Arnolt Schlick and the pedal keyboard: vnnd offt confusiones machen
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ABSTRACT
Arnolt Schlick in his Spiegel der Orgelmacher und Organisten gives us a view of the organist's way of thinking about musical notation and how B♭ was played from a "white" note in a pedal keyboard. This information appears to have gone largely unnoticed, yet connects with an older tradition, at least as far back as 1390, which persisted until the beginning of the 16th century. A Prague manuscript described by Witkowska-Zaremba gives the notes of the pedal keyboard and thereby clarifies the layout of some 15th-century instruments where the keys were not named, or as in Praetorius' information, were incorrectly given.

Schlick's 15-line passage is, from the didactic viewpoint, curiously organised: he starts with his recommendation for a new orientation of the notes in a pedal keyboard, then deprecates another type of pedalboard he has seen in several organs, finally concluding that the "usual form", i.e. the older form, is the best.[1] Although this circuitous route is initially puzzling, Schlick does nevertheless inform us of the older tradition regarding playing a B♭ note from a "white" key, in the lower row of "longer" keys, usually reserved for the diatonic notes.

Before approaching the text we should briefly review some of the background information which Schlick did not communicate.

The Norrlanda organ (c.1390), which still exists, has its b♭ note in the c-a¹ manual keyboard as a "white" key, and establishes the fact of this practice (Plate 1). The pedal keyboard has eight notes, C-B♮, and no raised ones, so the B♭ was also a "white" note[2].

Plate 1, Source: internet[3], unknown copyright holder, probably Statens historiska museum, Stockholm, where the instrument is kept.

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[1] Schlick, Das drit Capitel, Das vij blat.
[2] Bormann, especially pp. 65-67. A photo of the pedal keyboard is shown in Wraight.
[3] https://i.pinimg.com/originals/65/45/7f/65457f3af53567872f819f550985de40.jpg

That an organ pedal keyboard in the first half of the 15th century could end on b♭ with the range h-b [B♮-b♭], is established by a South German manuscript, the Munich manuscript, examined by Göllner, to which Witkowska-Zaremba has drawn attention.[4]

Witkowska-Zaremba also described a Prague manuscript (1427-1436) in which there was a diagram showing the physical layout of the pedal keys, their description with note names, and with their solmisation equivalents.[5] This is a "Rosetta Stone" regarding this subject, being the only known, clear evidence of the distribution of the notes in the pedal keyboard. Witkowska-Zaremba considered this source to be slightly earlier than the Munich manuscript.
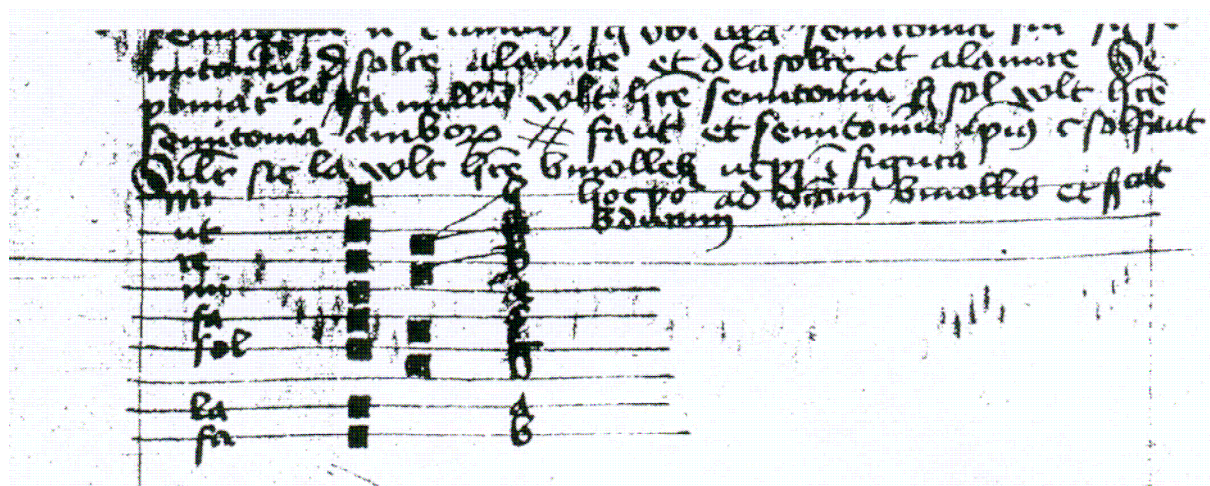

Plate 2. Source: Witkowska-Zaremba, p. 378.

For clarification, with the key names (rotated into the horizontal plane):

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 B  C  D  E  F  G  A  B♭ (English)
 H  C  D  E  F  G  A  B  (German)
      ♯  ♯     ♯    ♯
mi  ut  re  mi  fa  sol  la  fa
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Praetorius gives us two reports of pedal keyboards with b♭ as the final note, in organs he dates to "150 years ago" and 1475.[6] In the first instrument the b♭ [b] is even shown by the printer in the row of diatonic notes.

Thus, before Schlick's time we have records of pedal keyboards reaching only to b♭ and the clear manuscript indication that the b♭ would be played from a "white" note.

In the Guidonian "hand" with its hexachord system (Appendix 1), B♭ was an integral part of the diatonic musical range (*musica vera*), before the addition of any semitones (*musica ficta*).[7] Hugo Spechtshart (von Reutlingen), some 180 years before Schlick, recorded that the musical range had in practice already been extended to the F below G [Γ, gamma], this being the traditional, lower limit.[8] This extension enabled a hexachord "in mollis" (Appendix 1, col. 8) to start on F so that the mi-fa interval incorporated the B♭; the B♮ was reached via a *durum* hexachord (Appendix 1, col. 1) starting on G. The B♭ and B♮ were conceived of as occupying the same place in the "hand" (Appendix 1, col. P, places 3, 10, or 17), which is why this note position is designated "bfabmi" and not "bfa" *or* "bmi".[9] This is probably the essential key to understanding how the keyboard developed with B♭ and B♮ as "white" notes, some time before 1390: they had equal status in the "hand". Thus, the instruction which organists received in placing the mi-fa interval correctly was ingrained in theory long before Schlick's time.

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church in Venice, p. 110, has an unclear final note, the typeface of which is somewhere in appearance between b and h, but this key is in the diatonic row. Eitner read it as a "h" (B♮) in the 1618 editon of Syntagma musicum, II.

[7] Further discussion of this is found in Berger, especially p. 411-412. The 20 positions discussed by Berger reflect the 14th-century version, with its extension to ee, but originally it was only to dd with 19 positions on the drawing of the "hand". I thank Christopher Stembridge for a copy of this article.

[8] For a modern edition of Hugo's Latin text with a German translation see Beck, p. 68, from line [48]. A copy of a 1488 printing is available at https://www.e-rara.ch/bau_1/content/titleinfo/20880738 .

[9] Virdung's drawing in 1511 of a keyboard with 20 naturals and two "black" notes for b♭ (= 22 places) can be understood as a "mistake" imposed by his 16th-century understanding of the keyboard, not as evidence of the development in the 13th to 14th centuries. It reveals how the use of the keyboard with its semitones had clouded the original understanding of the distinction between *musica vera* and *musica ficta*.

Schlick's text

Even Eitner's 1869 rendering of Schlick's text with modern typography is not easy to read, so a new version is given here in which the spelling has been modernised, and only minimal grammatical additions have been introduced, without adding any interpretation.

My translation is intended to remain close to the original, not to provide a fluent version in English. The versions in modern German by Flade and Smets contain errors of translation and understanding, but are given for comparison in Appendix 2.

Schlick's text has been dissected to reveal eight separate ideas he expressed, and under each I have added a clarification.

1. Item das bdur oder mi. in bfabmi [b mi = b ♮], oben im pedal unter dem
csolfaut [c], soll nicht ein langer clavis sein, als seine octave bdur unten

im pedal [B mi = B ♮], sondern kurz und hoch, als die anderen semitonien.

Translation: Also, the b♮[10] in the top of the pedal, under the c should not be a long key, as [in] its octave B♮ below in the pedal, but short and high, as the other semitones.[11]

Commentary: Schlick recommended a chromatic, 12-note pedal compass: F-c (Das vi Blat), which has two higher notes, so this is his suggestion (only shown down to B♮)

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     ♯   ♯    ♯   ♯    ♮
♮  C  D  E  F  G  A ♭  c
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This is remarkable since the b♮ is intended to appear as a "black" note!

2. so bleibt des bfabmi oder bmoll [♭] liegen[12] wie das unsere vorfahren geübt haben,
Translation: in this way the b♭ [position] remains as our forefathers have used [it]
Commentary: The way the forefathers used it is thus:

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♮  C  D  E  F  G  A ♭
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with b♭ in the lower row as a "white " note. Semitones were not described.

3. das auch jetz der zeit einem jeglichen gebräuchlicher ist,
Translation: that also now in our time is familiar to everyone
Commentary: The pedalboard with b♭ as a "white" note is the "usual" form.

4. nochdem bisher wenig orgeln in dem pedal etwas über das bfabmi bmoll [♭] gehabt haben,
Translation: since until now few organs have had anything above the b♭

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[10] I have used the ♮ (for quadro) and ♭ notation instead of the solmisation because it fits better with the diagrams of the keyboard layout, and avoids possible confusion through English or German naming.

[11] The terminology of "short" and "long" keys also occurs in the Munich manuscript in Latin examined by Göllner, p. 177, so it is a typical expression, well before Schlick.

[12] "bleibt liegen" could mean that the b♭ key is not accidentally moved when the b♮ is played, which is the sense Flade and Smets gave the text. Berry, correctly in my view, took "bleibt liegen" to mean that the *position* of the key (high or low) is not changed. This is a significant difference and contributes to understanding the whole passage. Further analysis of Flade's and Smet's errors will not be given here.

Commentary: Schlick refers to this pedal keyboard: ♮ C D E F G A ♭

5. dann so jetz gemelt bmoll [♭] in der höhe als ein semitonium, und das bdur [♮] in der nieder wäre als ein natural gleich ihren octaven unten,

Translation: then [the] so now mentioned b ♭, up above as a semitone, and the b ♮ down below [in the lonf keys] would be a natural, equivalent to its octaves below

Commentary: This (apparently hypothetical) keyboard Schlick now describes

  ♯ ♯ ♯ ♯ ♭
  ♮ C D E F G A ♮

is in fact our modern arrangement, different from the older ("usual") keyboard, and different from his own suggestion in 1.

6. wie ich dann in etlichen wercken gefunden habe,

Translation: as I [as a result] have found in several organs

Commentary: This is the empirical confirmation that the use of the modern keyboard was well known in 1511, *nota bene*, "in *several* organs".[13]

7. würde es den Organisten fast ungewohnt [sein], und oft confusiones machen.

Translation: would almost be unusual for the organists and often cause confusion

Commentary: This is the interesting statement that the *modern* pedalboard would be confusing.

8. [um] solches zu vermeiden, und um mindere aufmerckung oder arbeit sich anders zu gewöhnen oder lernen ist die gemeine form des stücks die beste.

Translation: in order to avoid such [confusion] and in order to [require] less attention, or the effort of learning or getting used to something else, the usual form of the thing is the best.

Commentary: Now Schlick tells us that this modern form (which he has found in several organs) causes confusion so it would be best to use the *usual* form of pedal keyboard.

The entire translation reads as follows:

Also, the b ♮ [14] in the top of the pedal, under the c should not be a long key, as [in] its octave B ♮ below in the pedal, but short and high, as the other semitones. In this way the b ♭ [position] remains as our forefathers have used [it], that also now in our time is familiar to everyone, since until now few organs have had anything above the b ♭.

Then [the] so now mentioned b ♭, up above as a semitone, and the b ♮ down below [in the long keys] would be a natural, equivalent to its octaves below, as I [as a result] have found in several organs, [which] would almost be unusual for the organists and often cause confusion. In order to avoid such [confusion] and in order to [require] less attention, or the effort of learning or getting used to something else, the usual form of the thing is the best.

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[13] Berry incorrectly renders "etliche" as "few": see p. 11, below.

[14] I have used the ♮ and ♭ notation instead of the solmisation because it fits better with the diagrams of the keyboard layout, and avoids possible confusion through English or German naming.

The implications of Schlick's information

Extracting the essential information from this passage we have (in reverse order) the following pedal keyboards:

1. The usual form: ♮ C D E F G A ♭

2. The modern form: ♯ ♯   ♯ ♯ ♭

                                   ♮ C D E F G A ♮

3. Schlick's suggestion: ♯ ♯   ♯ ♯   ♮

                                   ♮ C D E F G A ♭ c

For our purposes of understanding the use of the pedal keyboard in the 15th century, it is the "usual" form which is most interesting since this confirms the presence of B♭ as a "white" note, in the diatonic row. Strictly speaking, Schlick does not tell us clearly where the B♭ is to be found, only where the B♮ was placed. By implication of the unsatisfactory position of B♭ as a "black" note in the modern keyboard, we can infer that the B♭ was previously a "white" note. This is why one needs the background information and a correct translation. To what extent this pedal keyboard was equipped with semitones is not conveyed by Schlick, for which reason the semitones have been omitted in the diagram, but the Prague manuscript from c.1430 already records them.

In 1493 Conrad Rotenbürger modified the pedal range of the organ he had built in 1475 in Bamberg, extending it downwards with the addition of F,G,A B♭, but the upper limit remained at B♭.[15] If this modification is any guide, then the modern keyboard was introduced from around 1500. Since the modern form of the pedal keyboard would cause confusion, at least in Schlick's opinion, we may infer that organists had already learned their skills by the time that this modern type of pedal keyboard was built.[16] Schlick was about 50 when writing in 1511, so he would have belonged to the older generation for whom this new keyboard would have required some effort to master.

Schlick's suggestion seems strange, to place the normally "white" note B♮ in the position of a semitone, but this strategy reflects a custom to which he refers, that pedal keyboards rarely went above B♭. The *motivation* for the whole discussion came about through Schlick's preference for a wider range in the pedal keyboard from F to c,[17] higher than the traditional B♭, but also by the existence of such larger ranges with the modern keyboard, to which he refers. So ingrained was this tradition of a limit at B♭ as a "white" note, that Schlick thought it better to give the new B♮ an unusual position as a "black" note rather than remove B♭ from its normal place.

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[15] This is Praetroius' account of the matter, p. 111.
[16] This line of reasoning was suggested to me by Claudia Wraight.
[17] For good counterpoint in the pedal. Schlick, Das Drit Capitell Das vj Blat. Berry p. 92.

The value of this information for us is that it indicates the continuity of a medieval practice regarding the B♭, even until the beginning of the 16th century, a detail which has received little attention from organology.[18]

Witkowska-Zaremba has drawn attention to the relevance of the Prague manuscript for understanding Praetorius's pedal board, shown in his Tafel XXV, which illustrates the keyboards of the 1361 Halberstadt organ (as he understood them in 1619).[19]

Das I. vnd II. Difcant-clavier.
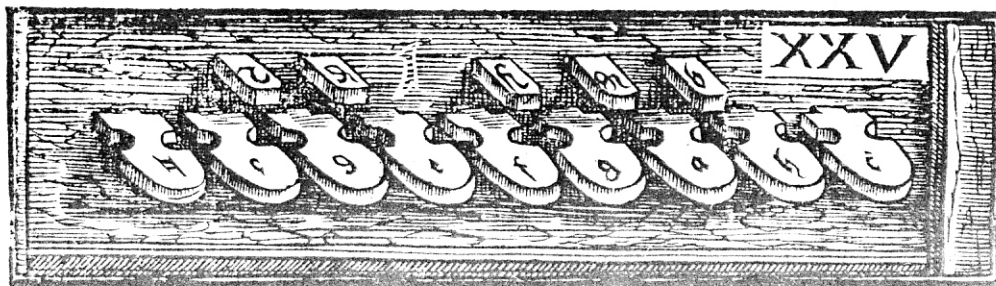
Das III. Clavier.
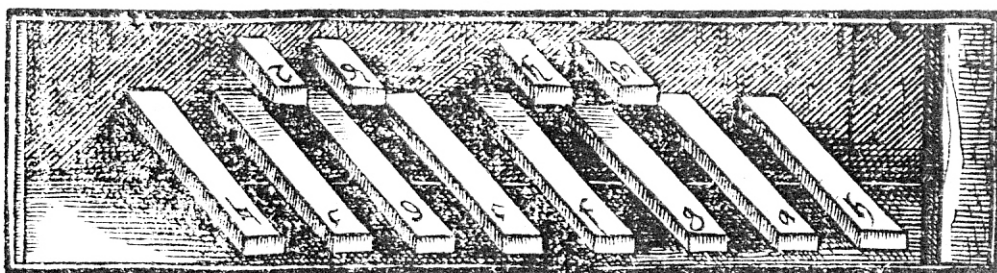
Das IV. Pedal-Clavier,
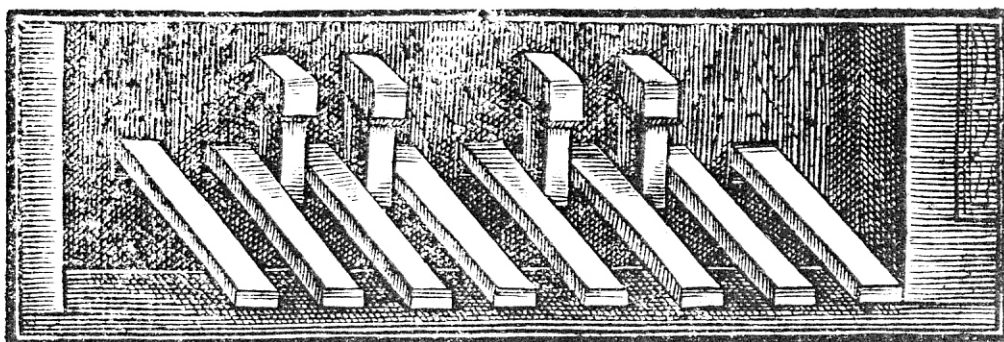
Diß sind die Manual-vnnd Pedal-Clavier, wie die in der gar grossen Orgel im Thumb zu Halberstadt vber einander liegen.

Plate 2. Source: Praetorius, Syntagma Musicum II, Tafel XXV, Bärenreiter 1980.

In this we see Das III. Clavier labelled with a final h [B♮]. It appears in the light of the manuscript evidence that this h must be a mistake for b [i.e. B♭] and that Bormann was

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[18] A 15th-century drawing of a pedal clavichord, usually described as Hugo von Reutlingen, 1464, with B♭ as a "white" note is discussed in Wraight.

[19] Witkowska-Zaremba, 2003, p. 5.

correct in refusing to believe that this could be possible.[20] Eberlein provided the explanation for this practice when he linked the BB-B♭ pedalboard as a *downward* continuation of the B-g²,a² manual keyboard of the Halberstadt organ.[21] We can fairly assume that by Praetorius' time the older practice of the B♭ as a white note was largely replaced by the modern keyboard (our no. 2, above) so that the mistake of labelling the

B♭ key [b] as a B♮ [h] was possible. The doubt which remains is whether Praetorius or his printer was responsible for this error.

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[20] Bormann, p. 43: "Es ist kein musikalischer Grund denkbar, den Ton H zweimal anzulegen und so die chromatische Folge zu brechen".
[21] Eberlein, " Die Entwicklung ...", p. 1, although he repeats Praetorius' printed -A,H ranges verbatim, shown in Praetorius, pp. 98-99.

Appendix 1. The Guidonian hand and the Hexachord System from c.1330

The Guidonian hand *before* c.1330 = G-d² [Γ-dd], only 19 places

8	7	M	P	G	1	2	3	4	5	6	
	la	e²	20	ee							E la
	sol	d²	19	dd						la	D la sol
	fa	c²	18	cc						sol	C sol fa
	mi	b♮¹	17	bb♮							B mi
		b♭¹		bb♭						fa	B fa
	re	a¹	16	aa					la	mi	A la mi re
	ut	g¹	15	g					sol	re	G sol re ut
	D	f¹	14	f					fa	ut	F fa ut
		e¹	13	e				la	mi	**M**	E la mi
		d¹	12	d			la	sol	re		D la sol re
		c¹	11	c			sol	fa	ut		C sol fa ut
		b♮	10	b♮				mi	**N**		B mi
		b♭		b♭			fa				B fa
		a	9	a		la	mi	re			A la mi re
		g	8	G		sol	re	ut			G sol re ut
		f	7	F		fa	ut	**D**			F fa ut
		e	6	E	la	mi	**M**				E la mi
la		d	5	D	sol	re					D sol re
sol		c	4	C	fa	ut					C fa ut
		B♮	3	B♮	mi	**N**					B mi
fa		B♭									
mi		A	2	A	re						A re
re		G	1	Γ	ut						G ut
ut		[F]			**D**						[F ut]
M											

D = hexchordum durum
N = hexachordum naturale
M = hexachordum molle

Column G: the form of note designation after Guido, the octave repetition occurring at a
Column M: our modern note designation with the octave repetition occurring at c
Column P: the "places" of the notes on the Guidonian hand, if Γ = 1

Appendix 2. Transcriptions and translations of Schlick in chronological order

Eitner 1869, pp. 91-92

Item das bdür oder mi. in bfabmi, oben jm pedal vnder dem
csolfaut, sol nit ein langer clauis sein, als sein octaff bdür vnden
ym pedal, sonder kurtz vnd hoch, als die andern semitonien. so
bleibt des bfabmi oder bmoll ligen wie das vnsser fürfarn geübt
haben, das auch ytz der zeitt eim iglichen brüchlicher ist, nochdem
bissher wenig orgeln in dem pedal etwas vber das bfabmi
bmoll gehabt haben, dann so ytz gemelt bmoll in der höh als
ein semitonien, vnd das bdür in der nyder were als ein naturall
gleich yren octauen vnden, wie ich dann in etlichen wercken funden hab, würd es
den Organisten fast ungewon, vnnd offt confusiones
machen, sollichs züuermeyden, vnd vmb mynder vffmerckung oder arbeit sich
anders zü gewen oder lernen ist die gemeyn form des stücks die best.

Flade 1931 and 1951, p. 24[22]

Das obere h (das mi in bfami *) im Pedal soll nicht wie in der tieferen Oktave im Pedal eine Untertaste sondern eine Obertaste sein, kurz und hoch wie das benachbarte b. Tritt der Organist das h, so wird das b unberührt bleiben, wie das unsere Vorfahren auch geübt haben und wie das noch heute jedem Organisten geläufig ist, nachdem bisher nur wenige Orgeln im Pedalumfang über b hinausgekommen sind. Wenn das oben bezeichnete b eine Obertaste und das h eine Untertaste gleich dem eine Oktave tiefer liegenden h wäre, wie ich das in etlichen Werken gefunden habe, so würde das dem Organisten sehr ungewohnt sein und gäbe Ursache zu Verwirrung. Um dies zu vermeiden und um weniger Aufmerksamkeit oder Arbeit durch Umlernen zu verursachen, halte ich die übliche Form der Pedalklaviatur für die beste.

* mi bedeutet die Erhöhung schlechthin

Smets 1959, p. 80[23]

Das obere h im Pedal soll nicht wie in der tieferen Oktave, eine Untertaste sondern eine Obertaste sein, kurz und hoch wie die anderen Obertasten. So liegt das h an der gleichen Stelle, wie unsere Vorfahren es hatten, (kürzer und höher als das b nebenan. Tritt der Organist dieTaste h, so bleibt das b unberührt), wie noch heute jedem Organisten geläufig ist; denn bisher sind nur wenige Werke über das b im Pedal hinausgekommen. Ist aber das obere b eine Obertaste, und das h eine Untertaste, wie das eine Oktave tiefere h, was ich in mehreren Werken gefunden habe, so ist das für den Organisten sehr ungeeignet und gibt Anlaß zu Irrtümern. Um solche zu vermeiden und um besondere Aufmerksamkeit und Umgewöhnung unnötig zu machen, halte ich die gewöhnliche Form der Pedalklaviatur für die beste.

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[22] This modern German version was originally published in 1931 at the instigation of Paul Smets, also with his own contributions, not acknowledged by Flade.
[23] Smets' 1959 version came about because he was dissatisfied with Flade's 1951 version.

Berry 1968, transcription pp. 33-34[24]

Itē das bdůr od mi. in bfabmi / oben jm pedal vnder dem csolfaut /
sol nit ein langer clauis sein. als sein octaff bdur vnden ym pedal
sonder kurtz vnd hoch / als die andern semitonien. so bleibt das bfabmi
oder bmoll ligen wie das vnsser fůrfarn geůbt habē / das auch ytz der
zeitt eim iglichen brüchlicher ist / nochdem bissher wenig orgeln in
dem pedal etwas vber das bfabmi bmoll gehabt haben / dann so ytz gemelt
bmoll in der hœh als a semitonien / vň das bdůr in der nyder were als ein
naturall gleich yren octauen vnden / wie ich dann in etlichen wercken
funden hab / wůrd es den organisten fast vngewon / vnnd offt confusiones
machen. sollichs züuermeyden / vnd vmb mynder vffmerckung oder arbeit sich
anders zů gewen oder lernen ist die gemeyn form des stucks die best.

Berry 1968, translation p. 94[25]

Now the B natural just below middle c in the pedal should not
be a long key as is B natural in the lower octave in the pedal,
but rather should be short and high as the other semitones, so that
B flat lies where our predecessors were accustomed to have it, and
where at this time it is more useful to everyone. In that until
this time, few organs have had pedals that go above the high B
flat, therefore when top B flat is a semitone and B natural is a
natural key, the same as the lower octave, (as I have found in a
few instruments) this is almost unknown to the organist and often
makes for confusion. To mitigate this and to avoid the strain
and labor of accustoming oneself to or learning something new,
the familiar form of the thing is best.

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[24] The symbols over letters, indicating a missing character, follow the original printing, as far as the Arial typeface allows.

[25] Berry's MA thesis was published as a book in 1980 by Frits Knuf, under Berry's married name Elizabeth Berry Barber; this version has not been consulted.

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