Voiced vs Voiceless or Why does b sound like p but not really?

This is where it would pay to have grown up speaking Cantonese, Vietnemese or Navajo ... One thing that can be said about all languages is that they all maintain sound contrasts, that is, have a set of sounds which can even intuitively be divided into groups. Say a hypothetical language has the sounds tt, b, g, kk, d, pp, k, t, p and you were asked to put them into "similar" groups - how would you order them? Most likely you will come up with three groups b, p, pp; d, t, tt and g, k, kk. In this case linguists would talk about b p pp contrasting with each other and you would have a good chance to find word contrasts like baka, paka and ppaka in such a language. So what on earth does this have to do with Gaelic? Patience ...

English also has such contrasts: <b, p> <d, t> <g, k> e.g in words like bat vs pat, down vs town and got vs cot ... Now, sit back for a moment and think about what your mouth is doing when you are saying these words. Put your hand on your throat (feel free to close the study door before trying this) and say them again. You should notice that with <b, d, g> there is something vibrating in your throat, whereas there is no vibration with <p, t, k>. This is due to two ligaments in your throat called the vocal chords which either vibrate or do not vibrate during speaking. If they are vibrating, we talk about a voiced sound, if they are not, we call it a voiceless sound.

So we say that English has a major contrast between voiced and voiceless sounds - the distinction that keeps people from worrying when you start talking about 'patting your sister' as opposed to 'batting' her. BUT ... not all languages make this particular contrast. Some languages like Cantonese only have voiceless stops. So how then can Cantonese people maintain these contrasts you may ask? Simple ... instead of relying on the voiced/voiceless cue, these languages use aspiration, that is, the difference is signalled by the lack or the presence of a puff of air after the sound. Confused? Let's look at an example:

English	bad [bɛd]	pad [pʰɛd]
Cantonese	爆 [paːu] 'explode'	跑 [pʰaːu] 'run'

The little superscript ^{h} is the aspiration. Even though English 'pad' is aspirated, that is not the contrasting feature - which becomes obvious in Cantonese, where only the aspiration distinguishes the words for exploding and running.

And Gaelic works just like Cantonese in this respect. Gaelic b, p, d, t, g, c are all voiceless, both broad and slender. So which one is which? b, d, g are simply voiceless, p, t, c are voiceless and aspirated, so in a pair like gas vs cas, the only difference between the two will be a puff of air following c.

To add to the confusion, Gaelic also pre-aspirates non-initial p, t, c. This means that in the middle or at the end of a word those sounds are not only followed by a puff of air, but also preceded by one. Here is a summary of these sounds (NB the symbol used is a small superscript circle [g̊] to show devoicing rather than [k]. Strictly speaking Gaelic g is not voiceless but devoiced - but for all intents and purposes the discussion of this difference is something that can be banned comfortably to the world of phonologists - follow these instructions and no Gael will accuse you of sounding 'foreign'. Also, because p, t, c are always aspirated both in English and in Gaelic, it tends not to be indicated in IPA transcriptions to save on ink and parchment, but we've written it here since aspiration and devoicing is the topic of this page:

	beginning	middle	end
b (broad)	bó [b̥oː]	cabar [kʰab̥ar]	gob [g̊ob̥]
b (slender)	beò [b̥jɔː]	ceòl [kʲʰɔːt̪]	guib [g̊ɣb̥]
p (broad)	pasgan [pʰasg̊an]	mapa [mapʰpʰə]	cop [kʰɔʰp]
p (slender)	peur [pʰeːr]	ìmpis [iːmpɪʃ]	cuip [kʰuiʰp]
d (broad)	doras [d̪̊orəs]	adag [aðag̊]	ad [ad̪̊]
d (slender)	deò [ð̊ʲ ɔː]	spaideil [sp̥aðʲ ɪl]	cuid [kʰuiðʲ]
t (broad)	tobar [t̪ʰob̥ar]	bàta [b̥aːʰt̪ʰə]	cat [kʰaʰt̪]
t (slender)	tiugh [tʲ iu]	càite [kʰaːʰtʲ ɪ]	cait [kʰɛʰtʲ]
g (broad)	gob [g̊ob̥]	baga [b̥ag̊ə]	rag [rag̊]
g (slender)	geur [g̊iar]	aige [ɛg̊ʲɪ]	aiseig [aʃɪg̊ʲ]
c (broad)	cù [kʰuː]	aca [akʰa]	mac [maʰk]
c (slender)	ceò [kʲʰɔː]	aice [ɛʰkʲʰɪ]	mic [miʰkʲ]

Urk! So how do you make these sounds? Well, p t c are quite straightforward, because they have (close) English equivalants (except for slender c and pre-aspiration):

pasgan	pat
peur	peer
tobar	tongs (remember this is a dental sound in Gaelic)
tiugh	chew
cat	cat
ceò	keel (no real equivalant; see under Velar sounds)

The other three, b d g are a bit more tricky as you may have guessed because they do not exist in English as a phoneme as such. That is, you will not be aware of them being different in the same way as <pat> and <bat> are in English.

They do exist in English, however, which is a great help. In English, clusters like <sp> <st> and <sk> contain exactly these sounds:

English	compare Gaelic:
speech [sb̥iːʧ]	easbag [ɛsb̥ag̊] AND bàta [b̥aːʰt̪ə]
steer [sd̥iːɹ]	Alasdair [at̪asd̥ɪrʲ] AND doras [d̪̊orəs]
skew [sg̊juː]	sgàil [sg̊aːl] AND gob [g̊ob̥]

Say the English examples as you normally would and listen closely to yourself. The p t c sound more like a b d g but not really either, true? There is no voicing, but there is not puff of air after them either - which is exactly the sound you need for Gaelic. So the only thing you have to learn is to make these sounds in a "new environment" - that is, not only in sp st and sc clusters, but on their own at the beginning, in the middle and at the end of words.

Try to start by saying 'speech'. Then say it again but drop off the 's' - and check to make sure there is no puff of air. Then drop off the rest of the word, the 'eech' bit and you should be left with a voicelss, unaspirated [b̥]. Now repeat this process for the other two English examples - and you should have it cracked.