The Bridgian Herald

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ISSUE XI

Contents

The *Bridgian Herald*

Whilst measures have been taken to ensure the accuracy of the content, it is possible that errors or omissions have been made. Feedback would be greatly appreciated to enhance the *Herald* for all.

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King's Seat,
Dueltree Base / Base μ,
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Bridgian News

The dying Convention
"Convention Reborn", the sequel

DUELTREE BASE

BRIDGECON. An annual gathering of all the Bridgians. A special time to convene, now celebrating five years since the beginning of 'Bridge Base'. Five years since the fateful name was given to a certain bridge-like tree in the rural backwoods of the School. Not five years since the Bridgians arrived – but, as they say, beggars can't be choosers. The third Bridgian Convention is to be held on the 18th of November 2025, in Base μ.

BridgeCon began two years ago as a platform for the Foundation's Media division to announce new projects. In 2023, that meant the Bridgian song *Planks A' Crashing*: not the finest of pieces, but better than the previous *Bridge Base Forever*.

> *In the Base of tyres and wood;*
> *Beneath the canopy, Bridge Base stood.*
> *Out of Seldeth we come, relaid;*
> *But, by our members, we are made!*

It has also been a tradition, since the original with 'Bridge Base' marked on it, for the Devious One to release a map of the School in November each year. BridgeCon fits neatly into this schedule, so the 2023 School Map – the greyscale one – was offered to attendees after the speech. Yes, there was a speech (386 words long; a positive footnote, less than a column in the *Herald*) which publicised these advances, with the speaker atop Bridgehaven Treehouse, which had recently been rebuilt.

2024 continued this trend, albeit held in Base ν, at the other end of the School. The Devious One orated another speech, describing the *Cass-Bíshkaí* ('School Map' in Bridgian) as the "main course" of the event. This is understandable – he had spent over a month designing it, after all – but the other projects are almost as important in retrospect.

First was the grid-and-lines Bridgian writing-system, one of the few occasions where the Media division was not merely the Devious One working on his own. It paved the way for modern "syllabic form", the Phonetical form in which Bridgian is natively written (see Guides section). At the very least, can you appreciate how devious this looks?
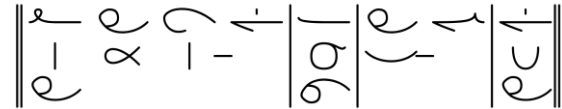
'Finally, our Head Guard has been leading the design for the *Bridgian Herald*, a new Bridgian newspaper.' The Head Guard?! That is correct. The Foundation's Head Guard was the initiator of this publication, before the Devious One took the idea and ran with it. He expressed a lack of content in the first issue of the *Herald* – nowadays, some believe we are going too far in the other direction, prioritising word-count over more interesting and summarised writing. '[P]roducing more issues of the Herald would be a great achievement for the Bridge Base Foundation,' said he. Yes, it would be.

With little to show
This year's BridgeCon is looking to be a bit lacking in some respects. The Devious One has wasted all his time writing this "double issue" of the *Herald*, so there is no speech planned. Nor a new Bridgian song. Nor any construction, as the Foundation has never recovered from Domebush's Demise. Many Bridgians have left the School (or were never in it; see following article), so the Convention would be a lot smaller than it was previously. This aspect was solved around a month ago when they met up, an adventure vaguely recounted in the last issue.

This means that there are two developments in this BridgeCon. Firstly, this issue of the *Herald*, which, at 18 pages in length, is the longest ever by a wide margin. Secondly, the School Map, showing all the altered region- and base-names and having greater accuracy – but not nearly ready for release as only four out of twenty-four regions (Bridgia, Dthenden, Gilnar, and Inbepan) are completed.

This leaves only the *Herald*. In essence, there is no real BridgeCon this year. That happened in High Wycombe on the 12th of October, not in Dueltree Base on the 18th of November. ▪

Outsider *v* recruit

The shifting identity of Bridge Base

WHAT DOES being "Bridgian" mean to you? Is it making a regular pilgrimage to Bridge Base (wherever that is)? Is it simply being a part of the Bridgian friend-group? Or is it acting like a Bridgian – acquiring resources, building structures, and the like? To answer the question posed at the beginning: it depends.

We believe that the term 'Bridgian' came into use in late 2022. It was originally spelt 'Bridgeian' but was quickly shortened to its modern spelling. The first document to use it was *A Summary of Bridge Base's History*, made in June 2023, which gave this definition: ' "Bridgians" are the people of Bridge Base, like how our enemies are the Beryllians of Beryl Base.' A common interpretation is meaning 'those who often occupy Bridge Base', as the Beryllians habitually occupied Base γ then.

However, as the Base evolved, the term varied with it. It began to expand, including those who provided service to the Base in the past, regardless of whether they attended recently. This also fits with the definition given above: the Beryllians had ceased to go to their Base after they destroyed their own bench (!) in September. They are still known as Beryllians by some. In the same way, the "people of Bridge Base" must only have occupied the Base in the past to qualify. At present, the Foundation's military and spaghetti-bowl factory expert is still a Bridgian, despite zero attendance for five months.

As the Base limped into 2024, it began to be more of a social group than a construction project. The Bridgians would often be seen fighting with sticks in Bridgehaven, before they were forced to flee by a disgruntled *Group*. Sure, members still engaged in building – Domebush Treehouse was one product of this period – but it was no longer the focus. The Foundation began to have a culture that was greater than 'raid Forest School!' and 'where can this beam go?' Assembling structures was satisfying, and Bridgians continued to share in that experience; furthermore, the Base was now open to those who did not want to build, but hang out with a receptive group of friends at the School.

The final evolution

Let us jump to the present day. Many former Base-dwellers have now left the School, leaving half the Foundation within it and half outside. By the token described earlier, they are clearly still Bridgian. (Unless they, for some reason, wished to renounce their Bridgianity, which none have.) But if Bridge Base is largely a friend-group, and if Bridgians do not have to go to the School, what happens if they befriend an someone who has never been to the Logs of Bridge Base in their life? Would they become Bridgian anyway? That is the question.

One such outsider has bonded well with the Foundation's Griddler, and was introduced to the other Bridgians, over the Internet, on the 7th of September. Most view them as a great addition to the group: their sense of humour aligns well with certain members (conveniently, the ones that are more actively online) and they have been eager to integrate further with the Griddler's fellows.

By the original definition of the term, they would never be considered Bridgian, as they have constructed nothing, nor even visited Bridge Base. But, as per all of etymology, words' meanings shift over time. What was a behavioural quality, going to the Base with the others, has become more of a social one. It seems awfully twentieth-century, the idea that this union must be confined to a single location. With the rise of digital communication technologies, being across the country should not limit one's ability to cohere with others anymore.

They were even included in the only meet-up of the Foundation outside the School ("The true BridgeCon", Issue 10). Does that not prove the point? This "outsider" has effectively become a part of the group – a Bridgian! – by purely social means. Our culture will shape and be shaped by them, in ways that nobody can yet conceive. It will certainly be good having another perspective, one unaffected by this School, on the Bridgian ship.

Gephyrologists, or 'the Devious One's fancy term for people who study Bridge Base, principally himself', had long thought that being Bridgian was less a physical status than a social one, but had a dearth of evidence supporting them. This new member has given them just that, and provided plenty of good conversation along the way. Bridge Base can never fall; it merely evolves, forever. ▪

School News

Leaders, assemble!

A discussion and a consultation: both are vital

LINTAE

Two meetings, both alike in dignity. In fair Entêkaí (where we lay our scene). Welcome to the Pearl Room, Lintae. Our Leaders should be arriving shortly. Ah! Two are currently waiting outside, for they are early to the meeting. The start is quoted as nine o'clock, but – as all know – the true beginning is always a little bit later. *9:05* and the south door opens, succeeded by the north door. One more enters from the indoor passage, after the day's ambassador of the *Group*. Now that the Leaders know their roles, this convention should be more fruitful than the last.

[Interruption. Two members of the Council, both looking for their meetings, come in via the back door. One is directed to their correct place: the Rights Respecting School (RRS) steering group up by Entegár Bridge. The other is allowed in on a provisional basis. ('It's important that the Council knows what's happening in the leader meetings.')]

We begin with the Maths Challenge Champion. The mathematics club held in the Science Quarter is still running on Friday mornings, with two regular attendants. 'Do you have any other ideas?' The Champion reiterates his manifesto of holding a "Maths Quest" on a future day, or even just an afternoon. This would not, he proclaims, be a time of struggling through worksheets – this would be a problem-solving experience, helping others to appreciate the true value of the subject.

A new idea was then given: what if the Maths Challenge Champion produced a challenge for interested students to complete each week? It could be displayed on the digital noticeboard in Rintae, although this has not started yet. (Readers of this publication enjoy an additional monthly challenge near the back of the issue.) The debate continued into ways in which answers could be handed in, or rewards for students who answer correctly. It was decided that, for now, the challenge would just be for fun; answers may be submitted to form tutors.

Moving on to the Eco Leader. He begins by proclaiming the severity of littering around the School, particularly by the benches in Entêby. ('People are just lazy. Even if the bin's literally over there, some people still won't throw things away.') A proposed solution: people caught littering could be made to pick rubbish off the ground in their breaks. However, the *Group* ambassador believes that waste is a systemic issue. Some bushes are 'absolutely covered' in rubbish. [This has nothing at all to do with Bridge Base. Nothing. At. All.]

Hence, "Clean up the School Day" is born. Tutor-groups would roam around Senkaí – that is, the central part of the School – to pick up as much rubbish as possible over an afternoon. They could even be ranked by their performance, although some would allege that this is unfair: certain parts of the School have more waste strewn about them than others, and tutor-groups vary wildly in size.

Continuing with the theme of sustainability, the *Group* member queries whether students use the blue recycling bins found in most classrooms. Reportedly, the assigned emptier (an ex-Beryllian infamous for the Fall of Bridgehaven) is not fulfilling their role, leaving the cleaning team to bear the workload. The students should have a greater involvement in this system. 'Maybe tutors could assign a student to empty their bin each week – on Friday afternoons – though we would have to add a label saying, "don't empty this," for the cleaners.'

Then things start to get silly. 'We could have a graph for how much we recycled each week. But how would we count that?' The Maths Challenge Champion, in his usual way, replies, 'What, like a massive bin on scales? We could get all the students to put their rubbish in the Massive Bin On Scales at the end of the week, so it can be weighed before going into the main bin.' What is he thinking? At least this time, common sense gets the better of the Leaders. 'Why don't we just count the number of full bins? That would be a lot easier, although we'd have to ensure bins were only emptied when full.' By displaying the amount of recycling, though, it makes discarding items seem good. Is this right? →

'I have a suggestion,' begins the non-Leader after the Massive Bin On Scales is overthrown. 'We should have a "debate club" in break or lunchtime, for people to practice their debate skills. It could be on the benches [of Entêby], so anyone can join in if they want.' Debate skills are very useful in life, and something that the School's students tend to struggle in. Providing a club would improve everybody's ability to present an argument respectfully. 'I think it would be good practice for me, seeing as I want to do something in politics in the future.'

A link is made at this point. If a staff-member must be present at the debate club, could they not also police the littering issue in that area? If a student knows that they are being watched, would they still act so irresponsibly? Even if they did so, should the *Group* not now compel them to gather it back up – plus a little extra for good measure? Nevertheless, 'People are just lazy.' This scheme could backfire if implemented poorly. Anyway, it would only apply during breaks on the day when the debate club runs. (Wednesday was specifically mentioned.) That leaves plenty of time to litter.

Next up, the Reading Ambassador. 'Have you got anything planned currently?' Nothing is on the schedule. Rather than probe into this absence, the *Group* member decides to survey the Leaders on a deeper topic. 'Have any of you signed a book out of the Library before?' They have not. ('It's just like, if I want a specific book, I'll get it at home, not waste time and effort going through the Library here.') To alleviate this, a slide has been commissioned for the digital noticeboard, detailing the sign-out process and promoting the Library's use.

If you are counting the number of Leaders who have spoken so far, you would naïvely assume six more discussions to reach the total of nine. You would be wrong. There are only three Leaders present this time, excluding the Council- and *Group*-members – that is very poor attendance indeed.

Reportedly, the main issue is that the dates are not well-publicised. 'I'm not going to stare at the board for minutes to find something specific. I'm busy; I've got lessons to go to.' On the day before, the noticeboard could show a static frame – bold text, large-point font – to alert all the Leaders.

This, though, marks the end for today. Physics now, and a week until the Council meeting.

Direct democracy

THE STUDENT COUNCIL "Forum" took place on the 11th of November. This is a new type of meeting, where the entire student population is invited to the Assembly Hall, Lintae, to suggest their ideas for the School. It allows any student to make their mark on decision-making, regardless of whether they were picked as a leader.

The Devious One was pleased when the first suggestion was for a playground for KS3 students. 'The only playground is the one in KS2; why can't we have one as well?' As longtime readers of this *Herald* will remember, there used to be a play-area in the western part of Lintae, outside the entrance to the School's sixth form. It was demolished in 2021 for being "unsafe", with the promise of a replacement in the near-future. Four years later, and that site remains an almost empty patch of grass.

Whenever this topic has been brought up before, the *Group* has conjured a façade of preparing to rebuild the playground – 'Oh, we're just waiting for planning permission.' Then they hope that the students have forgotten in a few months, when the quietly drop their pledge. Most did not notice, but one member of the Foundation saw it as an oppressive pattern that he was willing to break. The Petitioner, as he is now known, fulfilled his namesake and generated as much publicity as possible.

Eventually, the *Group* yielded, contracting the Petitioner to produce a plan, which he did, helped by the Devious One. Environmental surveys were even conducted in July (the petition, for reference, was submitted the previous November). The tone now would be a bellwether for eventual success. 'There is a date [for delivery of parts].' The 1st of December, the head of the *Group* confirms. This looks promising. Anyway, onto the next speaker.

'More D&D.' Of course somebody would ask that. "Dungeons & Dragons club" already takes place on Tuesday, Thursday, and Friday lunches – but apparently more is needed. The teacher who organises the club already dedicates two hours of her time to the cause each week; any more would be frankly ridiculous. The prevailing idea is that somebody else would run a separate campaign on Mondays and Wednesdays, but locating a willing party has proven challenging. 'More D&D' may be a serious proposal, but it will likely go unfulfilled.

Next up on the agenda: sport. The grassing over of a part of Bridgia's Tennis Courts has led to unexpected consequences. Footballs are being lost over the short fence into the thicket of Peleph, and nobody is going in to retrieve them. People could simply kick the ball more gently, but no serious football-player is going to accept that! No – clearly, buying more footballs is the correct solution.

Or we could cover the Tennis Courts over. Not like the £175,000 roof proposal; that would be far too much expense for a few footballs. Your correspondent suggested a form of netting to stop footballs being kicked too high. (Quite how that would stay up is a mystery, though, without huge pillars in the corners of the Courts.) An alternative is to use a form of inflatable sports dome, albeit one which would not gain holes when footballs fly into it. Despite some saying it would be an eyesore, a poll yielded 10 for, 3 against, and 8 abstaining.

More sport-related desires were soon to come. The kit for the School's football team is, allegedly, in need of replacement. The utility of the Tennis Courts is hampered by the new turf: basketball, netball, and other such sports do not work well on it. Previously, the indoor gymnasium would have been used, but this has been covered in equipment which cannot be easily put away. Less competition for football, though. Finally, a student proposed having a vote in PE classes for preferred sports – the results would be rather predictable, one expects.

Even getting into the School can be difficult for some. The queue at the start of the day is an intended feature, not a bug, but it is often slower to clear than it ought to be. This predicament is two-fold. Firstly, the circulation of taxis through the School is often blocked by cars stopping afront Reception – they should always park on the side before stopping so maximal efficiency is achieved. This will mean more taxis can drop students off in a given unit of time, expediting the entry process.

Secondly, although the queue can be slow at the Lintae end, registration is often the bottleneck in letting taxis in, especially early in the morning. In an ideal world, the staff would arrive very early and have the entire queue registered by 8:45. But there is always the temptation to leave just a little early. Sometimes, they arrive exactly at 8:45 to allay this; taxis must then wait a while to be registered.

Breakfast club. Hands up, all of you who use it. Three people? Really? Oh, I see... you're saying the last problem makes this one worse? Breakfast club ends at 9:00, so is inaccessible for anyone who arrives later. For those who rely on the service, it has led to many hungry school-days, especially when traffic rears its ugly head. Why not extend it to 9:30 to fix this? According to a poll conducted *in situ*, four students considered using breakfast club, but decided against it due to the early finish. After all, it leaves additional time for sleeping.

'More D&D.' I swear we had this one before, but I digress. Carrying on from the discussions on breakfast club, the new idea is to have a "Dungeons & Dragons" campaign running in the lunch-hall – the same place as breakfast club, note – between 8:45 and 9:00. Problem: only people who arrive early can play. Which, as implied previously, is variable. Therefore, some players would inevitably end up missing out of important sessions. (Given the conditions of the students at the School, upsetting their routine with little warning is not ideal.) All in all, break- or lunch-time sessions would be better.

The final suggestion of the Forum began thus: 'Could we have a music club during lunch?' To which, your correspondent replies, 'Please!' But, in all seriousness, music during lunch is currently in a strange situation. On most days, you will hear students playing their favourite instruments at the loudest volume in Lintae's music room. However, this is done solely at the discretion of a student's one-to-one assistant, or a well-disposed member of the *Group*. If nobody is there to open the door, no music can take place. Surely sparing one teacher is not too hard (on the contrary, given all the ideas for new clubs, it may well be so), and the demand is clearly there. Why not ensure the supply side?

Your correspondent feels that he must put a disclaimer here. All of these "proposals", "ideas", "suggestions"– whatever they were called – above have no guarantee of taking effect. It is completely up to the *Group*, or, to a lesser extent, the Council, to decide whether and how to implement these policies. Do not feel offended if your proposal does not make the cut; often, it is simply infeasible to execute the plans that students might have. The Forum is a space where any student can suggest what they want to. That is extremely powerful. ▪

Guides

Ŕhen Angane

A complete guide to Bridgian

I T HAS BEEN called the greatest achievement of Bridge Base's Media division. Three different writing-systems, an entire (admittedly puny) dictionary, and the world's most abstract syntax combine to produce something special. A medium of communication that has proven impenetrable to the eyes and ears of any non-Bridgian. And here is the Devious One, attempting to break this curse once and for all. He will, most assuredly, fail.

Explaining the product of one-and-a-half years of development is no easy task – not even in 7 pages – but one that its creator is willing to take on. If this accomplishment is not appreciated for its *Bíshbace-sye*, then all this time would have been wasted for nothing. Publicity, therefore, is crucial.

Phonetics: how to write Bridgianly

The first writing-system for the Bridgian language began to come together in December 2023, with an index of pronunciations for the Devious One's invented names. (Try saying 'Zétisle' and you will see why this was necessary.) Albeit primitive, this worked well enough for its principal objective, such as the aforementioned being transcribed as *ZÉ-tál*. When equated with the key below – like 'z' in 'zoo'; like 'ei' in 'eight'; like 't' in 'time', *et cetera* – the word's pronunciation can be intuited.

Gradually, the system was refined (although not expanded *per se*: the modern system uses 28 symbols, versus 34 originally), and, two months into development, gained the moniker "Bridgian Phonetics". The main object was that a letter corresponds to one sound only – a quality that the Devious One has dubbed "anaphony". English is notorious for not following this principle; 'ough', for instance, is said in at least nine different ways depending on the word it is found within.

The current version of Bridgian Phonetics has twenty-six base letters representing sounds. (In lowercase, *ɔxaɐbcdefghɪjlmnɔoprʂþuvwy*.) Most of them are ordinary Latin letters, but six may require further explanation. *ɔ* is an upside-down letter 'e', as *ɐ* is to 'a'; *ɪ* and *j* have their dots removed; *ɔ* is a reversed 'c', and *þ* is "thorn", a letter used in the middle-English period, but phased out for 'th'.

More important, though, is knowing what sound each letter represents. There is a full list on the Foundation's website, but a guide to the least intuitive half of letters is given here:

Symbol	English letters	Found in
ɔ	Any vowel.	'u' in 'full'
x	d(l) or t(l)	'd' in 'secondly'
ɐ	a(r)	'a' in 'father'
c	sh	'sh' in 'shy'
f	Not used in English. Similar to v	
j	ch	'ch' in 'loch'
ɔ	ng	'ng' in 'singer'
p	r (normal)	'r' in 'rain'
r	r (rolled)	'r' in 'rain'
þ	th ("soft")	'th' in 'three'
v	f	'f' in 'fine'
w (*ẃ*)	oo, w	'oo' in 'choose'

Some of the letters – 17 of the 26 – can gain an acute accent (ˊ) to modify their sound. For vowels (any letter in *ɔaɐeɪopuwy*), this lengthens their sound; *é* represents the sound of 'air'. For fricatives (*cfjʂþv*), this results in "voicing"; think of the change from 's' to 'z', or 'f' to 'v', or 'sh' to 'zh'. This is why the English phonic 'f' is denoted as *v*: the sound for 'v' is included by default as *ύ*.

ŕ, for those curious, represents a trilled, not merely rolled, 'r' sound. But anyway, about the 28 symbols described earlier. One has been omitted: the "pause", or ˊ. Technically known as the glottal stop, this forced break in speech is generally found replacing clicks in words, albeit depending heavily on dialect – an issue we will return to later. (Many, though, use one for the 'd' in 'forced break'.)

Some examples may be helpful here.

Sum eˊgsɐˊmbhɔlś mey by helˊbvɔl hí.

The first sentence of this section:

Þɔ vɔ́sd pɐydhɪɔ-sɪsdɔm vó þɔ Bpɪdćÿɔn laɔgwɪdć bɔgan dhɔ ghum dhɔgeþɔp ɪn Dɔsembɔ dhwendhy-dhwendhy-þpÿ, wɪþˊ ɔn ɪndeˊgś oύ bhpɔnunsÿeycɔnś vó þɔ Dÿύÿɔs Won's ɪnύendhɪˊ neymś.

Now easier to read!

Described in the last section was the "traditional" form of Bridgian Phonetics. This sets anaphony as the top priority, assigning one letter to each sound and sticking to it. Nonetheless, there are problems with its strict paradigm: legibility, depiction of structure, and – perhaps the worst offense of all – "common sense". Coincidentally, traditional form would be an ideal basis for creating other forms of Phonetics which could rectify these difficulties.

The first to come was "anglicised" form, itself based off a former system known as "short-form" Phonetics. This was created as a reaction to recent abstractions in traditional (then known as "long-form") Phonetics, where many common English phonics were found to be composed of two, more elementary sounds. Worst were the "aspirates": 'p', 't', and 'k', were transliterated as *bh*, *dh*, and *gh*.

In fact, short-form started by simply reverting these to their more "sensible" English versions, as well as a few others – *ɐ* to 'á', *dc* to 'ć', *ey* to 'é'. For some reason, letters outside the English alphabet (*ə*, *ɔ*, *ð*, then used for soft 'th', and *þ*) were kept as before in short-form, resulting in an odd mixture that was both unintuitive to English-speakers and phonetically inconsistent. What was the point?

A complete rework was needed. One renaming to "anglicised" later, the letter-substitutions became far more sensible and easier to pronounce properly. Suddenly, *Fɔneti'ź* became *Fùnetikse*; not perfect, but at least clarifying what on Earth *ź* was meant to be. Finally, a version of Phonetics for the lay person to read, not for the odd linguist who somehow understood the article in *Herald*-issue 2. Even better, the conversion process is reversible, in theory – this means that any anglicised text has an unambiguous pronunciation, although your median English-speaker may not reach this exactly.

Obviously, "anaphony" in its strictest sense is not maintained – a single letter can be pronounced many ways depending on context, and *vice versa*. But a looser sense is still present: any word written in anglicised form always has one, and only one, phonation in traditional form. Do we really need every letter to correspond exactly to a sound? Or is a simple set of rules enough for all to go by? This is the question of the Phonetical forms: traditional versus anglicised, precise versus instinctive.

<center>***</center>

You may notice that there was little detail in the description of modern anglicised form. This is because, again, the Devious One's perfectionism has gotten the better of him. Anglicised form is scheduled for another redesign, but this will, no doubt, take months to come to fruition. Presently, anglicisation takes place on a case-by-case basis – not ideal for a system based in definition and logic.

The title of this article, for instance, comes from the Bridgian *ren angeyn*, meaning 'other way to inform'. In the most recent version of the Translator, published in May, this was converted into *ŕen angên* for anglicised form. The accents are the most confusing part; the last syllable may end up sounding like 'gene', whilst it should be like 'gain'. The spelling *ŕhen angane* resolves this, but keeps the accented *ŕ* to make its rolled nature clear. (By the time the improved version of anglicised form is released, this will likely turn out to be incorrect.)

Anglicised is useful for writing Bridgian in an accessible way, but is almost never used when writing the language. Spellings change in peculiar and confusing ways, which makes it harder to understand the words. Anyway, being able to pronounce Bridgian is no help if you have no idea what anything means. There is one form, though, that aims to encompass the very meaning of Bridgian – to kill this glorified "alphabet" once and for all.

The International problem

International. Phonetic. Alphabet. Anybody who knows anything about linguistics will have been screaming at this this article for the past page, demanding a refund for this copy of the *Herald*. "We want a proper Bridgian writing system," say they, "not this half-baked copy of the ɪᴘᴀ". It is true that letters in traditional-form Phonetics correspond roughly to the ɪᴘᴀ's symbols. For example: *á* is [æ:], *c* is [ʃ], *f* is [ɸ], *ɟ* is [x], *ɔ* is [ŋ], *o* is [ɔ], *r* is [ɾ], *u* is [ʌ], and *w* is [ʉ]. Traditional form is nothing more than a respelled ɪᴘᴀ. That is the whole point. →

CONSONANTS (PULMONIC) © 2015 IPA

	Bilabial		Labiodental		Dental		Alveolar		Postalveolar		Retroflex		Palatal		Velar		Uvular		Pharyngeal		Glottal	
Plosive	p	b					t	d			ʈ	ɖ	c	ɟ	k	ɡ	q	ɢ			ʔ	
Nasal		m		ɱ				n				ɳ		ɲ		ŋ		ɴ				
Trill		ʙ						r										ʀ				
Tap or Flap				̆ⱱ				ɾ				ɽ										
Fricative	ɸ	β	f	v	θ	ð	s	z	ʃ	ʒ	ʂ	ʐ	ç	ʝ	x	ɣ	χ	ʁ	ħ	ʕ	h	ɦ
Lateral fricative							ɬ	ɮ														
Approximant				ʋ				ɹ				ɻ		j		ɰ						
Lateral approximant								l				ɭ		ʎ		ʟ						

Bridgian Phonetics was not intended to be a replacement of, or even an alternative to, the IPA. It was designed to only loosely represent the pronunciations of words, to the extent that anyone could be expected to reproduce them. Phonetics was merely a placeholder, waiting for something more Bridgian to fill its place. It was designed, in essence, to be simple. (Now that your correspondent reads these words, a chill runs down his spine, seeing the next topic on the agenda. Speaking of...)

All-Bridgian writing

In October last year, the Devious One, probably in a car on the way to or from the School, was thinking about how to deal with the existence of the IPA. The IPA is superior to Bridgian Phonetics in almost every conceivable way – so what was the point in duplicating their century-old work? He felt he was being faced with two options for development.

Lemma 1. Consider the purpose of Bridgian Phonetics. The only reason it exists (apart from that weird name-generator stuff) is to encode the Bridgian language. There is no reason why that cannot be translated into the IPA and Bridgian can carry on thence as normal. This alternative alphabet seems a bit silly, all in all; the Foundation looks quite ignorant for insisting on it. Why not forget Phonetics and keep going with the main project?

Lemma 2. Consider the purpose of Bridgian Phonetics. The only reason it exists (apart from that weird name-generator stuff) is to encode the Bridgian language. The Bridgian language deserves a Bridgian writing-system to fit it. Latin letters? No way! We need something better that will look the part with the language. The IPA can provide a basis for traditional form – then indirectly making whatever this new, Bridgian form is going to be.

The resolution to this dilemma came near the start of the next month. A new system for writing using lines between points on a grid, presented by a fellow Bridgian (not the Devious One this time!), which would hopefully be ready by the BridgeCon taking place in two weeks. Once the ball had been set in motion, things went quickly. It was transliterated into Phonetics and sentence syntax (spaces, full stops, and the like) was incorporated after only two days. This would be a success – an all-Bridgian writing system, without any semblance of Latin.

The grid-and-lines, tentatively known as "syllabic", system of phonetics, went thus: each letter in Bridgian Phonetics is assigned a point on one of two 3×4 grids. (There were only 24 letters back then; ꜰ and ɟ had not been added yet.) To form a word, lines would be drawn between the points representing the letters in traditional form. The second grid of letters is indicated by a circle around the respective point on the main grid. Accents are given by placing a triangle around the point – within the circle if both are present for a letter.

Two issues were noticed. Firstly, you could not tell which way around the word was said (is it *beys* or *syeb*?), requiring a small filled-in circle at the initial point. Secondly, some lines passed through other points between their two letters. It would be ambiguous whether those intermediates were part of the word or not. Therefore, if this condition occurred, a new grid must be started – same as if a point would be hit twice in one syllable. By the way, this is not how modern syllabic form works.

Eventually, though, the system was rewritten. In the Devious One's eyes, the concern was that this new form was actually harder to write than the other forms of Phonetics. With all the triangles, circles, and prefix-markers, many more strokes of the pen were needed to form words compared to simply writing letters. The name, "syllabic" form, was also a bugbear, as some syllables could not be shown on one grid. Finally, the grid layout is no more insightful than a string of letters: it does not give any information about the parts of a syllable.

Glyphs would be to replace the letters from traditional form. That is correct, another alternate alphabet. But with a twist. These glyphs would not just be placed left-to-right like boring English, but top-to-bottom within a syllable. Consonants would go at the top, followed by vowels in the middle, and another set of consonants at the bottom.

Take an English word made of a single syllable. For instance, 'trains'. The consonants before the vowel are 'tr', the vowels in the middle are 'ai' and the consonants at the end are 'ns'. Splitting the syllable like this is the first step in making syllabic form. (In Phonetics, we would do likewise with traditional *dhpeyns�ó: dh*, *pey*, and *ns̓*. Note how the 'r' phonic gets lumped in with the vowels, as *p* is considered a vowel in Bridgian Phonetics.)

In the syllabic jargon, the consonants at the start are known as "prophones", followed by the "mesophonic" and "exophonic" vowels, and lastly the consonant "metaphones". The prophone goes at the top of the syllable, and can either have one or two consonants. If one, the glyph representing the sound is placed at the top with a simple line on the right-hand side. (For example, the glyph for *d* is ⌒ , and for *ś* is ⌒ .) Note that the symbols for accented letters are only loosely related to their normal counterpart's – this effectively converts the syllabic system into an alphabet of 43 letters.

If there are two prophonic consonants, they are joined together by taking the first glyph and placing it on the left, then horizontally reversing the second glyph and placing it on the right. The phoneme (phonetic symbol) *h* is special in these rules, though. It acts like a modifier to the sound before, where it gains a small vertical line at the top. This goes on the side of the letter it relates to: in the middle if there is only one consonant, or to either side for two. The aspirate *dh* (like the phonic 't') is indicated in figure.

The vowels, which are placed in the centre of the syllable, follow somewhat different rules. There must be one main vowel, known as the "mesophone", which can be surrounded by an "exophone" on either side. Exophones can only be one of *p*, *w*, or *y*, unaccented, whereas any vowel can be a mesophone. In the example above, the sequence *pey* (pronounced 'ray') has the mesophone *e* and exophones *p* and *y*. The glyph for *e*, ⌣ , is put in the centre, whilst the exophones go in the top-left and top-right corners, respectively. Glyphs for exophones are different from their mesophonic versions – *p* is ´ , *w* is ˚ , and *y* is ˋ .

A sigh of relief may finally be let out after this: the metaphone is formed in the exact same way as the prophone. *n* (⌒) and *ś* (⌒) combine to make ⌒ . And now the three main parts of the syllable are formed. The word 'trains' has now been converted into syllabic form, for whatever purpose that may be good for. Hooray!

Punctuation

Prophone
dh

Mesophone
pey

Metaphone
nś

For those who wish to read Bridgian, the more important skill is deciphering the syllables. For that reason, an example has been provided opposite. If you wish to crack this for yourself, please skip to the next page's start. Otherwise, press on to reveal the boringness of this word. With the Website's list of glyphs in hand, let us continue to decode.

Careful reading of the syllabic alphabet shows the glyph ⌣ represents the anglicised letter *v́*. The horizontal line on the right shows that there is only one prophone, so the word must start with the phoneme *v́*. Next with the middle part. The vowel in the centre can be found, again by scouring the alphabet: not *v* – that's ∞ – but ∝ , *a*. This appears to be succeeded by an exophone; the one that looks like the letter 'u' is *w*. Result: *v́aw*.

The metaphone is a bit harder. Scanning through the alphabet, there appears to be no letter for ↩ . A culprit can be easily found: that is no "horizontal line" on the right. The right-hand side lines up reasonably well with the *ś* in the example. The left appears to be like *e*, but this is a consonant, not a vowel. That circular part on the left, though, is also found in the symbol for *l*, ↩ . Might that be the left half here? Sure enough, plugging *lś* (or 'ls', as it would be typed) into the Translator gives a glyph remarkably like this mystery word's metaphone.

Reading top-to-bottom within the syllable, the word is translated to traditional form as *v́awlś*. This is only half the work – now we need to work out how to pronounce it. *v́*: like 'v' in 'vine'. *a*: like 'a' in 'rap'. *w*: like 'oo' in 'choose'. *l*: like 'l' in 'line'. *ś*: like 'z' in 'zen'. *v-a-oo-l-z* – vowels! That is the word being written above, no matter how alien it may seem. Circling back to the correspondence to the IPA, this would be written as [væɫz]. (Technically, a primary stress marker should be added at the start for ['væɫz]. Again, this is the Devious One's poor transcription of his own pronunciation, so take it with a cellar's worth of salt.) →
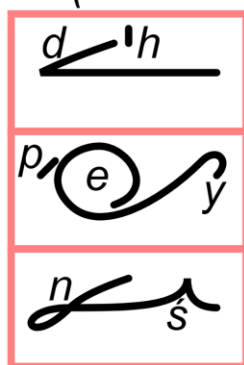
Grammar is also incorporated into syllabic form. This was another difficulty with the original grid-and-lines system – fixed by adding spaces and placing punctuation as in English. Boring! The second version of "glyphic syllabic", the version used now, has punctuation in two places. Spaces, hyphens, and full stops go between syllables – a tall line (|), short line (ı), and doubled line (‖) for each. The pause (in traditional, ´) is also denoted here, as a horizontal line through the middle. Be warned, though, that it may appear without any vertical line with it, so alignment must be perfect.

Other punctuation, such as commas (╱), brackets (≈, ⪍) and dashes (○), are placed above the syllable-lines – interestingly, in a way that could have worked for grid-and-lines. But this is fancier: odd letter-forms and careful structuring combine to produce confusion for all who try to parse it. This is one point of syllabic form. The other is to ensure that Bridgian remains the most devious language in the School – which it has little competition, seeing that the *Group* has no interest in providing anything beyond boring-old English.

Now for some examples of syllabic form.

This is the first paragraph of this section (see two pages ago) in syllabic:
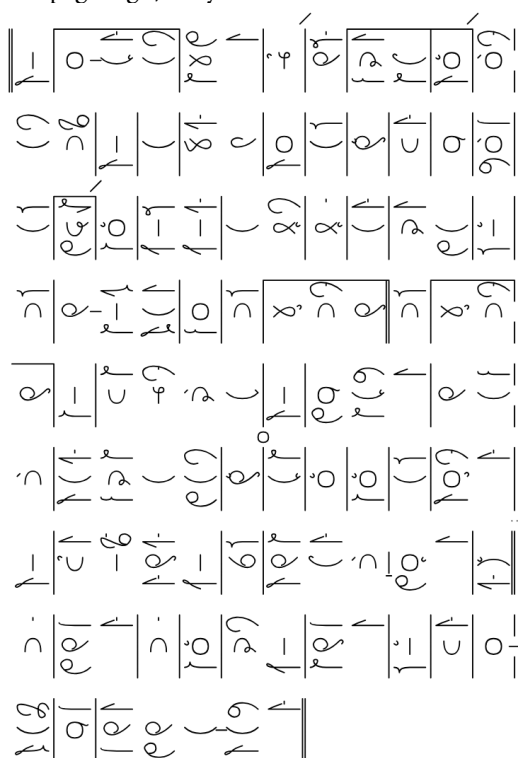
Of course, after any transliteration of English into Bridgian Phonetics, the following disclaimer needs to be made: 'This is how the creator of the transcription pronounces the words above; others' pronunciations may vary.' Honestly, it is getting boring now – why do we have to keep stating it? – but this point is nonetheless important. Different people say words differently. For instance, some would pronounce the word 'trains' like *dcpeynś* (IPA: [t͡ʃɹɛinz]): a 'ch' sound rather than 't' initially.

Therefore, a Bridgian Phonetic version of an English text, written by somebody else, may look slightly different. This is not such a game-breaker, though; saying the words should make them easy to identify. More impactful is the fact that English syntax does not work well with phonetical writing. People complain about English spelling. But have you seen English pronunciation? The word 'finite' is pronounced *vɐynɐy'dh* ['fɑinɑiʔtʰ], so what do you think the second half of 'definite' would be? That is correct (*de*)*vɪnə'dh* ['dɛfɪˌnəʔtʰ]. By adding a prefix, we have changed all the vowels in the root word. Meanwhile, the spelling acts like nothing at all happened, adding 'de-' and moving on.

A world in which English words are "spelled like they are pronounced" – the self-described dream of many students – would remove much of the structure that exists in the language. Prefixes and suffixes are replaced by seeming randomness. Every word's pronunciation must be learned, just like how spellings are learned. The only benefit is that knowing one gives you the other. Some may worry about the issue of homophones ('they're', 'there', and 'their' would become the same word), but words with the same spelling are equally bad.

The main trouble is dialect. One person's 'pick' may be another's 'pique', so these words could wind up being swapped around. Either this would be a regular occurrence, or we would need a standard pronunciation for every word – sort of like Received Pronunciation in English, but way more forced. (Anyone who disregards them would have to deal with unusual spellings.) A favourable solution, perhaps, would be to adjust everyone's pronunciations to fit each word's spelling. Then English would retain its linguistic structure, albeit with every word being said oddly. Or we could just make a new language, on a Phonetical basis…

Linguistically, "not too bad"

Now we reach the crown jewels of the Phonetical ecosystem (phonosystem?): the Bridgian language itself. This is how "all" – read: none – of the members of Bridge Base communicate between one another, via a cryptic channel of the utmost security. It does not matter whether a 7-page article is written explaining it in detail; still, nobody will really understand it.

Bridgian stemmed from the Devious One's sideline in Phonetics, beginning in April 2023. To his memory, a fellow member of the Base made a suggestion to the effect of, 'Wouldn't it be nice if we made a secret code for Bridgians to use, so the *Group* does not hear our plans?' The Foundation was already using such phrases as 'go Ohio' (raid Seldeth), so a cipher seemed rational to further covert capabilities in the School. A simple method would be to create a code like the Vigenère cipher, to hide messages from any prying eyes, or ears.

But as you all know, the Devious One does not do 'simple'. He took this as a request for a full-on language – which, since he created Phonetics a few months prior, would have been easily within his ability. A list of words was first to come. At the outset, this had little structure ('is' = *cem*; 'are' = *dcem*; 'person' = *afey*; 'people' = *afeyɔ*; 'truth' = *endō*; 'truths' = *landō*; *inter alia*). Gradually, some rules were added. For example, the language only uses some characters: *ɔ*, *þ*, and all accented letters are "reserved for future use", along with the pause.

More important are the differences between this and English. Firstly, no plurals. The Bridgian for 'person' and 'people' is the same: *vey*. Secondly, no articles. In Bridgian, there is no such thing as 'the person' or 'a person', just *vey*. Thirdly, one meaning only. If one word or affix has the spelling *beys*, then there cannot be another word *beys* – apart from proper nouns, which are indicated separately in syllabic form (see previous section).

The worst part, for some at least, is the completely different set of spellings for words. 'Today' is *ɯþel*, 'life' is *anden*, and 'reign' is *yeɔros*. There is a dictionary on the Website, but it does not explain the words' meanings very well. Otherwise, it could be solvable by a simple find-and-replace operation. 'Fire in the forest' would translate to *gɹal ve dþen*, as a completely and utterly random example.

Even after you get over the respelling, it turns out that Bridgian syntax is completely different to English. You know how in French, adjectives go after the noun they describe, so 'the red house' is translated to *la maison rouge*? Well, in Bridgian, adjectives can go either before or after the noun, with subtly different meanings. 'House' is *endhey* and 'red' is *ge bʜɪnsen*; *ge bʜɪnsen endhey* means 'the red house' (or 'a red house', or 'red houses' – again, no plurals), whereas *endhey ˏge bʜɪnsen,* means 'the house is red'. If the adjective is placed after the noun, a pair of commas must be used to delimit it from the rest of the sentence. Bridgian includes a reversed commas that goes before extra information, whilst a regular comma goes after.

Astute readers may notice that the "adjective" *ge bʜɪnsen* is two words, not one. Only *ge* is a real adjective; *bʜɪnsen* is a noun used as its "object". If this sounds remarkably like verb-syntax, it should. Verbs, adjectives, adverbs, and even prepositions are the same thing in Bridgian. *ge* means 'of', and *bʜɪnsen* literally translates to 'colour of the end': a reference to sunsets, trees' leaves in autumn, and the embers of a dying flame, all of which are red.

There are, in fact, only two types of word in Bridgian: nouns and verbs. Both can be described by putting a verb before or after them – if after, commas must be used to avoid ambiguity. Verbs can have a noun as their object, and this does not use a comma. These structures can be nested indefinitely to produce highly complex sentences, like in English. In a very abstract way, it gives you the meaning of the sentence, such as shown below:
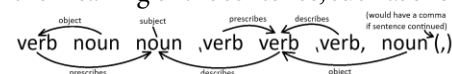
This fits in with the mental model of your correspondent when it comes to English sentences, with words "applying onto" others, modifying their meaning, which compounds until the main word contains the meaning of the whole sentence. (A procedure like this is also how large language models process strings of text, albeit in a far more complicated way.) The lay person probably does not perceive language in this way, understandably enough, but considering an example can help. Say, 'Bridge Base steals planks'. In this, the phrase 'steals planks' modifies the meaning of 'Bridge Base' to incorporate its wood-thieving quality. →

Essentially, if you want to convert Bridgian syntax back to English, you use the following procedure. Any verbs on their own after a noun move to before the noun. Meanwhile, any verbs with an object before the noun move to be after. Repeat this process until the entire sentence is English.

Except for the words themselves. Zooming in from sentence-level syntax, root words are always monosyllabic, made of one syllable. How, then, do we get longer words like *bhɐinsen* in Bridgian? Via two mechanisms: affixion and hyphenation.

Affixion is where prefixes or suffixes are added to change a word's meaning. The prefix *in-* turns a verb into the noun that it represents – *dhey* means 'to construct'; *indhey* means 'construction'. In the same way, the suffix *-sa* turns a noun into a verb representing relation to the noun – *Bycbeys* means 'Bridge Base'; *Bycbeys-sa* means 'Bridgian'. In these words, by the way, stress is always put on the root word, not the prefix or suffix. The earlier example should have its second syllable stressed: as *in**dhey***, not ***in**dhey*. (Or, in the ɪᴘᴀ, [ɪnˈdʰɛi], not [ˈɪndʰɛi].)

There are plenty more affixes, but *in-* (and other **n-* prefixes) are the most important. Not unrelatedly, *in-* is used in the word *bhɐinsen*, 'red'. *sen* means 'to end' in Bridgian, and *in-* turns this into 'the end' or 'ending'. Still, *bhɐ* is a completely different root-word, meaning 'colour'. How does it combine with *insen* without being a prefix itself?

Hyphenation, that is how. The use of hyphens in Bridgian is roughly like that in English, just the words are the other way around and sometimes the hyphen is omitted. If we apply English rules on *bhɐinsen*, for instance, we get 'colour-end' or 'the end of colour'. In Bridgian, though, 'colour-end' translates to 'colour of the end'; *bhɐinsen* is, to all intents and purposes, equivalent to *bhɐ ge insen*.

Noun–noun hyphenation, as depicted above, is the most common combination, but there are also noun–verb and verb–noun variants. Again, the words are swapped around: 'all-time' would translate to *dhanɐ* in Bridgian, even though *dha* means 'time' and *nɐ* means 'all'. Just as 'all-time' connotes eternity, *Bycbeys ˏdhanɐ,* is equivalent to *dha-Bycbeys ˏnɐ,* – literally, 'The time of Bridge Base is all'. The verb–noun form (noun–verb in English) means that the quality in some way relates to the noun, as in 'fire-starting', or *dheygɟɐl*.
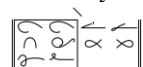
Punctuative syntax

There is one part of Bridgian that has not yet been explained. That is partly your correspondent's fault – he always felt it was too "English" for his rebel language. However, he now recognises that everyone else probably sees it otherwise – even if the same symbols are used, they would have subtly different effects on Bridgian compared to English.

You already saw one variation in punctuation: there are two types of comma. "Opening" commas are a reversed version of the regular comma (ˏ) that appear at the start of additional description. In English, of course, the same type of comma would be used at the start and the end, which can cause some ambiguity. For anyone thinking this sounds weird and overly formal, it has precedent. Think about brackets and quotation marks. Nobody is complaining of them using two different symbols to represent different aspects of the same concept.

Dashes have opening, middle, and closing variants ('—', '–', and '~' in the Translator), albeit not displayed in traditional form. This reflects the structure of the dash system, where a list of dashes is used to repeat the same meaning in alternative ways. Punctuation that divides clauses – *i.e.*, full stops, semicolons, and question marks – are nearly identical to those in English. The question mark, though, has the symbol for a full stop added too.

There is one all-new piece of punctuation in Bridgian: the "anticolon" (⨟). Like how a colon denotes the second clause as more important than the first, the anticolon sets the second clause as the main part, and the one before it as an additional description. Also, in the same way as the colon can replace 'because', the anticolon could be used in lieu of the word 'so'. All in all, the anticolon is not really a new concept, just a version of ':' or ';'.

Naturally, these punctuation symbols have their own glyphs in syllabic form, such as ∧, ‖, and ∨, for the semicolon, colon, and anticolon respectively. This article has displayed Bridgian in traditional form because it looks more familiar to English-speakers. In contrast, the most Bridgian way of rendering the language is in syllabic form – where *Bycbeys ˏdhanɐ,* for instance, is turned into

Bridge Base forever, indeed. ▪

Tabula Scholae

A guide to the Devious One's region-system

Twenty-four bases. An equal number of regions. An infinity of trees. This is the 2025 School Map. The fifth in a series of maps produced in the highest of detail. On it are drawn twisting, absurd lines of variable thickness, partitioning near-empty fields into bizarre parcels.

The writer of this publication references the regions of the School frequently (possibly because he made them up). But nobody else recognises the areas they cover (possibly because he made them up). They have weird names that are impossible to pronounce (possibly because he made them up). What is the point in saying 'the thicket of Peleph' if 'of Peleph' means nothing? People are not going to open their imaginary copy of the School Map, just to find out that Peleph was not called that a year ago.

Sector < region < *ankaí*

Firstly, an overview of the system used by Devious One uses. He divides the School into 24 regions, further sub-divided into roughly half a dozen sectors each. As an example, the five sectors of the region Entêby – the area with the benches and the shed, opposite the main building – are depicted above.

Regions are grouped into three greater areas, the *ankaí* (rhymes with 'cry'), which are then split into halves. These were only created in last year's School Map – hence the Bridgian term for them. Senkaí, the inner part of the School, is divided into northern Entêkaí and southern Ephkaí. Lenkaí, the west, and Renkaí, the east, have inner and outer halves. To list the regions in each *ankaí*:

Ephkaí is Beryl, Gâpan, Gilnar, Inbepan, Ingdthen, and Nærór (much of the "school field"). Entêkaí is Entêby, Extèria, Lintae, and Rintae (all the buildings, including κs2). Lenkaí is Bridgia, Dthenden, Lendthay (inner), Ankassen, Fïrhos, Ŋahow, Nebāssa, and Peleph (outer). Renkaí is Kybel, Órshal, Pandol (inner), Æthûsa, and Fälea (outer). That makes total sense to everyone, right?
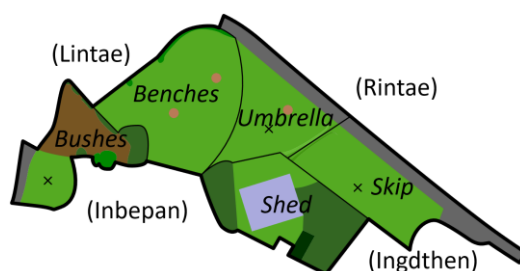
Honestly, the easiest way to work the Bridgian region system out is to look at the Map. Eschewing the antiquated ways of bitmap images, the latest Map is using the power of the Internet to release in an interactive format. This should make it easier to blend the detail needed, say, in the buildings with the large scale of "xenotopes" – in English, mostly uncharted areas at the edge of the Map. Nonetheless, there are some which are important to know.

Beginning with Dthenden. The combined [dθ] sound (see International Phonetic Alphabet) can trip some people up – ensure you are saying it as two syllables, not three. Anyway, Dthenden is the area of forest containing Bridgehaven, the old site for the Bridgians near Forest School, and the Logs of Bridge Base. Speaking of Forest School, it is in the region of Seldeth, a good approximation of cardinal west if seen from the main buildings.

The regions in Entêkaí are simpler. Lintae is around the building with reception and the lunch hall; Rintae is the part on the other side of the underpass. Entêby, as already described, is the benches and the shed, and Extèria is the Key Stage 2 area, plus the ramp to the back entrance into Rintae.

Oh, this can never work! Devious One, stop bombarding readers with random names! It does not help at all! *Yes, this is true. Really, I should be explaining the terms I use, rather than expecting everyone to find it out for themselves. The Bridgian geographical system may well be quite intriguing, but this is no place for rote learning – that should stay in Rintae, thank you very much.*

Advice accepted. Bases are odd relics from a bygone era. A time when mere bushes could have importance simply for existing. After all, that is what most bases are. You may have heard of Beryl, Bridge, and Domebush Base, but what about Junction Base? That is the bush by where the road splits to loop around Ephkaí. There are 24 bases, but only a small fraction was ever occupied. 24 is, incidentally, the number of letters in the Greek alphabet – and each base has a corresponding letter.

So, hopefully that cleared it up a little. Sectors compose regions compose *ankaí*; bases are sectors but special; and it is all messed up every year. ▪

Activities

Killer Sudoku
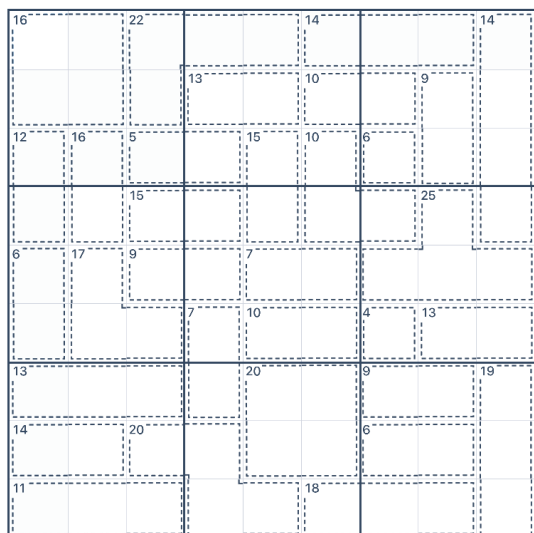
Instructions

Fill each square with a digit from 1–9, such that the squares within each dashed cage add up their respective total in the top-left. No digit may be repeated in a row, column, cage, or 3×3 box.

The puzzle is considered complete when there is a digit in all cells, following the above rules. There is only one valid solution given the initial clues, which should be arrived at by a logical approach for the maximum chance of success.

(Hint: consider the limited sets of possibilities of digits for cages of each size and total. Additionally, note that the digits 1–9 add up to 45 – this could be used to manipulate totals between cells.)

Maths Challenge

A scientist sets out to measure the strength of Earth's gravitational field, g, using a pendulum – a point-like bob connected to a uniform rod, free to rotate at a pivot. The bob has twice the mass of the rod, and the distance between the pivot and the bob is 3 metres.

The bob is released from rest at a small angle from the vertical and the duration of 100 oscillations is measured using a stopwatch. These measurements are repeated 5 times so a mean (average) can be taken:

<div align="center">312   319   322   312   320</div>

Level 1 (easy)

Give the initial momentum of the bob, and state the magnitude of the total weight of the bob and the rod, in terms of g and the rod's mass, m.

Level 2 (medium)

Calculate the distance l from the centre of mass of the rod and bob to the pivot. (Consider the moments around the pivot and how this can stay equal with all the weight at a single point along the rod.)

Level 3 (hard)

Derive an expression for the acceleration of the centre of mass perpendicular to the rod, αl, for small values of θ. Use an appropriate small-angle approximation.

Level 4 (extreme)

By deducing a formula for θ in terms of t, work out the value of g obtained by the experiment using the observed durations of 100 oscillations. (α, the angular acceleration from Level 3 $\equiv \mathrm{d}^2\theta/\mathrm{d}t^2$. Assume $\omega_0 = 0$.)

Solutions to all previous Maths Challenges can be read on the Foundation's website, accessible via the QR-code opposite.

Hypogram

A	E	I	L	N	T

Last issue's answers

A, ae, at, la, pa, ta, ale, all, alp, alt, ape, apt, ate, eat, ell, eta, lap, lea, let, pal, pat, pea, pet, tae, tap, tea, late, leal, leap, leat, lept, pale, pall, pate (or pâté), peal, peat, pell, pelt, plat, plea, tale, tall, tape, teal, tell, lapel, leapt, palet, petal, plate, pleat, tepal, pallet.

Instructions

Find as many words as possible using some or all the letters above in any order, excluding contractions, abbreviations, proper nouns, plurals, and adverbs ending in '-ly'. Letters may not be repeated unless they appear multiple times above.

Scores for this puzzle: moderate = 7, good = 14, excellent = 21, mastering = 28 words found.

Word Ladder

F	A	K	E
B	U	S	H

Instructions

Fill the grid so one letter changes between adjacent rows, and each row is a four-letter English word. Letters may not be swapped around, only replaced in the same position with another letter that generates a word.

Finding the correct sequence of words can be extremely difficult for longer chains, so a systematic approach is advised for the maximum chance of success.

Codeword

Crack the following Morse Code–based hexadecimal:

d566ab3559aacd566ab3559aacd566ab3559aacd566ab3559aacd566ab3559aacd56
6ab3559aacd566ab3559aacd566ab3559aacd566ab3559aacd566ab3559aacd566ab
3559aacd566ab3559aacd566ab3559aacd566ab3559aacd566ab3559aacd566ab355
9aacd566ab3559aacd566ab3559aacd566ab3559aacd566ab3559aacd566ab3559aa
cd56364d9aa4b45b6cdb546a969b66b5b1954b316cb2a35a5a59b535b35ad8da5a53
5352d49b2ca992d36d5146b34db2d8d52d36cd6b62996db4a8a994b52d46a95969a5
34da336cdb35ad8d9366a92d16db36d51b4b4a6a6a5a936595325a5ad65ad65ad65a
d6298a99b65b4b693515366d9aca69b4b5ac6d2d29a9a96a4d9654c969b6a8a62d94
b52d46a969b66d5b14ca8b6caca98caa45694b48d4d6ca69b4b5ac6b69aa6b646a9a
d91aa5969a6b5b35b58d566ab3559aacd566ab3559aacd566ab3559aacd566ab3559
aacd566ab3559aacd566ab3559aacd566ab3559aacd566ab3559aacd566ab3559aac
d566ab3559aacd566ab3559aacd566ab3559aacd566ab3559aacd566ab3559aacd56
6ab3559aacd566ab3559aacd566ab3559aacd566ab3559aacd566ab3559aacd566ab
3559aacd566ab3558

Sudoku

		7					1	3	
6		2	5	7				
8	4	3		9				
4			9			7	6	
	7	9			6			4
1		6			7		9	
	2				9			
		1	7		8	5		
				3	2			

Instructions

Fill all squares in the grid with the digits 1–9 such that each row, column, and 3×3 box contains every digit exactly once.

The puzzle is considered complete when there is a digit in all cells, following the above rules. There is only one valid solution given the initial clues, which should be reached by a logical approach for the maximum chance of success.

Crossword
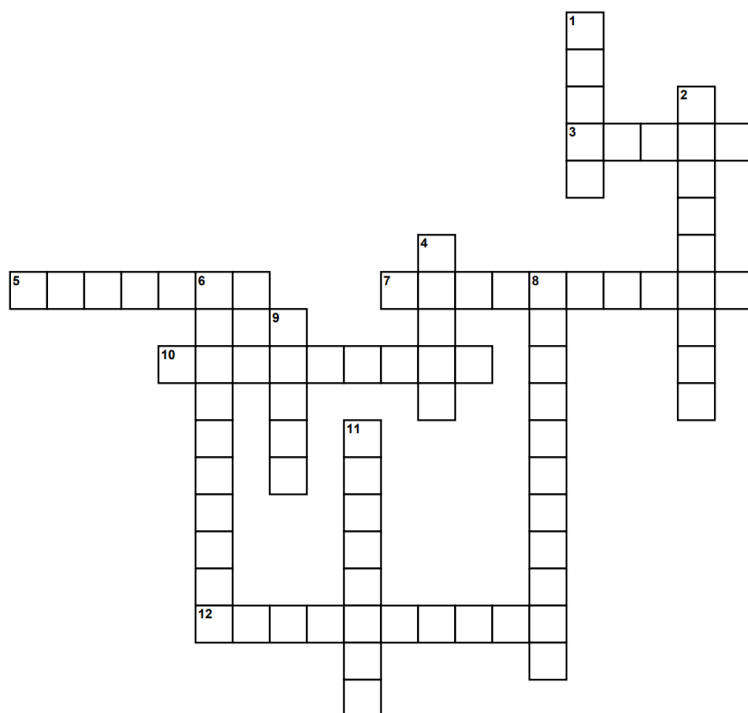
Across

3. Bridgian for 'life' (5)
5. Forest School's region (7)
7. The Petitioner's passion (10)
10. A syllable's main vowel (8)
12. Second word of RRS (10)

Down

1. Made up of multiple regions (5)
2. Maths Challenge theme (9)
4. Used to dig Dueltree Mine (5)
6. Number of School regions (6-4)
8. The study of Bridge Base (11)
9. Consultation with all students (5)
11. Suggested cause of littering (8)

Instructions

Identify each word above by filling each square in the grid with a letter, as given by the clues. Words are spelled either left-to-right or top-to-bottom. Each row or column has a clue-index in its leftmost or topmost square, respectively. The puzzle is considered complete when all squares contain a letter and the words fit their clues.

Kakuro
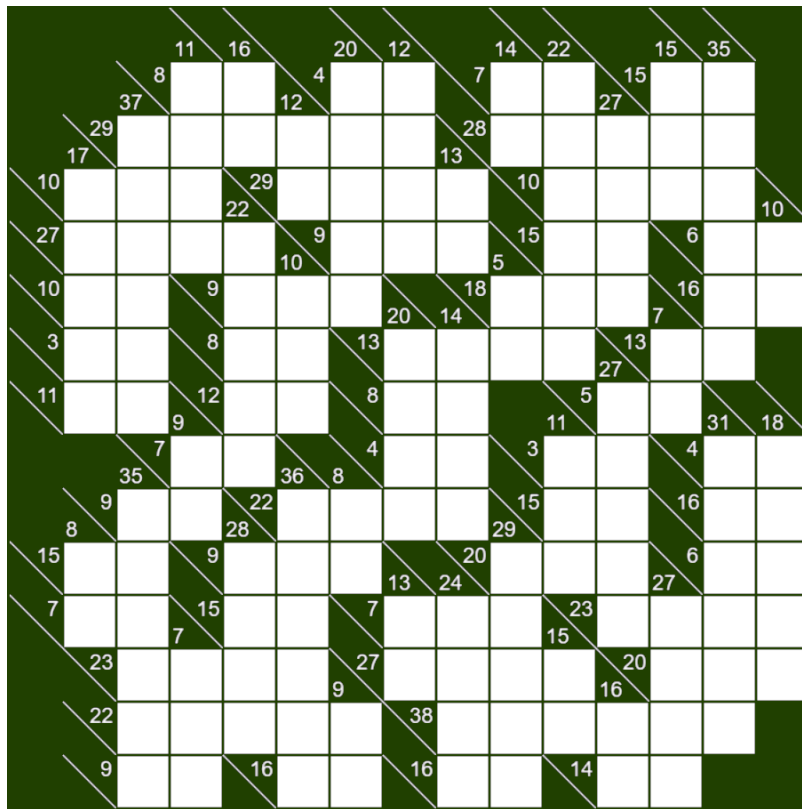
Instructions

Fill all squares in the grid with the digits 1–9, such that horizontal and vertical runs add up to their respective totals in the top or left. No digit may be repeated in an unbroken column or row.

The puzzle is considered complete when every square has a number in it, and all the above conditions are satisfied. This should be reached with a logical approach to maximise the chance of success.

Hashi ("Bridges")
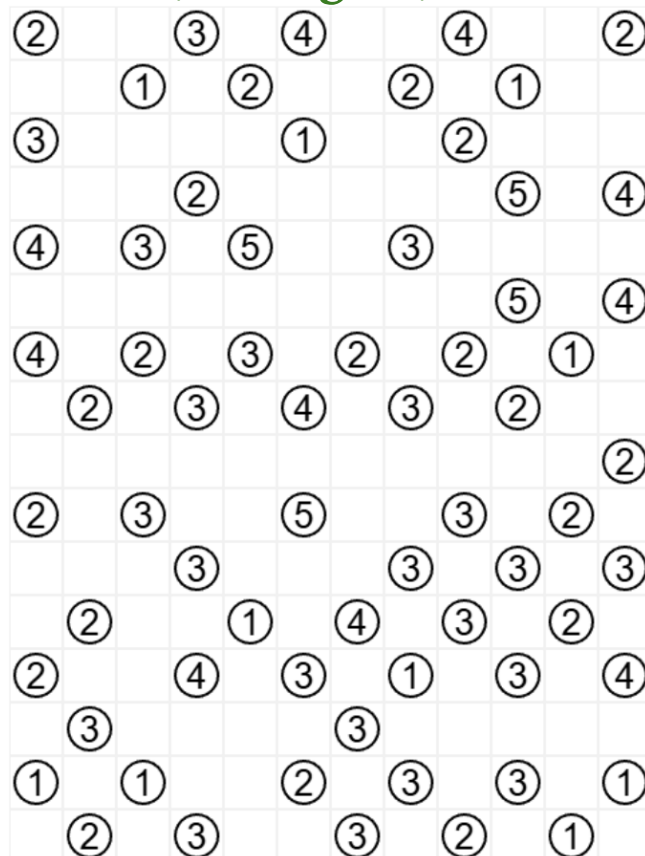
Instructions

Connect the ringed cells by bridges such that each cell has the indicated number of bridges connected to it. Bridges may only be horizontal or vertical, and cannot bend, cross another bridge, or pass over ringed cells. Cells can also be linked by double bridges (drawn as parallel lines), which count as 2 for the cells they connect.

The puzzle is considered complete when all cells have their requisite quantities of bridges connected (but no more), and the cells are linked by a single network of bridges – no disconnected islands allowed.