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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* FREDERIK NAGEL, SASCHA DISCH,  
NIKOLAUS RETTELBACH, MAX NEUENDORF,  
BERNHARD GRILL, ULRICH KRAEMER, and  
STEFAN WABNIK

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Appeal 2017-003074  
Application 14/250,139  
Technology Center 2600

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Before MICHAEL J. STRAUSS, MICHAEL M. BARRY, and  
PHILLIP A. BENNETT, *Administrative Patent Judges*.

STRAUSS, *Administrative Patent Judge*.

DECISION ON APPEAL

## STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from the Final Rejection of claims 1–8. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

## THE INVENTION

The claims are directed to an audio signal encoder and method for generating a data stream having components of an audio signal in a first frequency band, control information and spectral band replication parameters. Spec., Title. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. An audio signal encoder for generating, from an audio signal, an audio data stream comprising components of the audio signal in a first frequency band, control information and spectral band replication parameters, comprising:
  - a frequency selective filter configured for generating the components of the audio signal in the first frequency band;
  - a generator configured for generating the spectral band replication parameter from the components of the audio signal in a second frequency band;
  - a control information generator configured for generating the control information, the control information identifying a patching algorithm from a first or a second different patching algorithm, wherein each patching algorithm generates a raw signal comprising signal components in the second replicated frequency band using the components of the audio signal in the first frequency band,
    - wherein the control information generator is configured for identifying the patching algorithm by comparing the audio signal with patched audio signals for the first and for the second patching algorithms, wherein differently patched audio signals are derived from different raw signals related to the first and the second patching algorithms by applying raw signal adjusting in

response to spectral band replication parameters with a spectral band replication tool, and

an output interface configured for transmitting or storing the audio data stream representing the audio signal, the audio data stream comprising the components of the audio signal in the first frequency band, the control information and the spectral band replication parameters, wherein a bit rate for transmitting or storing the audio data stream is reduced compared to a bit rate for transmitting or storing the audio signal.

### REJECTION

The Examiner rejected claims 1–8 under 35 U.S.C. § 101 as directed to a judicial exception (i.e., a law of nature, a natural phenomenon, or an abstract idea) without significantly more. Ans. 2–4.

### ANALYSIS

We have reviewed the Examiner’s rejection in light of Appellants’ arguments the Examiner has erred in rejecting claims 1–8 under 35 U.S.C. § 101 as directed to a judicial exception. We agree with Appellants’ conclusions as to this rejection of the claims.

The Examiner finds the claims “are directed to the mathematical calculation (abstract idea) of regenerating digitized spectral band coefficients, without claiming significantly more.” Ans. 2. We disagree the claims are directed to an abstract idea.

In *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347 (2014), the Supreme Court clarified the law regarding patentable subject matter. In doing so, the Supreme Court reiterated the two-step framework previously set forth in *Mayo Collaborative Services v. Prometheus Labs., Inc.*, 566 U.S. 66, 82–83 (2012), “for distinguishing patents that claim laws of nature,

natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.” *Alice Corp.*, 134 S. Ct. at 2355. The first step in the analysis is to “determine whether the claims at issue are directed to one of those patent-ineligible concepts.” *Id.* (e.g., to an abstract idea). If the claims are not directed to an abstract idea, the inquiry ends. Otherwise, the inquiry proceeds to the second step where the elements of the claims are considered “individually and ‘as an ordered combination’” to determine whether there are additional elements that “‘transform the nature of the claim’ into a patent-eligible application.” *Id.* (quoting *Mayo*, 566 U.S. at 78–79).

The Court acknowledged in *Mayo*, that “all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.” *Mayo*, 566 U.S. at 71. Therefore, the Federal Circuit has instructed that claims are to be considered in their entirety to determine “whether their character as a whole is directed to excluded subject matter.” *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299, 1312 (Fed. Cir. 2016) (quoting *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015)).

Here, the claimed invention “relates to an audio signal synthesizer for generating a synthesis audio signal, an audio signal encoder and a data stream comprising an encoded audio signal.” Spec. 1, ll. 16–20. The Specification discloses that source coding of audio signals so as to reduce bandwidth requirements may introduce annoying perceptual degradation. *Id.* at 2, ll. 11–12. “In order to improve the coding performance, bandwidth extension methods such as spectral band replication (SBR) are used as an efficient method to generate high frequency signals in an HFR (high

frequency reconstruction) based codec.” Spec. 2, ll. 12–16.

Transformations used in the process of replicating high frequency signals are applied on low frequency signals and inserted as high frequency signals in a process known as patching. *Id.* at 2, ll. 18–23. Prior art systems utilize a single patching algorithm for all audio signals, lacking the flexibility to adapt the patching to different signals or coding schemes. *Id.* at 2, ll. 23–26. The claimed invention address this shortcoming by performing patching operations and processing of the output of the patching operation in independent domains, thereby “provid[ing] the flexibility to optimize different patching algorithms within a patching generator on the one hand and to use the same envelope adjustment on the other hand, irrespective of the underlying patching algorithm.” *See generally id.* at 8, ll. 26–34.

As recited in claim 1, the invention encompasses an audio signal encoder for generating, from an audio signal, an audio data stream comprising components of the audio signal in a first frequency band, control information and spectral band replication parameters. The audio signal encoder includes a frequency selective filter, spectral band replication parameter generator, and a control information generator.

The frequency selective filter is configured for generating the components of the audio signal in the first frequency band. The spectral band replication generator is configured for generating the spectral band replication parameter from the components of the audio signal in a second frequency band. The control information generator is configured for generating the control information, the control information identifying a patching algorithm from a first or a second different patching algorithm. Each patching algorithm identified generates a raw signal comprising signal

components in the second replicated frequency band using the components of the audio signal in the first frequency band. The control information generator is configured for identifying the patching algorithm by comparing the audio signal with patched audio signals for the first and second patching algorithms. Differently patched audio signals are derived from different raw signals related to the first and the second patching algorithms by applying raw signal adjusting in response to spectral band replication parameters with a spectral band replication tool. The output interface is configured for transmitting or storing the audio data stream representing the audio signal. The audio data stream comprises the components of the audio signal in the first frequency band, the control information and the spectral band replication parameters. A bit rate for transmitting or storing the audio data stream is reduced compared to a bit rate for transmitting or storing the original audio signal.

The Federal Circuit noted in *McRO* that the abstract idea exception has been applied to prevent patenting of claims that abstractly cover results where “it matters not by what process or machinery the result is accomplished.” *McRO*, 837 F.3d at 1314 (quoting *O’Reilly v. Morse*, 56 U.S. 62, 113 (1853)). The court in that case, thus, looked to whether the claim at issue focused on a specific method that improves the relevant technology, i.e., computer animation, or instead was directed to a result or effect that itself is the abstract idea and merely invokes generic processes and machinery. *Id.* There, the court concluded that the claim, when considered as a whole, was directed to a technological improvement over the existing, manual 3-D animation techniques and used limited rules in a process specifically designed to achieve an improved technological result in

conventional industry practice. As such the court found that the claim was not directed to an abstract idea. *Id.* at 1316.

Similarly here, claim 1 is directed to a specific improvement in the way an audio signal is encoded — an improvement designed to address a shortcoming in conventional practice and achieve an improved technological result. This is not a situation where “it matters not by what process or machinery the result is accomplished.” Instead, similar to the situation in *McRO*, it is the generation and use of the claimed patching operation and output processing, and not the use of generic computer components, which improves the existing technological process by adapting patching to different signals and coding schemes. Although not dispositive, claim 1 also does not broadly preempt all processes for achieving a compressed audio signal.

Claim 1 is limited to a specific method of encoding an audio signal, i.e., using a spectral band replication to generate high frequency components by copying the low frequency signal components in a filter onto high frequency bands, i.e., patching. Thus, we find claim 1, when considered as a whole, is directed to a method for improving an existing technological process, i.e., a process designed to solve the prior art problem of audio signal encoding, and not to an abstract idea. Therefore, we do not sustain the Examiner’s rejection of claim 1 under 35 U.S.C. § 101 or, for the same reasons, the rejection of independent claims 3 and 4 or dependent claims 2 and 5–8.



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DECISION

We reverse the Examiner's decision to reject claims 1–8 under  
35 U.S.C. § 101.

REVERSED