

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

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Paper No. 27

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte YVON GUEDES  
and RÉMI SFEZ

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Appeal No. 96-0309  
Application 08/135,370<sup>1</sup>

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ON BRIEF

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Before BARRETT, FLEMING, and CARMICHAEL, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

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<sup>1</sup> Application for patent filed October 12, 1993, entitled "Information Transmission System Comprising At Least One Base Station And At Least One Satellite System," which is a continuation of Application 07/857,348, filed March 25, 1992, now abandoned, which claims the foreign filing priority benefit under 35 U.S.C. § 119 of French Application 9103949, filed April 2, 1991.

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This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 26-41. Claims 1-25 have been canceled.

We reverse.

#### BACKGROUND

The disclosed invention is directed to an information transmission system which incorporates techniques to counteract the effect of fading. "The invention utilizes three prior art techniques known for improving reliability of the overall transmission process: error coding, interleaving, and frequency diversity (simultaneous transmission of the entire signal over two different frequencies), but eliminates redundant transmission." (Brief, page 2.)

Claim 26 is reproduced below.

26. An information transmission system, comprising a plurality of stations, said stations being arranged to exchange information signals by transmitting a plurality of time multiplexed signals over a plurality of channels having different carrier frequencies, wherein

one of said stations comprises:

means for encoding a first of said information signals with an error correction code, to form a first encoded sample,

means for interleaving parts of said first encoded sample to form a first sequence of parts,

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a multiplexer for generating a succession of parcels, each parcel comprising a plurality of time slots, at least one of said time slots including a portion of said first sequence of parts, and

frequency dispersion means for distributing the information content of two successive ones of said parcels for simultaneous transmission as signals in time multiplexed slots of at least two of said channels respectively, said information content being transmitted once only; and

another of said stations comprises a receiver comprising:

means for receiving and demultiplexing said signals in said time multiplexed slots of said at least two of said channels, and

means for providing a replica of said first of said information signals based on the received signals,

whereby, in said receiver, correction of burst errors affecting the content of one channel is simplified without need for redundant transmission.

No prior art is relied on in the rejection.

The specification stands objected to and claims 26-41 stand rejected under 35 U.S.C. § 112, first paragraph, because the examiner finds that the "means for encoding" and "means for interleaving" of claims 26 and 39, and the "means for deinterleaving and decoding" in claim 37, "are not disclosed in the original disclosure" (Final Rejection, page 2).

"Therefore, the disclosure does not enable one skilled in the

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art [to] make and use the claimed invention without undue experimentation" (Final Rejection, page 2). The Examiner's Answer more particularly identifies the bases of the rejection under § 112, first paragraph, as both the written description requirement and the enablement requirement.

We refer to the Final Rejection (Paper No. 16) and the Examiner's Answer (Paper No. 23) (pages referred to as "EA\_\_") for a statement of the examiner's position and to the Brief (Paper No. 21) (pages referred to as "Br\_\_") for a statement of the appellants' position.

#### OPINION

##### Enablement and written description rejection

The written description rejection under § 112, first paragraph, is used to reject when a claim is amended to recite elements thought to be without support in the original disclosure. In re Rasmussen, 650 F.2d 1212, 1214-15, 211 USPQ 323, 326 (CCPA 1981). "Satisfaction of the description requirement insures that subject matter presented in the form of a claim subsequent to the filing date of the application was sufficiently disclosed at the time of filing so that the prima facie date of invention can be held to be

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the filing date of the application." Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1562, 19 USPQ2d 1111, 1115 (Fed. Cir. 1991), citing In re Smith, 481 F.2d 910, 914, 178 USPQ 620, 623 (CCPA 1973). The written description is a question of fact. Vas-Cath, 935 F.2d at 1563, 19 USPQ2d at 1116.

"The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation." United States v. Telectronics, Inc., 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988), citing Hybritech, Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986). The Patent and Trademark Office must support a rejection for lack of enablement with reasons. In re Marzocchi, 439 F.2d 220, 223-24, 169 USPQ 367, 369-70 (CCPA 1971). Enablement is a question of law, which may involve subsidiary questions of fact. Paperless Accounting, Inc. v. Bay Area Rapid Transit System, 804 F.2d 659, 664, 231 USPQ 649, 652 (Fed. Cir. 1986).

The examiner's rejection states (EA3-4):

Reading the original disclosure, one skilled in the art cannot tell where an encoder and an interleaver are

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allocated. Therefore, the disclosure does not enable one skilled in the art to make and use the claimed invention without undue experimentation. In addition, because means for encoding, means for interleaving, means for deinterleaving and decoding, and [sic] an information signal encoded with an error detection were not disclosed in the original disclosure, the claimed devices and coded signal constitute NEW MATTER.

It is not clear whether the examiner is saying that the "means for encoding," for example, is not disclosed because the function is not disclosed or because no structure for performing the function is disclosed. The examiner finds that the disclosure does not show where encoding, interleaving, deinterleaving, and decoding steps are performed. In the response to the arguments, the examiner also states that the disclosure does not describe what exact kind of encoding is used (EA4-5):

[T]here are different types of codes in common use today, block codes (such as BCH codes, Reed-Solomon codes) and convolutional codes including Trellis coded modulation. Each type of code has its own advantage and disadvantage; and a specific type of code may have different circuit designs. The specification discloses no error correction encoder even by "functional-type block diagrams." Clearly, the selection of a suitable encoder requires unreasonable experimentation and delays for one skilled in the art to carry out the invention.

The specification describes that the use of error correction codes and time interleaving has been proposed

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(specification, page 3, line 26 to page 4, line 4). The specification indicates that error correction codes and time interleaving are used in the present invention (specification, page 4, lines 10-14, before amendment): "Thus, all information to be transmitted, consisting of, for example the interleaved coded information (i.e. the useful information is interleaved in time after the addition of an error correction code), is divided into slots which are referred to herein as replicas, said replicas undergoing the time multiplexing operation so that the use of excessively deep time interleaving is avoided." Manifestly, the encoded and interleaved information must be deinterleaved and decoded after transmission. Accordingly, we disagree with the examiner's rejection to the extent it finds that the original disclosure does not provide written description support for the functions of encoding, interleaving, deinterleaving, and decoding.

In regard to the structure for performing the functions, and the exact type of encoding used, appellants argue (Br7):

[T]he "specific improvement" is the dispersion of information, not its coding, interleaving, deinterleaving or decoding. Nothing in the specification or claims suggests that the invention involves or requires a new or

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a particular encoding, interleaving, deinterleaving or decoding technique or apparatus. Thus the specific circuitry need not be shown, so long as the necessary cooperation is disclosed. . . .

Where coding and interleaving are old, well-known processes, applicants submit that no further description is required.

Appellants submit patents and refers to the article Performance of Trellis Coded Modulation Using Multi-Frequency Channels in Land Mobile Communications by Yuki Yoshi Kamio, in Proc. of IEEE VEH. TECH., May 1990, cited in the specification to show that error correcting codes and interleaving/deinterleaving were well known in the art (Br7-8).

That the specification does not disclose a particular encoding, interleaving, deinterleaving, or decoding technique or apparatus does not constitute a lack of enablement where it is apparent that any technique known in the art could be used. As appellants point out, the "improvement" is the dispersion of information, not these other functions. Appellants have demonstrated with objective evidence that the structure for performing encoding, interleaving, deinterleaving, and decoding was well known in the art and, consequently, one skilled in the art would have known how to make and use the

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claimed invention. A patent need not teach, and preferably omits, what is well known in the art. Paperless Accounting, 804 F.2d at 664, 231 USPQ at 652. The examiner's position that appellants should not be entitled to rely on the cited references which were not mentioned in the original disclosure to show enablement (EA5-6), is not persuasive: appellants can rely on extrinsic evidence to show what was known to those of ordinary skill in the art. We also agree with appellants' arguments (Br8) that the selection of the particular encoding and interleaving technique is within the level of one of ordinary skill in the communication art based on the nature of the subscriber device and the characteristics of the transmission medium.

As to the location of the encoding, interleaving, deinterleaving, and decoding means, appellants argue that "[c]learly, coding and interleaving are completed before multiplexing, as such occurs" (Br7). The examiner states that this is not persuasive because interleaving before multiplexing is not disclosed (EA5). The specification indicates that error correction codes and time interleaving take place before multiplexing (specification, page 4,

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lines 10-14, before amendment): "Thus, all information to be transmitted, consisting of, for example the interleaved coded information (i.e. the useful information is interleaved in time after the addition of an error correction code), is divided into slots which are referred to herein as replicas, said replicas undergoing the time multiplexing operation so that the use of excessively deep time interleaving is avoided." Appellants further argue that known considerations to those of ordinary skill in the art would dictate the allocation between the subscriber device and the interface (Br8). We agree. The question is whether one of ordinary skill in the art would have known where to locate the various means in a system with a multiplexer. Since the various encoding/decoding and interleaving/deinterleaving means are well known in a transmission system with multiplexer, we think the presumption is in heavily in favor of enablement. The examiner's position that the specification is not enabling because the locations are not expressly disclosed is not persuasive because it fails to address what was known to those of ordinary skill in the art. Cf. In re Paulsen, 30 F.3d 1475, 1480, 31 USPQ2d 1671, 1675 (Fed. Cir. 1994)

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("This argument [by the appellant that the reference was not enabling] . . . fails to recognize that a prior art reference must be 'considered together with the knowledge of one of ordinary skill in the pertinent art.'").

For the reasons stated above, we reverse the rejection of claims 26-41.

#### Questions

We have some questions about the disclosure, claims, and appellants' arguments which should be answered to the examiner before this case is allowed.

First, figures 2a, 2b, and 2c show the information time slots in each channel contiguous to one another and simultaneous with time slots in the other channel. This appears to be misdescriptive since, in our understanding, the channels are used in an alternating manner (specification, page 4, lines 15-17). The described structure seems to operate like Kamio, figure 1, which uses a switch to consecutively switch between different frequency channels; if this is not the case, appellants should explain how their system operates differently. Thus, it would seem like figure

2a should be drawn somewhat as shown below for the information stream shown at the top in order to show the alternating use of the channels.

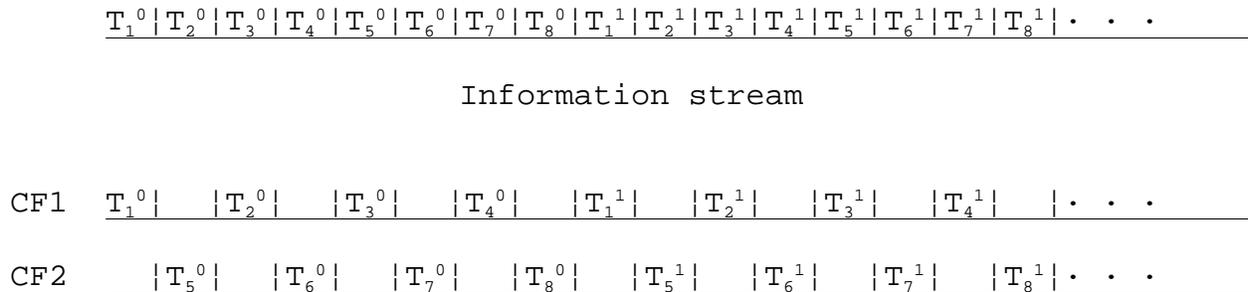


Figure 2a

Second, if our understanding of the operation of the invention is not correct, and there really is simultaneous transmission of information, then it is not clear how simultaneous transmission/reception is produced by the circuits of figures 4 and 5. Figure 4, for example, shows an MMF having a single input from the left leading to two modulators 1 and 2; this implies that the same data is modulated by carrier frequencies F1 and F2. Appellants description that figure 4 "involves a straightforward control of the timing of signal inputs to modulators 1 and 2" (Br5) is not understood since the timing of inputs to modulators 1 and 2 is not controlled. The outputs of the modulators are input

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to a juxtaposition circuit 5 having a single output; absent explanation in the specification, it is assumed that the output represents the same data modulated by carrier frequencies F1 and F2. There seems to be something missing in the description of the operation of juxtaposition circuit 5 and switch 7 whether the information is transmitted consecutively or simultaneously. Since the information content is transmitted only once, the output from modulator 1 or the output from modulator 2 must be alternately selected unless something undisclosed is happening in the juxtaposition circuit 5 to produce different data from modulator 1 and modulator 2. The specification says that the "control circuit AMRT, denoted by the references MAMRT and BAMRT, respectively, control the various accesses to the time slots of the multiplex signal for transmission as well as for reception . . ." (specification, page 3, lines 20-22) and that signals are supplied "in the correct time slot of the TDMA links as represented by a switch 7 which is controlled by the circuit MAMRT" (specification, page 5, lines 4-5), which implies that switch 7 under control of circuit MAMRT is responsible for putting the information in the correct time slots of the

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correct channel. It is not clear how this can be done using switch 7 since switch 7 opens and closes a single line output from juxtaposition circuit 5. We question whether the juxtaposition circuit 5 should have two outputs, one for frequency F1 and one for frequency F2, which are alternately selected by a switch under control of the circuit MAMRT. This would still not solve the problem of how to transmit different information simultaneously on two different channels.

Third, if our understanding of the operation of the invention is correct then the phrase "simultaneous transmission" in the phrase "frequency dispersion means for distributing the information content of two successive ones of said parcels for simultaneous transmission as signals in time multiplexed slots of two of said channels respectively" (claims 26 and 39) is misdescriptive because the transmission is not simultaneous in both channels. Also, it would seem that the description in the specification that "[s]imultaneity in time occurs between the various channels:  $U1^0$  is simultaneous with  $U1^1$ ,  $D4^0$  with  $D4^1$ , etc." (specification, page 4, lines 31-32) is misdescriptive since  $U1^0$  and  $U1^1$  are

sent from the satellite station and must be sent alternately on channels CH1 and CH2, not simultaneously.

Fourth, since "Fig. 2a shows a customarily used TDMA frame structure" (specification, page 2, line 4), figure 2a appears to be admitted prior art. Figure 2a shows the time slots of the first half of a parcel sent in the first channel and the time slots of the second half of the parcel sent simultaneously in the second channel. Is the only difference between appellants' claimed subject matter of claim 1 and the admitted prior art of figure 2a that a whole first parcel is sent in the first channel and a whole successive parcel sent alternately in the second channel, instead of half a parcel in each?

Fifth, as described in connection with figure 4, for example, the frequency dispersion circuit MMF appears to only distribute the incoming packets of information into the correct time slots of the different channels. It does not appear that the disclosed frequency dispersion circuit MMF has circuitry for reordering the time slots of parcels in any way. At least some sort of memory (delay) before the modulators would be required. Therefore, we question whether it is

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accurate to recite "frequency dispersion means for distributing the information content of two successive ones of said parcels for simultaneous transmission as signals in time multiplexed slots of two of said channels respectively" (claims 26 and 39), because this requires that the frequency dispersion means reorders the parcels and not just assign time slots to various frequency channels.

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CONCLUSION

The rejection of claims 26-41 is reversed.

REVERSED

LEE E. BARRETT	)	
Administrative Patent Judge	)	
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	)	BOARD OF PATENT
MICHAEL R. FLEMING	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
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