

**SUPREME COURT OF SINGAPORE**

24 February 2020

**Case summary**

*Quoine Pte Ltd v B2C2 Ltd* [2020] SGCA(I) 02  
Civil Appeal No 81 of 2019

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**Decision of the Court of Appeal (delivered by Chief Justice Sundaresh Menon) (Mance IJ dissenting):**

**Outcome:** Majority of the Court of Appeal (comprising Chief Justice Sundaresh Menon, Andrew Phang Boon Leong JA, Judith Prakash JA and Robert Shenton French IJ) dismisses cryptocurrency exchange operator’s appeal on breach of contract claim arising from unilateral cancellation of cryptocurrency trades, but allows appeal on breach of trust claim.

Pertinent and significant points of the judgment

- Where deterministic algorithms (*ie*, those that always produce the same output given the same input) are concerned, it is the programmer’s state of knowledge that is relevant and to be attributed to the parties: at **[98]**.
- The relevant inquiry is whether, when programming the algorithm, the programmer was doing so with actual or constructive knowledge of the fact that the relevant offer would only ever be accepted by a party operating under a mistake and whether the programmer was acting to take advantage of such a mistake: at **[103]**.
- The relevant time frame within which the knowledge of a programmer or the person running the algorithm should be assessed is from the point of programming up to the point that the relevant contract was formed: at **[99]**.

**Introduction**

1 The appellant (“Quoine”) was the operator of a cryptocurrency exchange platform (“the Platform”). Quoine also functioned as a market-maker on the Platform by placing buy and sell orders to create liquidity. Quoine conducted its market-making trades through its “Quoter Program”.

2 The respondent (“B2C2”) was a trader on the Platform at the material time. B2C2 traded using algorithmic trading software (“the Trading Software”) designed by its director (“Mr Boonen”). The Trading Software was designed to function with minimal human intervention, and was deterministic in the sense of always producing the same output given the same input. The inputs to the Trading Software, which would be used to generate quotes for sale and purchase orders on the Platform, were to be the best 20 orders from the Platform. Built into the algorithm was a fail-safe “deep price” of 10 Bitcoin (“BTC”) to 1 Ethereum (“ETH”), which would be invoked should input data from the Platform be unavailable.

3 In 2017, Quoine’s oversight in making certain necessary changes to the Platform’s critical operating systems led to the Quoter Program’s failure to generate new orders. This led to the deep price in the Trading Software taking effect. B2C2’s sell orders were eventually matched with the buy orders of two other traders (“the Counterparties”). Eventually, 13 trades (“the Disputed Trades”) were concluded between B2C2 and the Counterparties at a rate of

either 9.99999 BTC or 10 BTC for 1 ETH. These rates were approximately 250 times the then going rate in the market of around 0.04 BTC for 1 ETH.

4 The Disputed Trades were automatically settled by the Platform, with BTC debited from the Counterparties' accounts and credited into B2C2's account, and ETH debited from B2C2's account and credited into the Counterparties' accounts. When Quoine became aware of the Disputed Trades the next day, it unilaterally cancelled the Disputed Trades and reversed the settlement transactions on the basis that the trades were concluded at highly abnormal rates.

5 B2C2 commenced proceedings against Quoine alleging that its unilateral cancellation of the Disputed Trades and reversal of the settlement transactions were in breach of contract or breach of trust. The International Judge who heard the matter ("the Judge") rejected all of Quoine's defences and allowed both of B2C2's claims. Quoine appealed against the whole of the Judge's decision.

### **The Judge's decision**

6 The Judge held that the contract in respect of each concluded trade was made directly between the buyer and the seller. The users of the Platform were also contractually bound with Quoine under the terms and conditions of the agreement governing the use of the Platform ("the Agreement").

7 As for B2C2's breach of contract claim, the Judge held that Quoine's unilateral cancellation of the Disputed Trades was a breach of the Agreement, and in particular of the clause which provided that once an order was filled, the trader was notified via the Platform and such an action was irreversible ("the Irreversible Action Clause").

8 As for B2C2's breach of trust claim, the Judge found that Quoine held the BTC in B2C2's account, which had been credited following the Disputed Trades, on trust for B2C2, and so Quoine was in breach of trust when it reversed the relevant credit transaction.

9 The Judge rejected Quoine's defences for the following reasons:

(a) The clause that purportedly allowed Quoine to cancel a transaction if this had occurred at an aberrant value ("the Aberrant Value Clause") had not been incorporated into the Agreement.

(b) Quoine's proposed implied terms ("the Proposed Implied Terms"), which would allow it to reverse trades on the Platform under certain circumstances, contradicted the Irreversible Action Clause, and were, in any event, not necessary to give business efficacy to the Agreement.

(c) The Trading Contracts were not vitiated on the basis of unilateral mistake at common law or in equity because Mr Boonen did not have actual or constructive knowledge of the alleged mistaken beliefs held by the Counterparties, and there was no impropriety on B2C2's part.

(d) The defence of common mistake at common law failed because even if Quoine held a mistaken belief as to the prices at which the Disputed Trades were to be concluded, B2C2 did not.

- (e) The fact that the Trading Contracts were valid and enforceable operated as a bar to any action in unjust enrichment.

### The CA's decision

10 The Court of Appeal ("CA") affirmed the Judge's holding that the Trading Contracts were formed directly between B2C2 and the Counterparties. This characterisation best accorded with the terms of the Agreement, which made clear that Quoine was merely providing a service to the users of the Platform, who would transact with one another in the exchange of cryptocurrencies on the Platform (at [50] and [51]).

11 The CA did not accept that there were express or implied terms in the Agreement that allowed Quoine to cancel the Disputed Trades. With regard to Quoine's reliance on the Aberrant Value Clause, the CA agreed with the Judge that the Aberrant Value Clause had not been incorporated into the Agreement. Sufficient notice of the incorporation of this clause had to be given to users of the Platform before the clause could be regarded as having been incorporated, and this had not been done (at [66]).

12 As for the Proposed Implied Terms, the CA agreed with the Judge that these were inherently incompatible with the Irreversible Action Clause, given that they purported to allow Quoine to reverse trades which had been executed and had become irreversible (at [71]).

13 Turning to unilateral mistake, which formed the central feature of Quoine's defence, the CA first reaffirmed the following principles:

(a) For both unilateral mistake at common law and in equity, one party must have transacted while operating under a mistake as to a *fundamental term* of the contract. It was not necessary in this case for the CA to determine whether unilateral mistake in equity could extend beyond a mistake as to a term of the contract (at [80] and [92]).

(b) The type of knowledge required on the part of the non-mistaken party of the mistaken party's mistake differed depending on whether a party was seeking to invoke the doctrine of unilateral mistake at common law or in equity. The former required proof that the non-mistaken party had actual knowledge of the mistake at the time of the contract, while the latter required constructive knowledge (coupled with an element of unconscionability) (at [105]).

14 The question of how unilateral mistake should apply to contracts made by computerised trading systems should be answered by first considering the more fundamental issue of *how* such contracts were formed. Because a deterministic algorithm was bound by the parameters set by the programmer, it was the programmer's state of knowledge that was relevant and to be attributed to the parties. The relevant inquiry was whether, when programming the algorithm, the programmer was doing so with actual or constructive knowledge of the fact that the relevant offer would only ever be accepted by a party operating under a mistake and whether the programmer was acting to take advantage of such a mistake. The relevant time frame within which the knowledge of a programmer or the person running the algorithm should be assessed was from the point of programming up to the point that the relevant contract was formed: at [93], [98], [99] and [103].

15 As for the final requirement of unconscionability for unilateral mistake in equity, the CA held that it was not necessary for it to decide the question as to whether the narrow conception

of unconscionability discussed in *BOM v BOK and another appeal* [2019] 1 SLR 349 should apply. Further, it was relevant when considering unilateral mistake in equity to have regard to the degree of carelessness or negligence on the part of the mistaken party to determine where the equities fell, even if a mistaken party's carelessness would not in and of itself disentitle it from relief (at [110] and [111]).

16 The CA rejected Quoine's defences of unilateral mistake at common law and in equity. The Counterparties' mistaken belief that they were buying ETH for BTC at prices that did not deviate significantly from the market price was not a mistake as to a *term* of the Trading Contracts. Rather, this was a mistake as to the premise on which the buy orders were placed, or a mistaken assumption that the Platform would not fail. Even assuming there was an operative mistake, Mr Boonen did not have actual or constructive knowledge of the Counterparties' mistaken belief (at [114], [115] and [126]).

17 The CA also rejected Quoine's defence of common mistake at common law. B2C2 and the Counterparties could not have entered into the Disputed Trades under a shared mistaken assumption that they were transacting at or around the going market rate for ETH, given that B2C2 had placed its sell orders for ETH at prices of 9.99999 BTC and 10 BTC to 1 ETH on the Platform *because the intentionally* pre-programmed deep price of 10 BTC to 1 ETH in the PureQuote strategy had taken effect (at [129]).

18 In considering Quoine's defence of unjust enrichment, the CA proceeded on the basis that this was properly raised as a defence. This defence nonetheless failed, because the unjust factors that Quoine had raised were premised on the same points that had been rejected in relation to the analysis on unilateral mistake. Further, given the conclusion that the Trading Contracts were not vitiated, B2C2's enrichment would have been pursuant to valid contracts was not unjust (at [132], [134] and [135]).

19 On the trust question, the CA held that it was not necessary in the present case for it to decide whether cryptocurrency, specifically BTC, was a species of property that was capable of being held on trust. This was because no express trust arose over the BTC in B2C2's account given that there was no certainty of intention to create a trust. The mere fact that Quoine's assets were segregated from its customers' could not in and of itself lead to that conclusion (at [144] and [145]).

20 The CA therefore dismissed Quoine's appeal on the breach of contract claim, and allowed its appeal on the breach of trust claim. Given the decision that the Trading Contracts were valid and enforceable, B2C2 was contractually entitled to the proceeds of the Disputed Trades from Quoine.

### **Mance IJ's dissenting judgment**

21 Mance IJ dissented on the issue of unilateral mistake. He opined that the law of unilateral mistake should not be applied in a manner that left out of consideration elements which were normally central to its application, namely whether there was anything drastically unusual about the surrounding circumstances or the state of the market to explain on a rational basis why such abnormal prices could occur, or whether the only possible conclusion was that some fundamental error had taken place, giving rise to transactions which the other party could never rationally have contemplated or intended. The law had to be adapted to the new world of algorithmic programmes and artificial intelligence, in a way which gave rise to the

results that reason and justice would lead one to expect. Relief should be available if it would at once have been perceived by an honest and reasonable trader that some fundamental error had occurred (at **[192]**, **[193]**, **[194]** and **[198]**).

22 In the case at hand, any reasonable trader would at once have identified, as B2C2 did identify, a fundamental computer system breakdown as the cause of the transactions, and such error could be rectified without any suggested detriment to B2C2 or any relevant third party. The considerations in favour of reversal of the transactions outweighed in the balance any errors or faults which had led to that breakdown (at **[194]** and **[195]**).

23 Mance IJ also considered that unconscionability in bringing about the transactions could not and should not have a role in relation to this novel situation, which was closer to one of actual knowledge than of constructive notice. To the extent that unconscionability might be relevant, it was in any event clearly unconscionable for a trader to retain the benefit of transactions which he would and did at once recognise as due to some major error as soon as he came to learn of them (at **[204]** and **[205]**).

*This summary is provided to assist in the understanding of the Court's judgment. It is not intended to be a substitute for the reasons of the Court. All numbers in bold font and square brackets refer to the corresponding paragraph numbers in the Court's judgment.*