Priorities for Braille Production Systems Development

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In the last decade, most of the larger European braille producers have installed computer-based production systems. The motivation for this change has usually been the shortage of skilled braille transcribers as well as the desire to appear to be using current technology. Unfortunately many organisations have found that using computers increases the cost of producing braille.

One way of reducing the cost of the special hardware needed for computer-based systems would be for the producers to collaborate on standard specifications for the braille embossers. One problem acting against international collaboration in this area is the excessive number of *standard* braille cell sizes and braille page sizes in common use. For instance the more common cell sizes (official specifications) are:

	Horizontal dot to dot mm	Vertical dot to dot mm	Cell to cell mm	Line to line mm	Min dot base diam mm	Max dot base diam mm	Dot height mm	Dot radius spherical mm
English Interline	2.29	2.54	6.00	12.70	1.4	1.5	0.46	0.80
English Interpoint	2.29	2.54	6.00	10.41	1.4	1.5	0.46	0.80
Small English	2.03	2.03	5.38	8.46	1.4	1.5	0.33	0.80
English Giant Dot	3.25	3.25	9.78	17.02	1.9	2.0	0.81	1.00
Standard American	2.29	2.29	6.10	10.16	1.5	1.5	0.53	0.61
Jumbo American	2.92	2.92	8.76	12.70	1.7	1.7	0.53	0.80
Marburg Large	2.70	2.70	6.60	10.90				
Marburg Medium	2.50	2.50	6.00	9.90				

An additional problem is the variation in the braille codes used in countries with a common language. This also applies to the special codes such as mathematics and scientific notation.

The venturi (hour-glass) approach to braille production was pioneered by National Braille Press some years ago. With this approach, the textual data is converted into a common format irrespective of the type of input (eg typed, compositors' tape, OCR) before being translated and formatted for a range of output devices and media. Further work is needed on this system so that the software is readily available and transportable between different computer systems.

The major advance in recent years has been the considerable increase in the use of microcomputer-based systems for the local production of small runs of braille documents. These systems frequently use a standard word-processing package, braille translating software and a direct braille embosser (ie embosses directly on paper). The single-sided embossers have improved considerably in reliability in recent years but the

prices are still too high for many potential users. These systems are not usually suitable for producing large quantities of braille. The large braille printing houses are equipped to produce large runs, but are frequently short of skilled staff. Therefore one approach, being used in the USA, is for the small microcomputer systems to produce floppy disks with the data in contracted braille already formatted for a standard page size. The printing house then uses the floppy disks to produce the required number of copies. The advantage to the printing house is they do not have to proof-read the braille which is frequently a source of delay in the production process.

There is still need for better preprocessors of text input for braille production systems. If the data is input in computer-readable form, a preprocessor can recognise problem areas and flag them for later decision by a human operator. This approach minimises the number of errors picked up at proof-reading stage. The first system of this type in routine production use was POINTS; it had the disadavantage that it was slow since it was written in Basic.

There is a need for an inexpensive braille inputting device for use by sighted braille transcribers working at home. If it was based on an inexpensive IBM-compatible microcomputer, it would ease the problems of using it in a number of different countries. Also needed are some well designed training software packages for teaching braille special codes (eg mathematics).

As yet, the high-speed double-sided computer-controlled paper embossers have not lived up to expectations. Problems have included reliability, high price and the difficulties of guillotining the output. There has long been discussion on the desirability of a robust full-page computer-controlled braille display which could mounted on a flat-bed press. This would eliminate the need to emboss metal or plastic plates, and therefore reduce the cost of producing high quality braille in medium to large quantities.

For the developing countries, there is an urgent need for inexpensive robust production equipment appropriate for producing 100 to 500 braille copies.

Appendix 1 — Braille Cell and Page Sizes

Braillewriters

	Horizontal interdot mm	Vertical interdot mm	Cell to cell mm	Line to line mm	Cells per line max	Lines per page max	Max page width mm	Max page height mm
Stainsby - interline	2.3	2.5	6.0	12.7	36	18	254	343
Stainsby - interpoint	2.3	2.5	6.0	10.4	36	27	254	343
Stainsby - small	2.3	2.5	6.0	10.4	28	20	184	260
Perkins	2.3	2.3	6.1	10.2	42	31	292	279
Perkins Jumbo	2.9	2.9	8.8	12.7			292	279

Available Computer-controlled Embossers

	Horizontal interdot mm	Vertical interdot mm	Cell to cell mm	Line to line mm	Cells per line max	Lines per page max	Max page width mm	Max page height mm
Arts Computer Products	2.54	2.54	6.35	10.16		25	355	355
Daisy Systems	2.40	2.50	6.00	11.43	46	28	330	279
Elbicon	2.35	2.35	6.10	10.20	40		290	
Marburg Puma Large	2.70	2.70	6.60	10.92	36	28	285	250
Marburg Puma Medium	2.50	2.50	6.02	9.83	40	31	285	340
Marburg Puma Small	2.30	2.30	5.70	9.20	42	33	242	400
Nippon Dentsu	2.34	2.60	6.35	10.18		25	292	
Polar Print	2.50	2.50	6.50	10.00	42	29	335	
Resus RS-214	2.40	2.54	6.00	10.16	40	28	355	431
ETC Romeo	2.29	2.29	6.15	10.06	42	34	336	355
ETC Marathon	2.29	2.29	6.15	10.06	40	25	342	355
ETC TED-600	2.29	2.29	6.10	10.16	40	25	339	279
ETC PED-30	2.34	2.35	6.22	10.17	40	32	342	355
TSI VersaPoint	2.38	2.38	6.35	10.16	42	29	330	305
Thiel	2.54	2.54	6.50	10.16	42	52	385	406
Trask P-40	2.54	2.54	6.00	9.80	40	28	279	

Cell Sizes Used

	Horizontal dot to dot mm	Vertical dot to dot mm	Cell to cell mm	Line to line mm
Australia, Royal NSW Institute	2.0	2.0	6.0	10.0
Belgium, Blindenzorg Licht en Liefde	3.0	4.0	5.0	10.0
Belgium, Blindenzorg Licht en Liefde	4.5	3.5	6.0	7.0
Belgium, Sonneheerdt Emmelo	3.1	3.1	6.0	9.8
Belgium, Vlaamse Blindenbibliotheek	3.0	2.0	6.0	10.0
Denmark, Dansk Blindesamfund	2.5	2.2	6.0	9.9
Denmark, Students' Library	2.0	2.0	6.0	12.0
Fiji Society for the Blind	2.3	2.3	6.1	10.2
France, Jeunes Aveugles	2.5	2.5	6.5	10.0
GDR, Leipzig	2.9	2.7	6.6	11.0
Greece, Athens Lighthouse	2.5	2.5	6.0	10.0
Hong Kong Society ft Blind	3.0	3.0	6.0	10.0
India, Ramakrishna Braille Press	2.6	2.6	6.3	9.2
Italy, Firenze Stamperia Braille	2.5	2.5	6.5	10.0

Japan, Nippon Lighthouse, Osaka	2.1	2.2	5.1	13.6
New Zealand, Royal Foundation ft Blind	3.0	2.5	6.0	11.0
Norway, Blindeforbunds Trykkeri	2.5	2.5	6.0	10.0
Norway, Foreningen Dovblinde	2.5	2.5	6.5	10.5
Norway, Huseby	2.0	2.0	5.0	10.0
Norwegian Association of the Blind	3.0	3.0	6.0	10.0
Polish Blind Union	2.7	2.7	6.6	10.9
South Africa, Pioneer School	2.0	2.0	6.0	10.0
Switzerland, Bibliotheek fur Blinde	2.7	2.7	6.6	10.9
Thailand, Foundation for the Blind	3.0	3.0	6.0	10.0
UK, Scottish Braille Press - books	2.5	2.5	6.0	9.9
UK, Scottish Braille Press - magazines	2.5	2.5	6.0	10.6
USA, National Library Service	2.3	2.3	6.2	10.2
USSR	2.5	2.5	5.6	10.0

Page Sizes Used

	Cells per line	Lines per page	Page width mm	Page height mm
Australia, Royal NSW Institute	40	25	275	265
Belgium, Blindenzorg Licht en Liefde	30	25	220	295
Belgium, Blindenzord Licht en Liefde	26	23	205	285
Belgium, Sonneheerdt Ermelo	30	26	280	440
Belgium, Sonneheerdt Ermelo	36	29	260	320
Belgium, Vlaamse Bibliotheek	28	25	205	275
Canada, Ross Macdonald School	40	25	304	279
Denmark, Dansk Blindesamfund	31	25	230	290
Denmark, Dansk Blindesamfund	31	23	230	279
Denmark, Students' library	31	26	192	265
Fiji Society for the Blind	40	26	279	292
France, Jeune Aveugles	30	27	210	297
GDR, Leipzig	36	28	270	340
Greece, Athens Lighthouse	40	31	270	341
Hong Society for the Blind	38	25	279	292
India, Duggan Braille Press, Bombay	36	30	275	330
India, Ramakrishna Braille Press	38	30	262	330
Italy, Firenze Stamperia Braille	36	30	260	340
Japan Federation of the Blind	34	18	200	250
Japan, Nippon Lighthouse, Osaka	30	17	152	232
Malayan Association for the Blind			248	292
Netherlands Blindenbibliotheek	34	28	250	300
Netherlands Blindenbibliotheek	34	28	250	320
Netherlands Blindenbibliotheek	31	24	225	280
New Zealand, Royal Foundation ft Blind	41	25	293	280
Norway, Blindeforbunds Trykkeri	30	28	210	310
Norway, Blindeforbunds Trykkeri	36	28	240	310
Norway, Foreningen Dovblinde	30	25	225	320
Norway, Huseby	34	29	250	304
Norwegian Association of the Blind	32	27	225	295
Pakistan	36	25	267	337
Polish Blind Union	32	28	247	334
Romania	32	26	250	320
South Africa, Pioneer School	36	28	252	330
Sri Lanka Council for the Blind	38	18	270	320
Switzerland, Bibliotheek fur Blinde	36	28	270	340
Thailand, Foundation for the Blind	38	23	290	270
UK, National Library for the Blind	36	18	256	342
UK, National Library for the Blind	36	18	256	330
UK, Scottish Braille Press	36	29	254	330
USA, National Braille Association	40	25	279	292
USA, National Library Service	38	25	292	279
USSR	30	24	190	240