the future based on its applicability and the size of the staff attached. So, what are the difficulties when trying to get an accurate picture of this structure?

Berghuis: So, yes, problems are difficult steps along the way. So the first part is, getting the samples in the right, and I mentioned right, producing these ribosomes, producing all of the elements, that can be used at a synchrotron, which means we have to grow crystals of the ribosome and then find the right conditions that they can be irradiated there. We're doing this at cryogenic temperatures to lower the damage of X-rays. Once the sample is at the synchrotron, not all samples are equally good. We know we sent a whole pile of them, and each one has to be tested to figure out which one is good. I know it is hard to come up with a good analogy for that one. But from some samples, the image will be fuzzy. From some samples, the image will be much sharper.

So, what we would call resolution is that the resolution we can get from an experiment differs depending on the sample and the intensity of the x-rays that come up from the Synchrotron. So, at the moment, I think the Synchrotron is about to come up again. They have some issues because that machine does not run 24 hours, seven days a week, 52 weeks a year. They have their fair share of problems with that thing, keeping it operational as well. But you try it multiple times. One of the things we did a lot of experimenting with is we knew how to make the ribosomes and the whole thing around there. But how much plazomicin did we add to our mixture to see it? Like, think of it, if you have samples containing a million ribosomes in there, and this is the number is far more significant than that, do we have to add a million of the plazomicin or two million or three million or four million to make sure that it sits in there to see it all the time? Because if we only see it once in every hundred, we don't see it. Hmm. So that was an experiment. We had to try it. Get the data processed, all the data. Look at it, and finally, in the end, can we see it or not? No, we can't see it. OK, let's try again. Change that parameter so it is a lot of iterative steps until you finally get to see what you were hoping, that it is finally there when that finally worked, as I mentioned to you before, we saw it more clearly than I thought was possible.

Jacobsen: That's great. I mean, it is science. It is fascinating. You'll know people have this stereotype of a very dry endeavour. I think it is that it is a very long-term endeavour. So it is a slow-boiled excitement.

Berghuis: It is, yes. I do think my students go through the same thing. I try to explain it like think of being a discoverer. Right? Most people are like Columbus. What must have felt, although there's the story, is far different in natural history, but the fake story, right? He sailed across, and he didn't know if there was another side to the north, to the Atlantic suddenly, he did see land like, whoa! Right? That was a fake story, but I still realized, like at that point in this fake version of history, I saw something that nobody had ever seen before,. People didn't believe I could see. That is very much what we do. We see things that have not been seen before, and we see them for the first time. That is… And, when we started, suddenly, a whole pile of things made sense. The same, maybe with a steering wheel like, "Oh," and then connect. "So that's how it turns the wheels.

Oh, how?" Right? And you are when you see that you go like, "I'm probably the first person in the universe who understands how these wheels work because nobody has ever looked at them." Right? Chances are, on other planets in other galaxies, they don't have ribosomes, right? So, that kind of realization is somewhat intoxicating. That's why we keep on doing this.

Jacobsen: Are there any areas of the research, the questions that I have not asked that should be addressed as we close today?

Berghuis: Let me think, I think. It is always important to talk about research. That's a team effort, and I am incredibly proud of the students in my lab who worked on this right. I'm the guy sitting behind the desk. I come up with some of these ideas, right? It feels a bit like designing or writing a piece of music, but with amazing musicians that can make your stuff come alive.

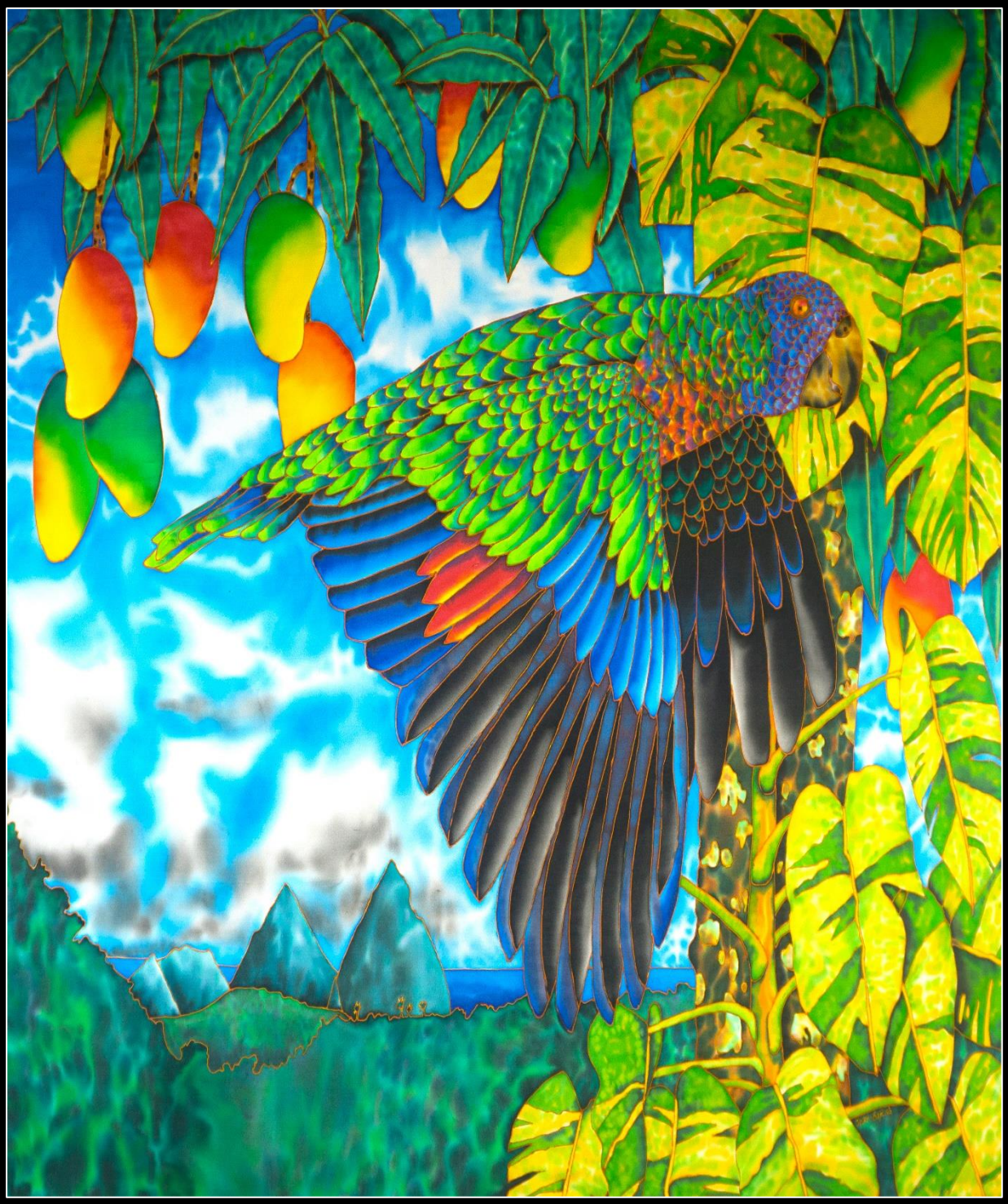
Jacobsen: Professor, thank you very much for your time today.

Berghuis: Okey doke. Hopefully, you can synthesize out of all of this rambling.

BIOGRAPHY OF THE ARTIST DANIEL JEAN-BAPTISTE

Daniel Jean-Baptiste is a Caribbean artist of Dutch Jewish, African Kalinago Carib descent who resides in St. Lucia and Canada. His art focuses on underwater scenes, game fish and their prey, tropical botanical themes, and exotic animals. He was inspired by his childhood spent fishing in Choiseul and hopes to bring attention to the beauty of his island home through his artwork. He uses 10mm Habotai silk as his canvas and is the originator of the shimmering light water technique, which involves painting with liquid paints on wet silk using Sumi bamboo brushes. The finished product is water-resistant and vibrant due to the translucency and natural luster of the silk. His website is https://www.jean-baptiste.com/

ARTWORK BY ARTIST DANIEL JEAN-BAPTISTE



SILK ART BY DANIEL JEAN-BAPTISTE

SILK ART BY DANIEL JEAN-BAPTISTE

In the Grungiest Corner

By Eric Trowbridge

In the grungiest corner of this bleak, gritty town, there lived a young rebel named Leonardo. Leonardo was no ordinary punk; he had an insatiable obsession with numbers and patterns that set him apart from the rest of the crew. He would often squat beneath that rusty streetlight at the edge of the hood, his leather jacket adorned with patches and spikes, staring at the stars and the world around him, trying to discern some hidden meaning amidst the chaos.

One fateful night, as he was engrossed in his thoughts, Leonardo noticed something peculiar about the way that dodgy streetlight flickered. The light beams seemed to spiral around like a psychedelic trip, and it struck him that there might be some sort of punk order hidden within this chaotic dance of photons.

Determined to crack this enigma wide open, Leonardo turned his attention to other aspects of urban life. He began to observe the graffiti on a nearby wall, recognizing that the tags and swirls of colour wove together in a twisted spiral pattern. He even counted the stickers plastered on a nearby dumpster, which seemed to follow some cryptic numerical sequence. The more he examined his gritty surroundings, the more he became convinced that these numbers were interconnected, like the pulsing heartbeats of the city itself.
Leonardo's relentless curiosity and desire to understand these patterns consumed him. He began experimenting with numbers, adding and subtracting them, searching for some elusive connection that would unlock the mysteries of his gritty world. His nights were spent hunched over in the dim light of a flickering neon sign, scribbling his findings onto the back of old pizza boxes and scraps of cardboard.

One fateful evening, as Leonardo was lost in his calculations, a weathered old punk named Fibonacci happened to stumble by. Fibonacci was a street-smart mathematician who had navigated the underbelly of cities far and wide, learning from all kinds of different subcultures and their unique mathematical vibes, man.

Fibonacci couldn't help but notice the young punk's intense concentration and asked him what he was up to. Leonardo was eager to share his observations and calculations, explaining how he believed there was a

hidden order in the streets, and that he had uncovered a sequence of numbers that seemed to hold the key to understanding it all.

Impressed by the young punk's passion and determination, Fibonacci decided to drop some knowledge. He spilled the beans, revealing that what Leonardo had stumbled upon was the Fibonacci sequence. It was a sequence of numbers where each one was the sum of the two preceding ones, starting with 0 and 1. The sequence went like this: 0, 1, 1, 2, 3, 5, 8, 13, 21, and so on. Leonardo was over the moon to have a mentor who could guide him in his quest for understanding. With Fibonacci's support, they delved even deeper into the Fibonacci sequence, exploring its mathematical properties and its mysterious connection to the urban environment. They discovered that this sequence appeared in various natural and man-made phenomena, from the growth patterns of plants to the arrangement of leaves on trees.
The Fibonacci sequence was more than just a string of numbers; it was a hidden code that seemed to govern the very fabric of their gritty world. Fibonacci and Leonardo's collaboration led to groundbreaking discoveries, and their work began to ripple through both the punk scene and the mathematical community.

As time marched on, Leonardo, now proudly known as Fibonacci in honour of his mentor, became a legendary figure in the punk underground. His contributions to the understanding of the Fibonacci sequence didn't just mess with the math world; they added a whole new layer to the gritty urban scene. His graffiti, adorned with mathematical symbols and sequences, became iconic in the streets, blending art and mathematics in a way that had never been seen before.

That Fibonacci sequence, once a mystery beneath that flickering streetlight, became a symbol of order amidst the chaos of life on the edge. Leonardo Fibonacci's legacy lived on, reminding punks and mathematicians alike to find the beauty and rhythm in the concrete jungle, even in the most unexpected places.

Now, let's dive a bit deeper into the mathematics of the Fibonacci sequence. The sequence starts with 0 and 1 as its first two terms. To generate subsequent terms, you simply add the two previous ones. So, the third term is $0 + 1 = 1$, the fourth term is $1 + 1 = 2$, the fifth term is $1 + 2 = 3$, and so on. This process can be expressed mathematically as follows:

F(0) = 0
F(1) = 1
F(n) = F(n-1) + F(n-2) for n > 1
Here's a breakdown of the first few terms of the Fibonacci sequence:
F(0) = 0
F(1) = 1
F(2) = F(1) + F(0) = 1 + 0 = 1
F(3) = F(2) + F(1) = 1 + 1 = 2
F(4) = F(3) + F(2) = 2 + 1 = 3
F(5) = F(4) + F(3) = 3 + 2 = 5
F(6) = F(5) + F(4) = 5 + 3 = 8
F(7) = F(6) + F(5) = 8 + 5 = 13
F(8) = F(7) + F(6) = 13 + 8 = 21

The Fibonacci sequence can continue indefinitely, producing larger and larger numbers as you move along. What's fascinating about this sequence is that it appears in various aspects of nature and art, from the arrangement of leaves on a stem to the growth patterns of certain plants, the spirals in pinecones, and even in the proportions of some famous pieces of art, like the Mona Lisa.

The ratio between consecutive Fibonacci numbers, as you move further along the sequence, approaches a constant known as the "golden ratio," which is approximately equal to 1.618033988749895. This ratio has fascinated mathematicians, artists, and architects for centuries due to its aesthetic and harmonic qualities.

In the context of urban life, Leonardo Fibonacci and his mentor, Fibonacci, discovered how this sequence influenced the way graffiti artists designed their tags, how the vines of plants climbed up walls, and even how the patterns of shattered glass on the city streets followed the Fibonacci sequence in their fragment sizes.

So, whether you're a punk rocker expressing your rebellion through art and music or a mathematician searching for hidden patterns in the world around you, the Fibonacci sequence reminds us that there's more to the chaos of life than meets the eye. It's a testament to the beauty of mathematics and the unexpected places where it can be found. Leonardo Fibonacci's legacy continues to inspire us all to explore the intricate connections that shape our world, one number at a time.

10 Questions Put to Lena Roman, Peace Ambassador and Ecologist

1. How would you describe your childhood, Lena?

I was lucky enough to be born as the youngest child. As many people know, younger children always get the most parental love and attention. My mother devoted herself entirely to my upbringing, but despite the boundless love, warmth, and care that my parents surrounded me with, my upbringing was also quite strict. My parents were an unshakable authority for me in everything.

2.What main character traits did you inherit from your parents?

To me, my father was the ideal of a man and a person, the main motivator. I always remember trying to be the best at everything. I had a very worthy example in my parents' person. Now it is quite rare to find the qualities which my parents instilled in me: modesty, kindness, honesty, responsibility, patience, selflessness, self-sacrifice for a noble cause, plus striving to benefit others, and society as a whole.

3. You are especially modest, Lena. So, to push the boat out: what are you good at, Lena?

As you have already noted, modesty was indeed instilled in me by my father. He always said, "Modesty adorns a man." My parents really had a very strong influence on the formation of my personality because, most of all, I wanted my father to be proud of me. I was expected to be a worthy daughter to my father, and I couldn't let my father be disappointed in me. That has always been my main motivation in life.

4. What do you consider your greatest achievement by age 20?

I think these are achievements in sports. Undoubtedly, sport plays an important role not only in the physical development of a person, but also in the formation of their character. Sport helps develop endurance, determination, and willpower. All these qualities are very important for the formation of a person's personality.

5. As far as I understand it, you have two degrees. This is certainly a remarkable achievement. Why did you study ecology and why history?

My father also had a very strong influence on the choice of these plans. I was fascinated by history, even in childhood. I remember my father gave me a three-volume history of Kievan Rus and asked me to read it. He told me that a person must know the history of his homeland. He was a true patriot of his Motherland. These books made a very strong impression on me and from that moment on history became one of my main hobbies. Now I understand very well why it is so important to know history. This knowledge helps me a lot in life. Ecology is also very relevant, especially now, when the influence of humanity on nature is becoming stronger and stronger.

6. What aspects of history influenced you the most?

What I enjoy most is studying the biographies of outstanding people, their strengths, their aspirations, and goals, how they managed to achieve success and what caused their failure. It is very useful to analyse and draw conclusions from their life path. In some ways, take them as an example and in some ways, learn from their life path. By studying history, you can gain a lot of useful life experience and wisdom. Have your own judgments, draw your own conclusions.

7. You got married in February 2021. What have you done so far?

My most important achievement since I got married is, primarily, the achievement of being a worthy wife to my husband. Of course, the main mission of a woman is to be a good wife who inspires her man and motivates him for new victories, one who is for him, not just a beloved woman in whose arms a man rests both body and soul, but is also filled with strength for new achievements. To be a woman who believes in her man, one who will always understand, and support him in any decision, to be a devoted friend and reliable comrade-in-arms, one in whom you can always rely on in difficult times. And the most important thing is to inspire your man and inspire faith in himself. It’s not for nothing that they say that behind every Great Man there is a Great Woman. This is the absolute truth. My husband is a very noble man, both in soul and by blood. He has always thought big, and his main goal has always been to benefit society. For this I endlessly respect and appreciate him.

8. What are you passionate about now that you are reaching middle age?

Now my main goal is to bring as much benefit to society as possible. I am very grateful to Sheikh Qasem Bader, who is the President of the Universal Peace Council, for his invitation to join his great noble mission and become an ambassador of peace. Now the issue of peace is especially important, and we must do everything so that people can live happily on a peaceful, beautiful planet.

9. You are obviously a cultured woman, well versed in psychology and philosophy. I'm sure this makes you a great friend and confidant. How do you see these intellectual aspects of your life developing over the next decade?

Of course, I plan to further expand my social circle. It is a real pleasure to communicate with interesting people; it is very developing and fills you with positivity. Maybe I'll try my hand at politics. I have always been very interested in politics and most importantly, this is an excellent opportunity to apply my knowledge and experience to achieve the good of society.

10.As you become more involved in British life, what would you like to achieve in your new country?

I have always had great love for Britain. Its culture, history, traditions have always fascinated me. When I met my husband and got to know more closely the true beauty of the English soul, I realized that our souls are very related. I love Britain as my second homeland and want it to flourish in peace and prosperity. I want to do everything in my power for this.

Thank you for your time, Lena. I wish you the best in your endeavours.

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PUZZLE PAGES

By Graham Powell

WORDOKU

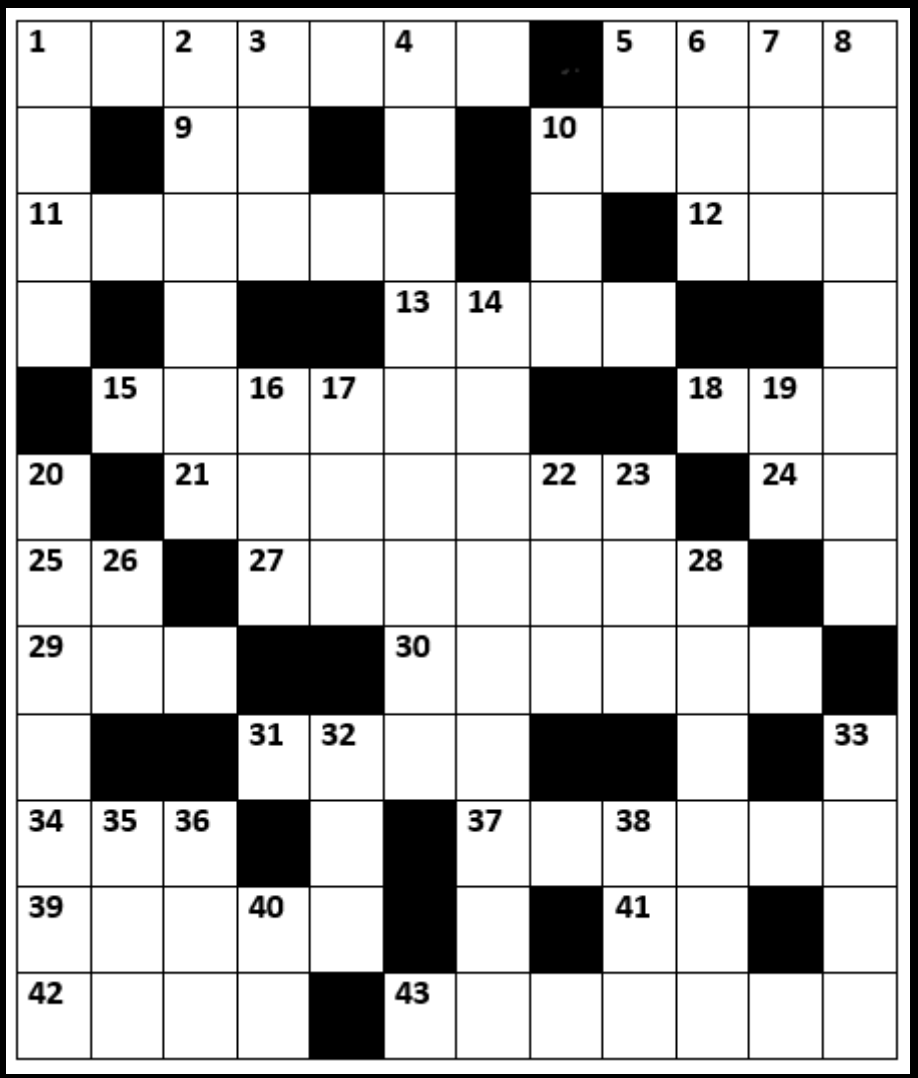
Put the letters that are beneath the grid in the puzzle to fill it, plus reveal the name of a famous British fashion designer.

H		T		P				I
S		I	U				A	
	M			L	I			T
L	I			A			H	
	P		T		L	M		
		A	M			P		U
	S		A	T		U		
		H				A	S	L
P		U			M		T	

A H T S M P U L I

CROSSWORD

A Fun General Knowledge Puzzle



CROSSWORD CLUES

Across

1. Currently the third time a male monarch has this name as he sits on the throne of Great Britain and Northern Ireland. (7)
5. An area of land used in Britain. (4)
9. Initials of an airline based in the United Kingdom. (1,1)
10. Edible sea-borne bivalves. Mollusca Bivalvia. (5)
11. Graduates of a university. (6)
12. Abbreviated time zone in the Pacific Ocean area. (3)
13. Princess's first name, and whose surname is Tindall. (4)
15. A cool, dry place for wine, for example. (6)
18. To consume, often via mastication. (3)
21. Saint Thomas is a famous example of such a person. (7)
24. Not you, but… (2)
25. Goes before Cordobes, the famous matador. (2)
27. A popular hairstyle in the buzzing 1960s. (7)
29. "A needle pulling thread." (3)
30. Surname of a 20th century president of the USA. (6)
31. Formerly a seedy area of London. (4)
34. A fish delicacy, especially in London, served in jelly. (3)
37. A Malayalam nickname for small boys. (6)

39.An abbreviated man's name near Dover? (5)

41.Two-letter placename of degree study, founded on Saint George's Day, 23rd April 1969. (1,1)

42.Said to be where the heart is. (4)

43.Latin phrase that completes the motto of the Royal Air Force. (2,5)

Down

1.African country with the capital N'Djamena. (4)

2.Treated badly. (6)

3.Male sheep. (3)

4.The mother of 1 across had this first name. (9)

5.Paul Simon said you can call me this name. (2)

6.A type of hat popular as sportswear. (3)

7.The designation of the Titanic, for example. (3)

8.For real, collections of houses. (7)

10.Automobile. (3)

14.Referring to a phylum that includes insects and spiders.

16.A tennis shot, over your head. (3)

17.A Norwegian knitted wool hat with a peak. (3)

19.Time abbreviation in the morning. (1,1)

20.Old word for implore, entreat. (7)

22.Abbreviation for a place of study in Charleston, Coles County. (1,1,1)

23.An abbreviation of a Canadian decoration for personal service to the monarch, which was established by Queen Victoria in 1896. (1,1,1)

26.Article in Italian used before singular masculine nouns beginning with s + a consonant. [E.G. stenditore] (2)

28 & 32. Vincent Van Gogh had his what? (3,3) & (3)

33. Another reference to the Moon. (4)

35.Common reference to a British pop group that combines electric instruments and classical ones. (1,1,1)

36.A common Korean surname. (3)

38.An abbreviation for "numbers". (3)

40.Chemical symbol for iron. (2)

THE PUZZLE ANSWERS WILL APPEAR IN THE NEXT EDITION OF PHENOMENON.

The editors hope you have enjoyed the

27th edition of the WIN magazine.