Traditional contract law principles and technological change: harmony or discordance?

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Features of a ‘smart contract’

- A legal contract in the sense of a legally enforceable agreement
- All or part of the contract is reduced to computer code
- Once the code is switched on, the contract operates automatically and cannot be amended or stopped
- The contract continues to operate until its designated end date, or until it is breached
- Operates using blockchain technology
def composeimage( x, y, colr, radius, points, diminish ) :
    nofill()
    stroke()
    strokewidth( 0.05 )
    autoclosepath( False )
    count = int( radius * 1.3 )
    colr = colors.color( colr )
    grad = colors.gradient( colr.darken( 1.0 ), colr, 
                          colr.lighten( 1.0 ).desaturate( 0.4 ),
                          steps = count )
    for i in range( count ) :
        stroke( grad[ i ] )
        a = 0.75 - 0.25 * float( i ) / count
        colors.shadow( dx = 5, dy = 8, alpha = a, blur = 15 )
        path = oval( x - radius + i * 0.5, y - radius + i * 0.5,
                     radius * 2 - 1, radius * 2 - 1, draw = False )
        drawpath( brushpaint( path, points = int( points - i * 0.2 ),
                             length = radius - i + random( count - 1 ) / 3,
                             diminish = diminish ) ) )
Outline of presentation

1. Overview of the foundational principles of contract law
2. How these principles apply to ‘smart contracts’
3. Concluding observations
Foundational contract law principles

- Parties
- Agreement
- Consideration
- Breach
- Enforcement

- Intention
- Terms
- Performance
- Termination
Application to smart contracts

Parties

- Contractual capacity ✓
Application to smart contracts

Parties

Intention

• Intention can be manifested in any manner, including computer code
Application to smart contracts

- Parties
- Agreement
  - Offer and acceptance ✓
- Intention
Application to smart contracts

- Translating to computer code
- Adds an additional step
- Parties/lawyers cannot verify accuracy
- Must interpret all terms in advance
- No flexibility
- Computer code ≠ legal language
Application to smart contracts

Parties

Agreement

Consideration

- All funds must be locked up at commencement

Intention

Terms
Application to smart contracts

- Parties
- Agreement
- Consideration
- Intention
- Terms
- Performance

- Automating performance
- Verifying performance has occurred (requires outside parties, i.e., oracles and external data sources)
Application to smart contracts

- Parties
- Agreement
- Consideration
- Breach
- Intention
- Terms
- Performance
- Termination

- Contract ends automatically
- Can’t foresee all possible breaches
- Problems if breach not anticipated
Application to smart contracts

Parties - Agreement - Consideration - Breach - Enforcement

Intention - Terms - Performance - Termination

Usual enforcement mechanisms apply
Concluding observations

• Smart contracts are compatible with foundational contract law principles – the two can work in ‘harmony’

• Contract law is sufficiently flexible to withstand this technological change

• Smart contracts may be useful for short-term, one-off financial exchanges (eg interest rate swaps; futures trading)

• However, smart contracts are problematic for complex, long-term commercial agreements – costly, time consuming, inflexible
Thank you