

&R JQLWLYH \QDPLFV LQ /DQJXDJH 0HGLDWI
ODWLRQ \$XGLRYLVXDQG UQWMOBWHWQQJ 6V

-LDQLQJ :DQJ

6RXWKHDVW 8QLYHUVLW\ 1DQMLQJ &KLQD

\$EVWUDKFW DUWLFQY YQW XEDWHL QWRBKHV FVR JQQLWLYH\LSQW WUDQVOD
LQWHUSUHWLQJ ,W SUHVHQWV D PHHWLQ WDRXS UHRJDFLVQHWV DRQG FRIRWQLHW
WKDW WUDQVODWRUV DQG LQWHUSUHFWH BNVH PSHQRW ULQO VVKRI LWK BV RH HS
LQWHJUDWLRQ RI WKHRUHWLFDQ PRJGHODV ZLQWKK HPLSL ULKFDW BHIWHJDU
XQGHUVWDQGLQJ XQGWKSLRQLQJLWLVFHDSILQW UDKW OSUWDFQWL DQG LQWHUS
FRPSUHKHQVLYH VWXG\ VFUXWLQLR GHYODU LBRD OHJLW D EORLZ\ KWKH FRIQKL
FRJQLWLYH DFWLYLWLHV LQYROYHG LWQ GHQWYKH D JHQ WIRGW B W LDFSS O)XFDWKL
WR UHDO ZRUOG VFHQDULRV DVDFVWLQK WKHLG\SDDFWLEBQGWRI DQGL
LQWHUSUHWLQJ %\ EULGJLQJ VKKHDW KHLR OH WVKFDQOV ZLWKK W RHO SKURZF MRL
RQO\ LQIRUP DFDGHPDQVBLKBRXUWDRQXWQ BSBQDFDQJL WKH HILFLH
HIIHFWLYHQHV RI WUDQVODWLRQL DQGLRQWVKHSWHHMLQRQMDLNEK W7KL W L
ILHOG E\ RIIHULQJ LQVLJKWV WKDW HKSB BFWK BHSRQVQGVMDQDQWRL RQ YR
LQWHUSUHWLQJ PDNLQJ LW D SED B WDFLQDQVR XDBS MVUXSHRQWV VLQDQD

,QWURGXFWRQ

&R JQLWLYH)UDPHZRUNV LQ
7KH H[SORUDWLRQ RI FRJQLWLYH SURFHVVHV LQ WUDQVODWLRQ DQG
LQWHUSUHWLQJ LV D FULWLFDO 7UDQVODWLRQ DQG BWHUSUHW
DUWLFQY YHQWXUHV LQWR WKH LQWULFDW ZRUOG RI FRJQLWLYH
SURFHVVHV XQGHUOLQJ WUDQVODWLRQDGLDQV BRSHBWLQJ &R JQL
SUHVHQWV D PHWLFXORXV H[DPLQDQV RDRMLWGH FRPSOH\ PHQWDO
SURFHVVHV DQG FRJQLWLYH VWUDWHJLHV WKDW WUDQVODWRUV DQG
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WR WKLW H[SORUDWLRQ LV WKH LQWUDWLRQRY WXGLWLV SURYDGLRQ
ZLWK HPSLULFDQ UHVHDFK ILQGLQJ XQGHUVWDQGLQJLWLVWKDW RHWDOV SU
SURIRXQG XQGHUVWDQGLQJ RI WKH DFWLYLWYR XQGHUSLQGLQOV
VKDSLQJ WKH SUDFWLFH RI WUDQVODWLRQ DQG LQWHUSUHFWLQJ XGRLV
FRPSUHKHQVLYH VWXG\ VFUXWLQLR GHYODU LBRD OHJLW D EORLZ\ KWKH FRIQKL
FRJQLWLYH PRGHQV DQDO\JLQJ WKH UZRUHQ @ ZLW FRIQKHSWXDOL
FRJQLWLYH DFWLYLWLHV LQYROYHG LQ DQJXDJH RQWV RQWV RQWV
)XUWKHUPRUH LW GHQYHV LQWR RQDQSSORLDFRYR RYKWHVFRGHQV
WR UHDO ZRUOG VFHQDULRV DVDFVWLQK WKHLG\SDDFWLEBQGWRI DQGL
UHOHYDQFH LQ WKH G\QDPLF ILQGLQJ DQGLRQWVKHSWHHMLQRQMDLNEK W7KL W L
LQWHUSUHWLQJ > @ %\ EULGJLQJ VKKHDW KHLR OH WVKFDQOV ZLWKK W RHO SKURZF MRL
SUDFWLFDO WKH DUWLFQY VKHG\GLJLW RQ WRZFRQDWRQV FRGHQV
QRW RQO\ LQIRUP DFDGHPDQVBLKBRXUWDRQXWQ BSBQDFDQJL WKH HILFLH
DSSOLFDWLRQV HILQKQDFDQGWKHLWLVHQLWV WUDQVODWLRQ SUDFW
RI WUDQVODWLRQ DQG LQWHUSUHWLQJ WDWLV DQGLSUDFWLWLRQWLV
WKHUHE\ FRWULEXWHV VLJQLILFDQWO\ WR WKH ILHOG E\ RIIHULQJ
LQVLJKWV WKDYH WKH SRWHQWLQGLR FWHY BSBQDFDQJLW RQWV
DQG WUDLQLQJ LQ WUDQVODWLRQDGLDQV LQWHUSUHWLQJ PDNLQJ LW D
SLYRWDO UHVRXUFH IRU SURHVVLRQDOV DFDGHPDQVBLKBRXUWDRQXWQ BSBQDFDQJL
VWXGHQWV DOLNH (PSLULFDQ UHVHDFK LQ LQWHUSUH
YDOXDEOH ZLQGRZ LQWR WKH SUDFW
JRLQJ EHRQG WKHRUHWLFDQ FRQVW

ZDQJMLDQLQJSKGDSSO\#RXWORRN FRP

L Q W R W K H D U U D \ R I H P Q R I Z O H L G F J B O V H D B C S H V R O D F W H D Q V X R V
SURIRXQG LQVLJKWV LQWR WKHV V R U D M W L J Y H V S U R E B M V H W K H G R W H L Q U F D O
LQWHUSUHWDLRQ 3URPLQH Q W I P H Q M L C R J Q V K R G G X G B W U K Q Q N F D O R D C X H
SURWRFROV H \ H W U D F N L Q J V X X G H H V W D Q Q I G Q J D R G Y D R Q F H L G V L Y H S U R
QHXRURLPDJLQJ WHFKQLTXHV O L Z N K H Q I X W K F W L E R U L Q C O H P A K J K H J V S F E H W Z H H
UHVRQDQFH LPDJLQJ 105, 7KLQSU D E W X S H S U, R W R R K R I O V H D O O P R Z I W U D Q Y
LQWHUSUHWLWV WR YRFDOLJH W R K J L U W W Y K R X J G W L V K I Q V U V H D O Y W L P H V J
XQUDYHOLQJ FRJQLWLYH VWUDV S H J D F H W L W L Q R G H G W F L V Q B B P R Q N D V Q L Q J P R
SDWKZD \ V (\ H W U D F N L Q J M X J U M W L Q G L H D S S U H R V D H K M V J D P H W O K W L B U F U D Q G L Z O W H
SDWVHUQV UHYHDOLQJ ZKHU WKDUL Q H D W W W H I C H W W R L O P L W L J W X X V M G Z G R S N L S
WDVNV 1HXURKLPD J L Q W S U R F Y L G H P D N H Z H H O S H U Q I R U P H G O L Q J X L V L F G R S N L S
XQGHUVWDQGLQJ RI WKH QHXUB O H S D R G H T X D H L W L Q R R O Y D H C J X I D J H P H G
LQWHUSUHWDLRQ V K K @ V H P S W L G L F D P O S H V K B I Q F K Y H X Q G H U V W D Q G L Q J R I
LWV FDSDFLW \ WR EULGJH WKHR S H U D Q G H V S E D G W H F S R Z H R U P I D O O M G H S L U C H W
WKHRUHWLFD O F R Q W H S U S V H W R H O V R R D E H O X G O S Z F O U N G X U L Q J U H D O W L P H L
7KHVH VWXGLHV Q V L H K W S U D Q W L R F L Q L W K W S I Q H H G H D F F X U D F \ D Q G I O X H Q F
FKDOOHQJHV D Q Q J G B B R V F H R V P D N S Q R U R X D O G W L P S O L F D W L R Q V R I F R J Q L W L
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FKDOOHQJHV D Q G V W U D W H J L H V U Q W H H J U B F W Q Y H F R R E P W Q Y F D W L R R O V D
DFURVV ODQJXDJHV D Q G F X O W X U F X U J L F X O K I P V H K A V E D K W V T X H S W H K B V Q H
YDOXDEOH JXLGDQFH IRU D V S L U L H G L D Q W H U S Z L H W K H W K H V F R J Q Q W L W R F
H Q K D Q F H W K H L U V N L O O V D Q G X F H G X F D W R U V Q G M A S L O O Q E H Q J D I Q W O D
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PHGLDWRQ 7KH \ S U R Y L G H D F O M D D G V O D M X D R F H Q G L H Z W R H U S W K H W L Q J
FRJQLWLYH GLPHQVLRQV DW Z R U R R L O W M K M V S U T K H W L F D O V Z B W G L Z K H H B F F
LQWHUSUHWLWV X Q I D F L W L R O D W R G F R P B A U X D W D H Q G S Q R I L F L H Q F \ W K H \ H Q F
DSSURDFKHV W R Q S U R G H F L R L V R O P D N L C
D G D S W L Q J W R B P Z R X G L B D W D Y R I V F H Q D U
K R O L V W L F D S S U R D F K H O H Y D W H V W K H

%ULGJLQJ 7KHRU \ D Q G 3U D F W L F H

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FDQ EH DSSOLHG LQ WKH SUDFWLFD O G R P D L Q R I W U D Q V O D W L R Q D Q G
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WKH WKHRUHWLFD O E H F R P H V D F W L R O D R O H F R J Q H W L P S O L V D W L R Q J L H R V D
FRJQLWLYH VWXGLHV D U H I D U L L C H D F K E D W H H Y W H O V G H W L R G O S U R K H V
SURIHVVLVRQDO WUDLQLQJ D Q G V S U R G L G H Y H D F S R H Q W O R I D N Q H W W B G S
HGXFDRUV FDQ KDUQHVV WKH W R H Q K I D J K F W F R J Q L V L H C H W H I I E R I U H Q F \
H I I H F W L Y H W U D L Q L Q J S U R J U D P V R I H W X L D S S L O D M X R Q X S I P R Q Q J X B H H Y D
PHGLDWRUV ZLWK WKH FRJQLWLYH P H W R B O V \ Q W H E M G J O R V H [F H O H V Q D K G I U
UROHV > @ \$ G G L W L R Q D O O \ F R R W W D Y H F V X F L G I O H F R J Q L R W L P Y H V B H G V
FUHDWLRQ RI H I I L F L H Q W W U D Q V O S L V O R Q V D Q G L Q V S B S W H D H P S R W R U D W H F
H Q K D Q F L Q J W K H T X D O L W \ D Q G D F F R X O D I F V R H O D Q D Q G J H W H I G I D P O L R Q W K
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F U X W F K H V U D W S K H L V W W R K D W H G J H L Q A R W U
K D U Q H V V F R J Q L W L Y H D E L O L W L H V W R
K L J K F V W T X D O L W \ 7 K H G L V F X V V L R Q J
R O X P L Q D W H W K H V H D P O H V V L Q W H J U
W U D Q V O D W R U V F R J Q L W L Y H Z R U N I O F
H Q Y X H V W K D W F R J Q L W L Y H U H V R X
R S W L P L J H G I R U H V G B W L S H F W I D F V N U S D Q
W U D Q V O D W R U V F W B U Z B B N X Z I D V F K D Q B H
G H O L Y H U L Q W W U D Q V O D W L R Q P W K D W F
Q H Q J X L O G V F R S U N C H D W L R O D W Q G E B K G F R
S W R D W H O L H V [D Q G Z K W R R O W K W R I S H W V F I O

&RJQLWLYH 3URFHVVHV D Q G
&KDOOHQJHV LQ 7UDQVODWLRQ

0HQWDO 3URFHVVHV LQ /DQJXDJH
7UDQVODWLRQ

7KH SUDFWLFD O DSSOLFDRUV G R I O L Y H U L Q W W U D Q V O D W L R Q P W K D W F
FRJQLWLYH VWXGLHV ZLWKLQ W R H Q J X L O G V F R S U N C H D W L R O D W Q G E B K G F R
LQWHUSUHWLQJ UHSUHVHQWV D S W R D W H O L H V [D Q G Z K W R R O W K W R I S H W V F I O

WKRURXJK SUHSDUDWLRQ IRU DVVBUQRMQWDVQVQDHM&RQQLWKLSSRWS SURD
IURP IHOORZ LQWHUSUHWHUV DQG 7KHQMLQXFRXVSHESD RYHPSISQVLRG OL
ODQJXDJH VNLOOV DQG LQWHUSUHWHVPHKRGFNHFKQJLQJHV,QWURGXFLLQJ
5RXWOHGJH

&RQFOXVLRQ

*LOH 'DQLHO ,QWHUSUHWLQJ VW
IURP ZLWKLQ
, Q FRQFOXVLRQ WUKLQV 3HWHU WWHWLFQWLFDOK DSS
FRPSUHKHQVLYH MRXUQH\ WKURXJK WKH LQWHUSUHWHVWLFDOVLRQVLRQV
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PHWLFXORXVO\ GLVVHFWHG WKHRUWLFDO PRGHV GHYHG LQWR
HPSLULFDO UHVHDUWKWLFDO SURJUDJH (YDOV\LV\ DQJXDJH WUDQVODV
LPSOLFDFWLRQV WUDQVODWLRQV RI FRJQLWLYH DFFRXQWLRQ
SURFHVVHV LQ WKHVH GRPDLQV 7KH VQHUV\ EHWZHHQ WKHRU
DQG SUDFWLFH KDV EHHQ DFHQWUDO WKHPH LQ RXU H[DPLQDWLRQ
:H YH QRW RQO\ VFUXWLQJHG WKHRUWLFDOVLRQV DQR DQWLWD
SURIRXQG LQVLJKWV LQWR WKH PHWUHSURFHVXVHVJLQVODWLRQ
ODQJXDJH PHGLDWRUV EXW DOVR YHWXUHQDQVWLVWLFDOVLRQV DQ
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%HQQG LWV DFDGHPLF VLJQLILFDQFH WR LQWHUSUHWHV RQRQV XUDO
WDQJLEOH LPSOLFDFWLRQV IRU WKH WUDQVODWLRQV DQVWLVRQV RSPHQW RI
ODQJXDJH PHGLDWRUV 7KH NQRZOHGJH ZH YH\ XQDQVWLVRQV WUDXPD
DERXW FRJQLWLYH GLPHQVLRQV RI WUDQVODWLRQV WUDQVODWLRQV
WKDW FDQ HQULFK WKH WUDLQLQJ SURJUDJH DQG VNLOV VHW RGH
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XQGHUVWDQGLQJ RI FRJQLWLYH GLPHQVLRQV HQVXUHV WKDW
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FRPSOH[LWLHV FXOWXUDO VXEWHLV DQG FRJQLWLYH FKDOOHQJH
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,Q HVVHQFH WKLW DUWLFOH VWDQGV DV D EHDRQ LQ WKH FRJQLWLYH
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RQO\ HQULFKHV WUDQVODWLRQV WUDQVODWLRQV WUDQVODWLRQV WUDQVODWLRQV
LPSOLFDFWLRQV WKDW H[WHQG LQWR WKH SUDFWLFDO UHDOV ,W LV D
WHVDPHQW WR WKH V[PELWLF UHODWLRQV KLSEHWZHHQ WKHRU\ DQ
SUDFWLFH DQG LW SDYHV WKH ZD\ IRU D EULJKWHU PRUH
FRJQLWLYHO\ LQIRUPHG IXWXUH LQ ODQJXDJH PHGLDWRUV \$V ZH
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GLPHQVLRQV H[SORUH KHUHLQ KROG WKH SRWHQWLDO WR UHVKDSH
DQG HOHYDWH WKH YHU\ HVVHQFH RI ODQJXDJH PHGLDWRUV LQ RXU
LQFUHDVLRQV\ LQWHUFRQQHFWHG ZRUOG

5HIHUUHQFHV

\$OELU \$PSDUR +XUWDGR DQG)DELR \$OYHV
7UDQVODWLRQ DV D FRJQLWLYH DFWLYLW\ 7KH 5RXWOHGJH
FRPSDQLRQ WR WUDQVODWLRQ VWXGLHV
+DOYHUVRQ 6DQGD &RJQLWLYH WUDQVODWLRQ VWXGLHV
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FRJQLWLRQ