

EQUITY, EXCLUSION AND
EVERYDAY SCIENCE
LEARNING

ZINE
EDITION

BOOK BY EMILY DAWSON

ZINE BY SOPHIE WANG

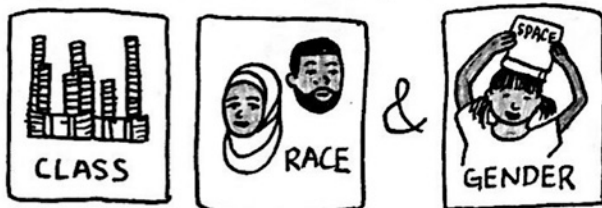
AS ANYONE WHO'S EVER BEEN EXCLUDED FROM SOMETHING KNOWS...



AND ONE THING THAT WE KNOW ABOUT EVERYDAY SCIENCE LEARNING



IS THAT IT EXCLUDES CERTAIN COMMUNITIES. SPECIFICALLY, PEOPLE MARGINALIZED BY DOMINANT SYSTEMS OF



BUT THE WAYS THAT PEOPLE ARE EXCLUDED FROM EVERYDAY SCIENCE LEARNING AREN'T AS SIMPLE AS INSTITUTIONS SAYING STRAIGHT UP,



SO WHAT DOES EXCLUSION FROM EVERYDAY SCIENCE LEARNING LOOK LIKE?

WHAT ARE THE CAUSES OF EXCLUSION?

AND CAN WE CHANGE EXCLUSION?



THESE ARE ALL QUESTIONS THAT **DR. EMILY DAWSON** TACKLES IN HER RESEARCH.

I WROTE THIS BOOK BECAUSE I WANT TO UNDERSTAND HOW REPRODUCTION OF INEQUALITIES IN EVERYDAY SCIENCE LEARNING HAPPENS, SO THAT WE CAN GET TO A PLACE WHERE EVERYDAY SCIENCE LEARNING PRACTICES COULD DISRUPT & TRANSFORM SOCIAL INEQUITIES, INSTEAD OF REPRODUCING THEM.

IN HER RESEARCH FOR THIS BOOK, DR. DAWSON WORKED WITH 59 PEOPLE FROM 5 GRASSROOTS COMMUNITY GROUPS:



SHE LEARNED ABOUT THEIR EXPERIENCES
WITH EVERYDAY SCIENCE LEARNING THROUGH



FOCUS
GROUPS



INTERVIEWS

&



ACCOMPANIED
VISITS TO EVERYDAY
SCIENCE LEARNING
ACTIVITIES.

★ THE EXAMPLES
OF EXCLUSION THAT
WE'LL TALK ABOUT HERE ARE ALL
FROM REAL EXPERIENCES OF THESE
PARTICIPANTS! ★



SO LET'S JUMP RIGHT INTO IT AND EXPLORE
SOME OF THE WAYS THAT EXCLUSION IS
UNDERSTOOD AND MISUNDERSTOOD
TO SEE IF WE CAN ANSWER SOME OF
THOSE BIG QUESTIONS ABOVE.

ONE WAY THAT EXCLUSION IS COMMONLY
CONCEPTUALISED IS THROUGH
TANGIBLE BARRIERS -
FOR EXAMPLE, ADMISSION FEES.

SOME EVERYDAY SCIENCE LEARNING
INSTITUTIONS THINK:



SO SOME MUSEUMS HAVE
WHAT ARE CALLED

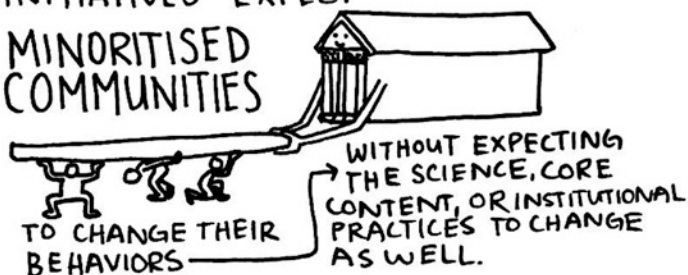
GOLDEN TICKET

SCHEMES, WHERE THEY PROVIDE
TICKETS THROUGH PLACES LIKE SPECIFIC
LIBRARIES AND SCHOOLS TO REMOVE
THE ENTRY FEE BARRIER.



THERE ARE A FEW ISSUES WITH THESE
TYPES OF INITIATIVES AND THIS KIND
OF THINKING.

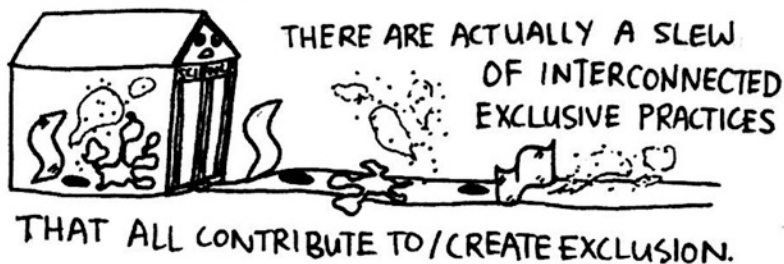
- ① THE **FIRST** ISSUE IS THAT THESE TYPES OF INITIATIVES EXPECT MINORITISED COMMUNITIES



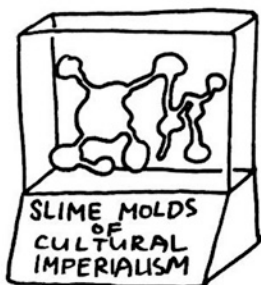
- ② THE **SECOND** ISSUE IS THAT A LOT OF INSTITUTIONS STOP HERE, WIPE THEIR HANDS, AND SAY



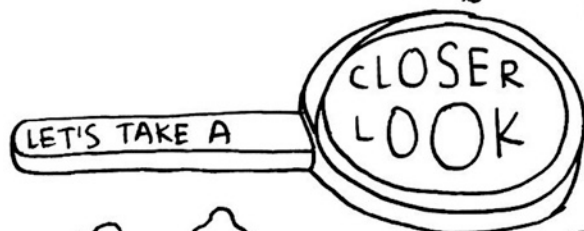
THERE ISN'T JUST ONE SINGLE BARRIER TO INCLUSION/PARTICIPATION IN EVERYDAY SCIENCE LEARNING.



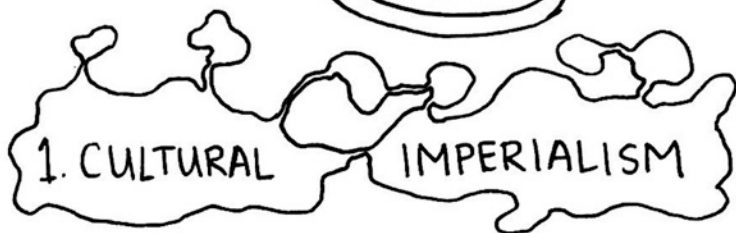
WE'VE GOT OUR



SINKHOLES
OF
POWERLESSNESS



AT THESE
EXCLUSIVE
PRACTICES



WHAT IS IT?

WHEN SOCIALLY DOMINANT PERSPECTIVES
AND PRACTICES SUPPRESS OR INVALIDATE
THE VIEWS AND EXPERIENCES OF
MINORITISED GROUPS, HARMING THE
MARGINALISED AND BENEFITTING THE
DOMINANT.

WHAT DOES IT LOOK LIKE?

LACK OF REPRESENTATION



WHITE GUY



WHITE GUY



WHITE GUY



LITERALLY ANYONE ELSE

"IN REALITY, A LOT OF AFRICANS HAVE DONE A LOT OF THINGS THAT ARE GOOD IN THE WORLD.

BUT MOST OF THE TIME WHEN PEOPLE ARE TALKING ABOUT HISTORY, WHEN YOU THINK ABOUT SCIENCE IN MUSEUMS, THEY ARE FORGOTTEN."

- HAWA, SIERRA LEONEAN GROUP

NEGATIVE REPRESENTATIONS



PARTICIPANTS DESCRIBED HOW THEY RESENTED THE PERCEPTION OF AFRICA AS BURDENED BY DISEASE AND "SAVED" BY THE WEST IN STORIES ABOUT MEDICINE - AKA "WHITE SAVIOUR" NARRATIVES"

OTHERING / TOKENIZATION



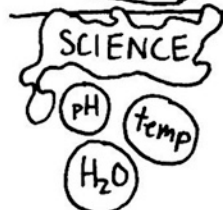
DOMINANT LITERACIES

BEING UNABLE TO SPEAK / READ / NAVIGATE MULTIPLE FORMS OF DOMINANT LANGUAGE AND CULTURE WAS A KEY ACCESS ISSUE FOR PARTICIPANTS IN EACH GROUP.

LITERACY WHAT DOES IT MEAN?



ALL TEXT + SIGNAGE AT 3 VISITED INSTITUTIONS WAS EXCLUSIVELY IN ENGLISH, WHICH LEFT PARTICIPANTS UNABLE TO ACCESS LEARNING / UNABLE TO NAVIGATE



MANY EXHIBITS WERE DESIGNED WITH THE EXPECTATION THAT PARTICIPANTS WOULD ALREADY HAVE SIGNIFICANT SCIENTIFIC KNOWLEDGE.



KNOWING HOW TO LOOK AT, INTERACT WITH, OR USE AN EXHIBIT IS RACIALIZED, CLASSED, AND GENDERED KNOWLEDGE.

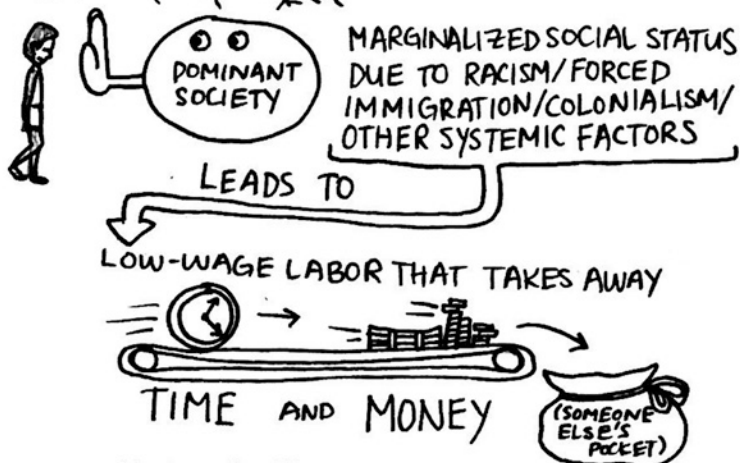
2. POWERLESSNESS

WHAT IS IT?

A COMBINATION OF ISSUES OF RACE/ETHNICITY, GENDER, AND CLASS THAT DESCRIBES THE EXPERIENCE OF BEING DISRESPECTED AND HAVING LITTLE TO NO AUTONOMY OVER YOUR CHOICES.

WHAT DOES IT LOOK LIKE?

CONSTRAINED CHOICES



WHICH TAKES AWAY PEOPLE'S ABILITY TO MAKE THE CHOICE TO DO THINGS LIKE PARTICIPATE IN EVERYDAY SCIENCE LEARNING, EVEN IF INVITED.

UNHEARD VOICES

VOICES AREN'T HEARD WHEN SOME RACIALISED/CLASSED/GENDERED GROUPS AREN'T LISTENED TO IN SOCIO-SCIENTIFIC CONSULTATION...



... OR WHEN THEIR OPINIONS AREN'T EVEN SOUGHT OUT



3. SYMBOLIC "VIOLENCE"

WHAT IS IT?

MISRECOGNITION OF OVERT EXCLUSION, DOMINATION, OR INHERITED ADVANTAGE THAT CAN MAKE EXCLUSION LOOK LIKE A CHOICE TO NOT PARTICIPATE.

WHAT DOES IT LOOK LIKE?

G
U
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L
T

SYMBOLIC VIOLENCE CAN RESULT IN PERSONALISED FEELINGS OF GUILT, RATHER THAN PLACING THE BLAME FOR STRUCTURAL INEQUALITIES ON INSTITUTIONS, SYSTEMS, OR SOCIETY

"I FEEL GUILTY THAT I'M NOT DOING IT ALL THE TIME... NOTHING CAN BEAT AN OUTING"

- MARIA, LATIN AMERICAN GROUP



N
O
N
ZOH-HO-HO-HO-HO

"[SCIENCE PEOPLE]... MAKE IT DIFFICULT... DON'T WASTE YOUR TIME ANYWAY, WHY DO YOU WANT TO GET INVOLVED?"
- ABDU, SIERRA LEONEAN GROUP



"I'M VERY UPSET WITH MUSEUMS, SO I'M NOT GOING"
- FATIMA, SOMALI GROUP

4. EMBODIED EXCLUSION

WHAT IS IT?

EXCLUSION AND NON-PARTICIPATION THAT'S BASED IN THE DISCONNECT BETWEEN

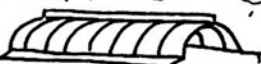
PEOPLE'S RACIALIZED, CLASSED, AND GENDERED BODIES

A
N
D

THE "SOMATIC NORM" - THE KINDS OF BODIES THEY IMAGINE EVERYDAY SCIENCE LEARNING CATER TO.

WHAT DOES IT LOOK LIKE?

VISITOR BODIES



"WE WENT TO THE BUTTERFLIES MUSEUM, I DIDN'T SEE EVEN ONE OR TWO LATIN FAMILIES THERE; DID YOU SEE ANYWHERE, OR NO?"

-IGNACIO, LATIN AMERICAN GROUP

SCIENCE BODIES



"SCIENCE ON TELEVISION FEATURED AN ALL-STAR CAST OF PEOPLE WHO WERE

"NOT LIKE US"

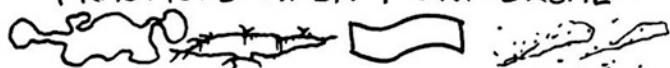
-IRENE, AFRO-CARIBBEAN GROUP

MOST SCIENTISTS ARE MEN, SO HOW COULD I BE A SCIENTIST?

-MRS. MALICK, ASIAN GROUP (PARAPHRASED)



AS YOU CAN TELL, THESE EXCLUSIVE PRACTICES AREN'T UNIVERSAL -



THEY'RE TARGETED TO SPECIFIC GROUPS OF PEOPLE. THEY'RE

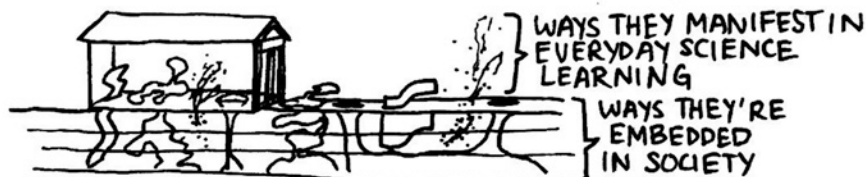
⇒ RACIST

⇒ SEXIST

⇒ CLASS

STRUCTURAL INEQUALITIES.

AND WHILE WE KNOW THAT THESE STRUCTURAL INEQUALITIES RUN DEEP THROUGHOUT OUR SOCIETIES AND



EVERYDAY SCIENCE LEARNING INSTITUTIONS DIDN'T INVENT THEM...

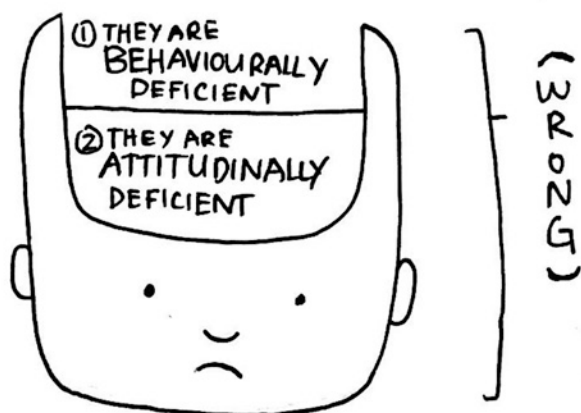


WHAT HAPPENS WHEN SCIENCE LEARNING PRACTITIONERS AND INSTITUTIONS AREN'T AWARE OF THOSE INEQUITIES AND DON'T SEE THESE EXCLUSIVE PRACTICES AS EXCLUSIVE?

WELL, THERE MUST BE SOME REASON THESE COMMUNITIES AREN'T PARTICIPATING...

AND THAT'S HOW YOU GET THE FALSE NARRATIVE
OF THE **DOUBLE DEFICIT**

- THE IDEA THAT EXCLUSION IS THE FAULT OF THE EXCLUDED THROUGH TWO WAYS:



SO WHAT DO THESE TWO DEFICITS ^{FALSE} MEAN, AND WHY ARE THEY WRONG?

LET'S BREAK THEM DOWN.
DEFICIT

BEHAVIORAL DEFICIT

"THEY'RE NOT PARTICIPATING IN THE KINDS OF CULTURAL PRACTICES LIKE EVERYDAY SCIENCE LEARNING THAT WE RECOGNIZE/SEE, AND THEREFORE WE DON'T SEE THEM AS CULTURALLY, EDUCATIONALLY, OR POLITICALLY ACTIVE."

THIS ARGUMENT DOESN'T HOLD WATER BECAUSE:

- 1 ALMOST ALL THE EVERYDAY SCIENCE LEARNING PRACTICES DISCUSSED + EXPERIENCED WITH PARTICIPANTS WERE SUPER INACCESSIBLE / EXCLUSIVE / OFF-PUTTING.

AKA 

IF YOU SAW THIS PATH + EXPERIENCE IN FRONT OF YOU, WOULD YOU BE ABLE TO MAKE IT TO THE EVERYDAY SCIENCE LEARNING? WOULD YOU WANT TO?

(NO, YOU'D BE SMART NOT TO)

AND

2 PARTICIPANTS LED RICH POLITICAL, EDUCATIONAL, AND CULTURAL LIVES!

THEY:



BUT THEIR PRACTICES + KNOWLEDGE ARE NOT THOSE THAT "COUNT" AND ARE RENDERED **INVISIBLE**.

THESE PARTICIPANTS AREN'T BEHAVIOURALLY DEFICIENT.

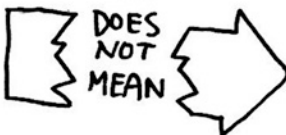
THEY'RE NOT CHOOSING TO DO NOTHING OVER GOING TO A SCIENCE MUSEUM (WHICH WOULD ALSO BE FINE.),



MYTH 2 ATTITUDINAL DEFICIT

"THESE PEOPLE JUST DON'T LIKE SCIENCE, IF THEY DID LIKE SCIENCE THEN THEY WOULD PARTICIPATE IN EVERYDAY SCIENCE LEARNING."

THIS ARGUMENT DOESN'T HOLD WATER BECAUSE WE KNOW THAT



DR. DAWSON TRACES THE LIVES OF 3 SUPER COOL PEOPLE WHO WERE ALL INTERESTED IN SCIENCE, WHETHER AS CAREER, HOBBY, OR A COMBO OF THE 3.

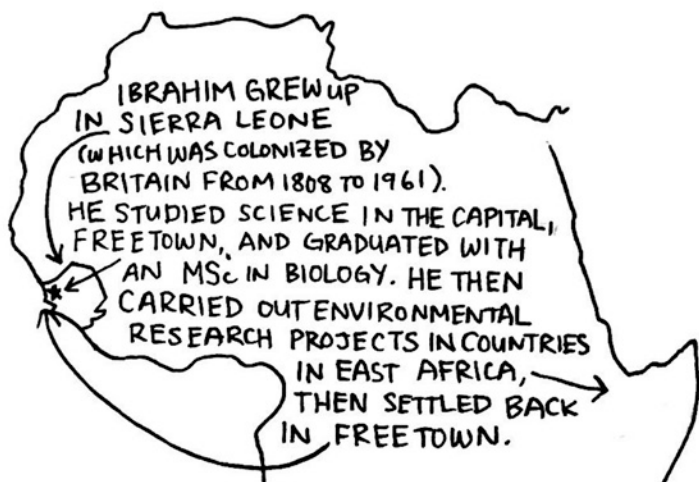
BUT WHEN WE LOOK AT THE SCIENCE EXPERIENCES IN THEIR LIVES, WE CAN SEE HOW STRUCTURAL INEQUALITIES LIKE THOSE WE COVERED EARLIER + ROOTED IN THINGS LIKE COLONIALISM MADE SCIENCE "NOT FOR THEM."

HERE, WE'LL LOOK AT ONE OF THOSE STORIES :



IBRAHIM, MAN IN HIS 40s FROM THE SIERRA LEONEAN GROUP

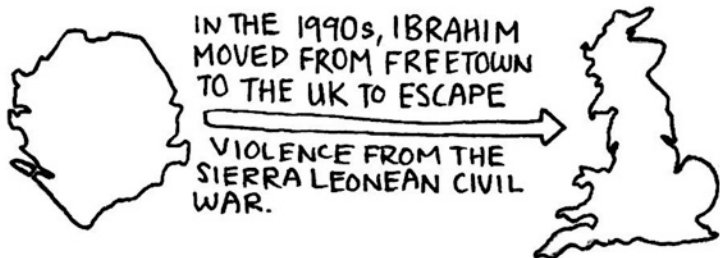
* IMAGE + NAME ANONYMIZED



IBRAHIM LIKES SCIENCE.



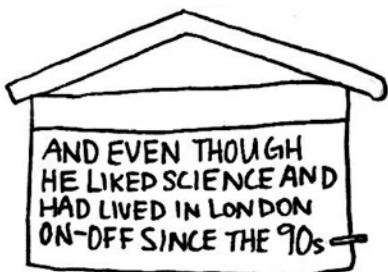
SCIENCE IS IN EVERYTHING.
SCIENCE IS WONDERFUL.



IN THE UK, DESPITE

- ☑ HIS PASSION FOR SCIENCE
- ☑ SELF-DESCRIBING AS A SCIENTIST
- ☑ AND HAVING A SCIENCE EDUCATION,

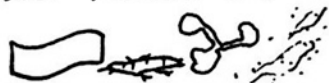
IBRAHIM WORKED
AS A SECURITY
GUARD FOR A CHAIN
OF HIGH-STREET SHOPS,



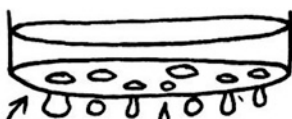
IBRAHIM DIDN'T KNOW WHERE THE
SCIENCE MUSEUM WAS.

SO LIKING AND BEING INTERESTED
IN SCIENCE WAS NOT ENOUGH TO
GET INTO EVERYDAY SCIENCE LEARNING
OR SCIENCE CAREERS.

NOW THAT WE'VE SEEN WHAT EXCLUSION LOOKS LIKE AND SOME OF ITS STRUCTURAL ROOTS, LET'S RETURN TO THOSE QUESTIONS WE POSED AT THE BEGINNING



↑ WE'VE LEARNED ABOUT THE INTERCONNECTED, SYSTEMIC, ACTIVE NATURE OF EXCLUSION



↑ AND WE'VE COVERED HOW THE IDEA OF NON-PARTICIPATING AND EXCLUDED COMMUNITIES AS BEING DOUBLY DEFICIENT IS A MYTH.

BUT WHAT ABOUT THAT THIRD QUESTION:
CAN WE CHANGE EXCLUSION?
AND Q 3.5: IF SO, HOW?



FIRST OF ALL, THERE'S A SERIOUS CONVERSATION TO BE HAD ABOUT WHETHER EVERYDAY SCIENCE LEARNING PRACTICES ARE EVEN SALVAGEABLE. CAN WE DISMANTLE THE MASTER'S HOUSE WITH THE MASTER'S TOOLS (AS AUDRE LORD ASKS)? CAN WE (AS DOMINANT PPL WHO WORK IN MUSEUMS) BE TRUSTED TO DO THAT WORK (AS MARIANA ORTEGA ASKS)? AND ARE THESE SYSTEMATIC INEQUALITIES DEEPLY ENTRENCHED IN EVERYDAY SCIENCE LEARNING WORTHY OF OUR TIME AND ENERGY TO RETHINK + REWORK?

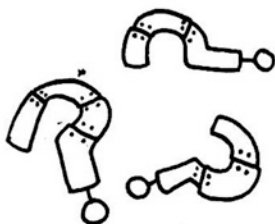
THE ANSWER MAY
VERY WELL BE NO.

INSTEAD,

WE COULD COMMIT
OURSELVES TO A
TOTAL RADICAL
ALTERNATIVE TO
THE TYPES OF
EVERYDAY SCIENCE
LEARNING THAT
CURRENTLY EXIST.



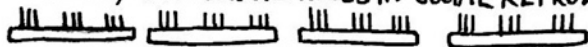
IT MAY BE HARD
TO IMAGINE WHAT
THIS COULD LOOK
LIKE...



BUT TOGETHER,
WE CAN ENVISION
AND MANIFEST THIS
ALTERNATIVE



ONE THING TO CONSIDER IS THAT
WE HAVE A LANDSCAPE OF PUBLIC CULTURE
THAT ISN'T GOING AWAY, THAT MAINTAINS
A DOMINANT, HEAVILY FUNDED, HIGHLY VISIBLE
POSITION, AND THAT CONTINUES TO PLAY THESE
REALLY POWERFUL ROLES IN SOCIAL REPRODUCTION.



SO BECAUSE THESE INSTITUTIONS/ PRACTICES
AREN'T GOING TO DISAPPEAR OVERNIGHT,
WE SHOULD CONSIDER TRYING TO TRANSFORM THEM -

↑ IN ADDITION TO MAKING RADICAL ALTERNATIVES



- A TRANSFORMATION THAT IS DEEPER
THAN TOKENISTIC, SHALLOW CHANGE
THAT DOESN'T ADDRESS STRUCTURAL
INEQUITIES.

TO DO SO REQUIRES A
COMMITMENT BEYOND
ISSUES OF ACCESS AND

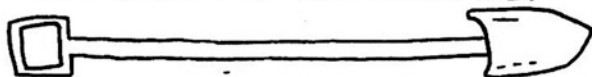
↔ (CLEARING THE PATH) ↔

PARTICIPATION!

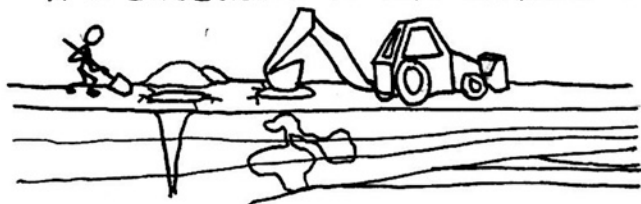
TO ALSO INCLUDE

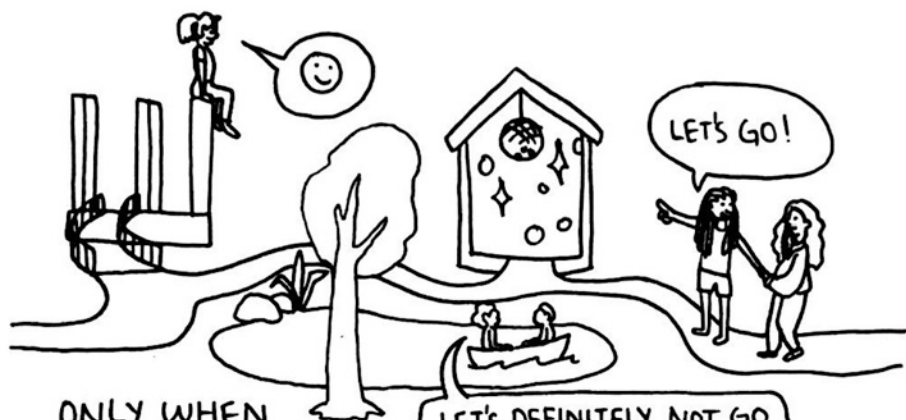
- RECOGNITION
- REPRESENTATION
- RESPECT

OF NON-DOMINANT PRACTICES, PEOPLE,
AND FORMS OF KNOWLEDGE.



AND ULTIMATELY, WE HAVE TO ADDRESS
THE STRUCTURAL INEQUALITIES THAT
THE EXCLUSIVE PRACTICES BUILD OFF OF.





ONLY WHEN
THAT HAPPENS
(WHILE PEOPLE MAY

LET'S DEFINITELY NOT GO

(BUT THEY COULD IF THEY WANTED
TO WHO HAVING A REALLY BAD TIME)

CONTINUE TO **NOT PARTICIPATE** IN EVERYDAY
SCIENCE LEARNING FOR REASONS THAT
DON'T STEM FROM INCLUSION)

WILL EVERYONE BE EQUALLY ABLE TO
CHOOSE TO USE EVERYDAY SCIENCE LEARNING,
AND TO HAVE MEANINGFUL, RELEVANT,
AND RESPECTFUL EXPERIENCES WHERE
THEIR OWN COMMUNITIES, KNOWLEDGES,
AND PRACTICES ARE WELCOME.

FOR MORE INFO ON THE BOOK, FIND EMILY AT
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AND FIND SOPHIE @wangshuf on TWITTER

