

**Social Networks and Group Sex
among Drug Users
and Others:
Mixing Patterns and the Limitations of
Current HIV and Drug Use Interventions**

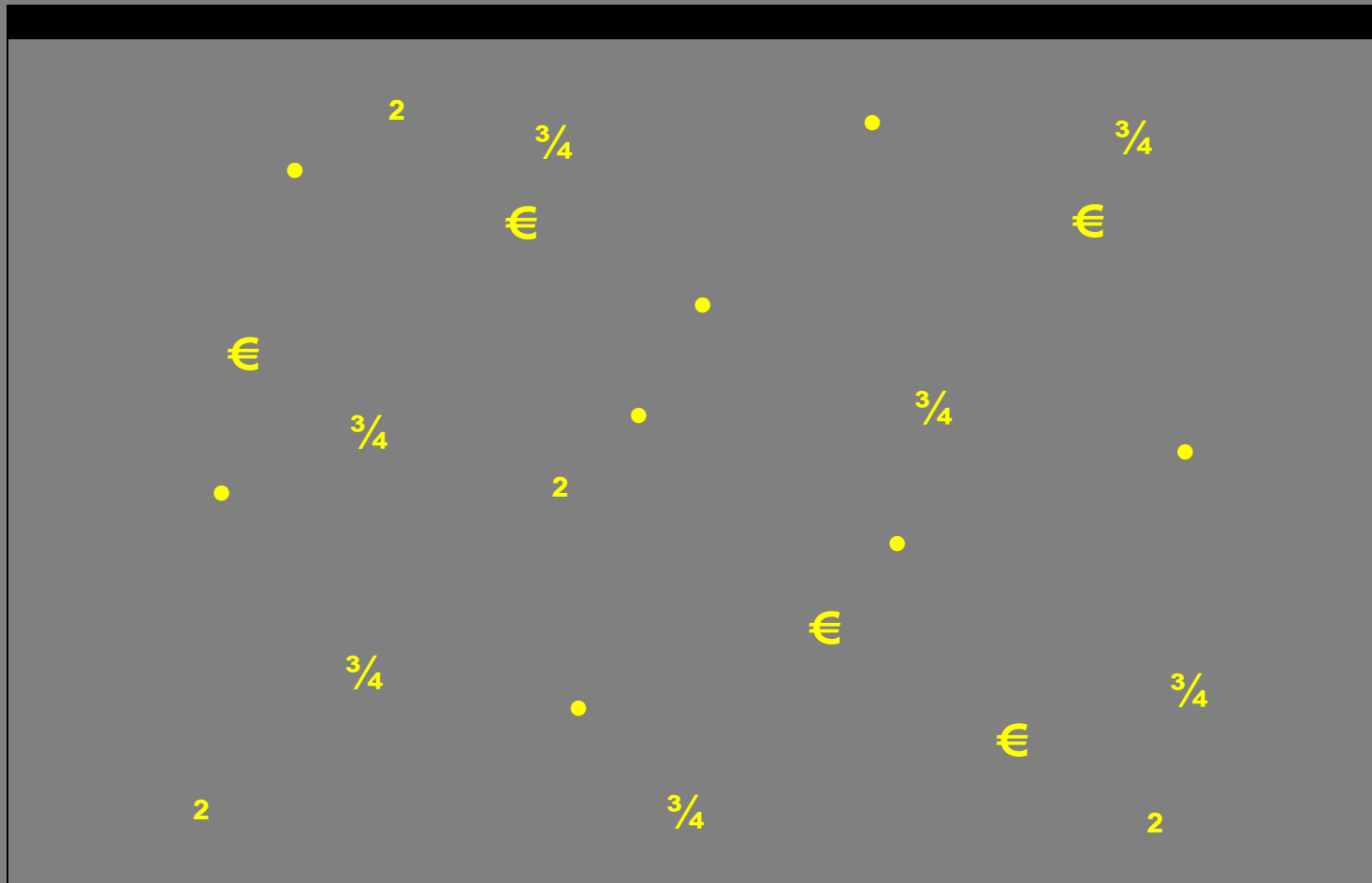
Samuel R. Friedman

I would like to acknowledge

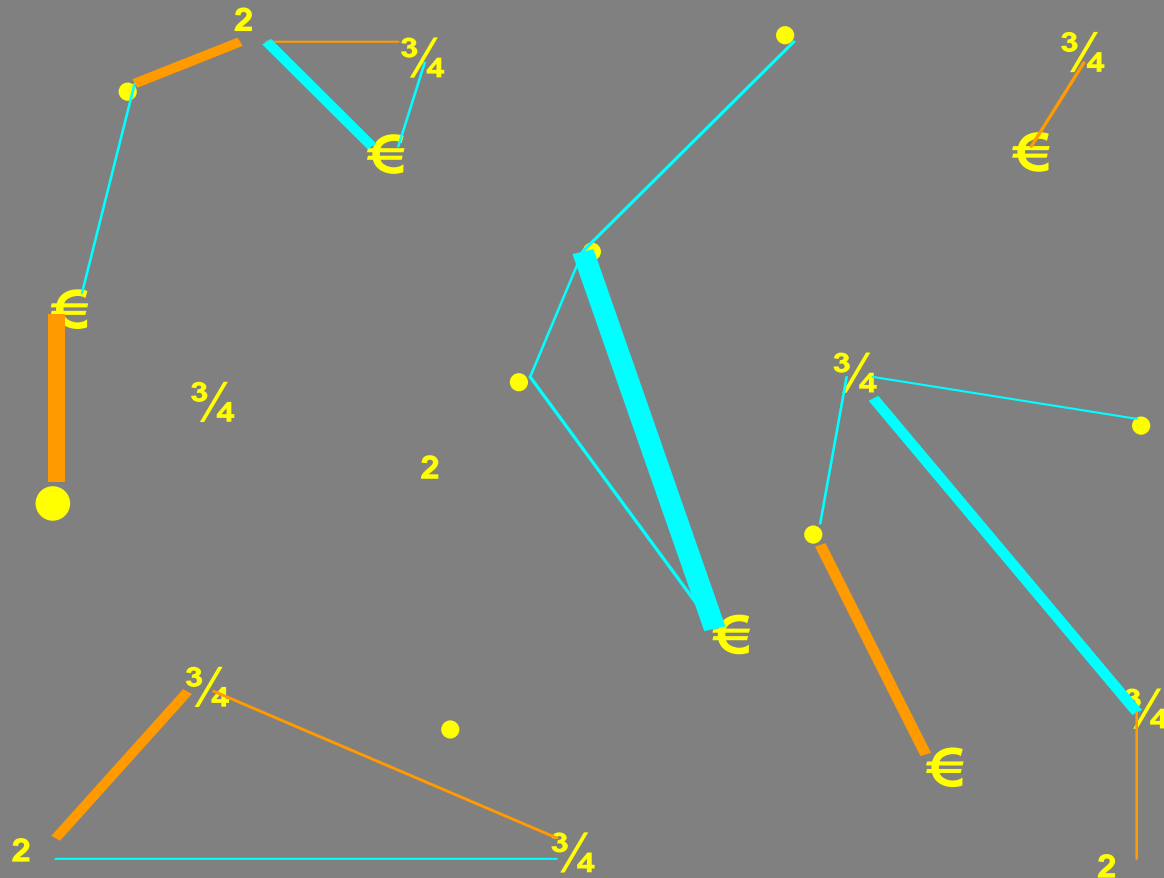
- NIDA projects:
 - R01 DA006723 Social Factors and HIV Risk
 - R01 DA13128 (Networks, norms & HIV risk among youth)
 - R01 DA DA019383-01A1 Staying Safe: Long-term IDUs who have avoided HIV & HCV
 - P30 DA11041 (Center for Drug Use and HIV Research; Sherry Deren PI)
- Hundreds of participants in these studies
- Colleagues and participants who have died of HIV/AIDS and hepatitis C
- Many collaborators and co-authors

Social and risk networks

**Most HIV epidemiology, prevention,
and policy has focused on individual
knowledge, attitudes, personality
and behaviors:**



People also have social and behavioral ties of various types and strengths

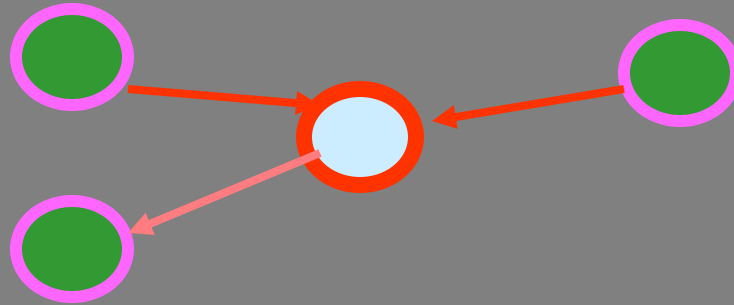


Risk (sex, IDU) network ties can carry infections:

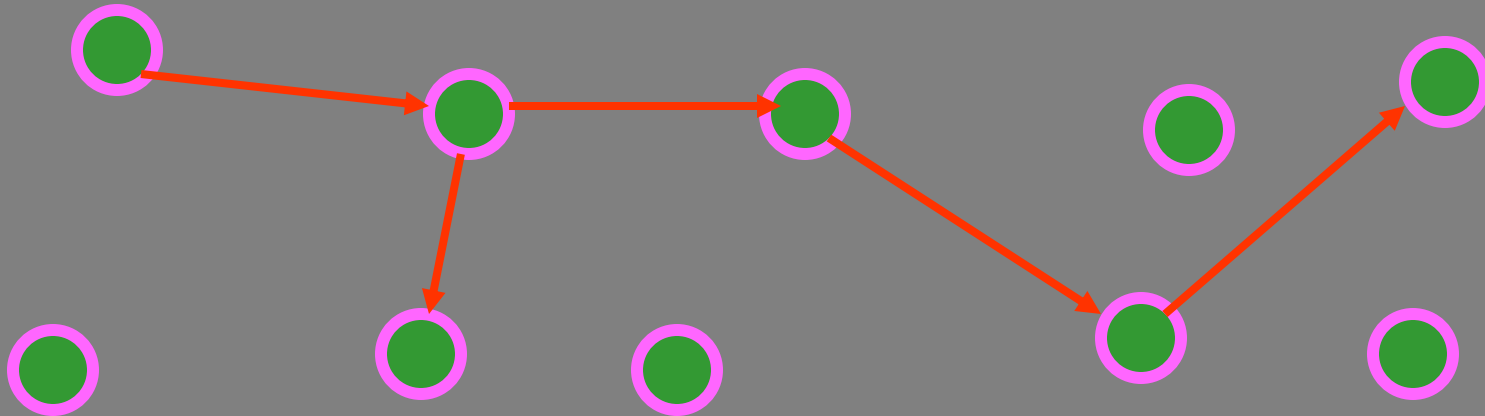
Within relationships



To or from an individual



Throughout a community or small group



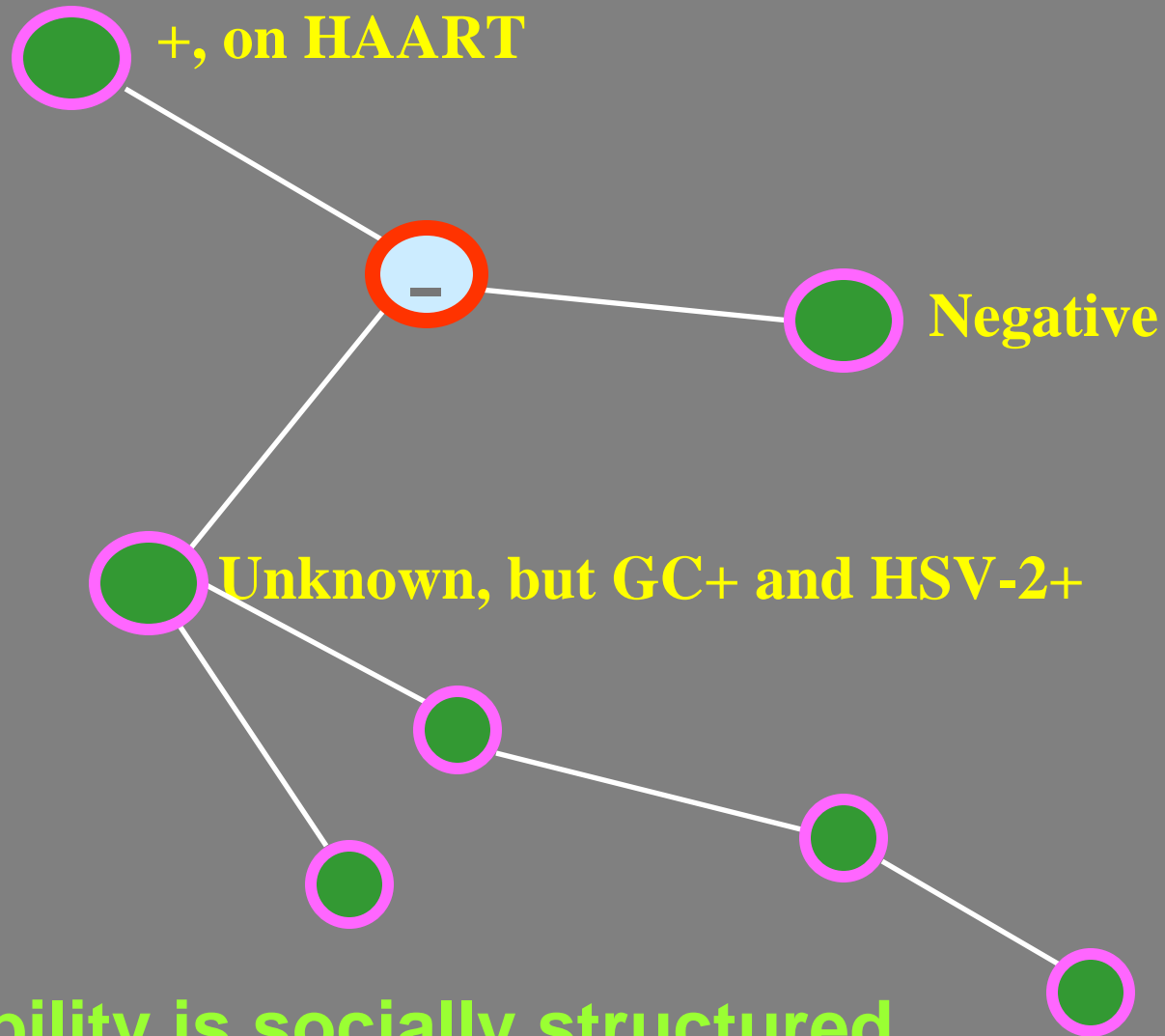
Social research insight 1:

risk networks

carry infections via behaviors . . .

And this can help us understand both why HIV can spread quickly in some circumstances and help us develop prevention strategies

HIV risk is a conditional probability: Risk behaviors with uninfected people do not lead to infection

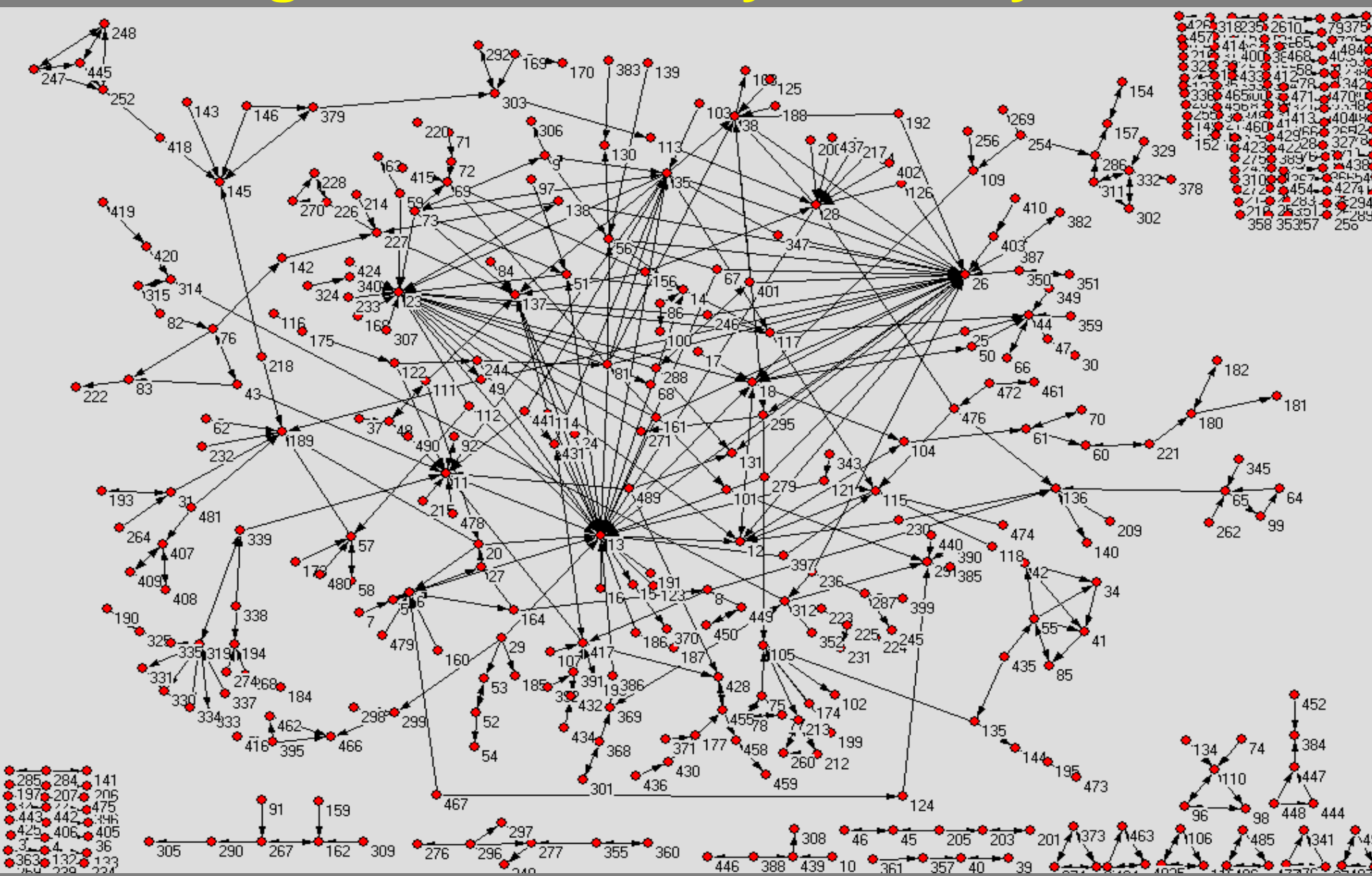


The probability is socially structured

What do real risk networks look like?

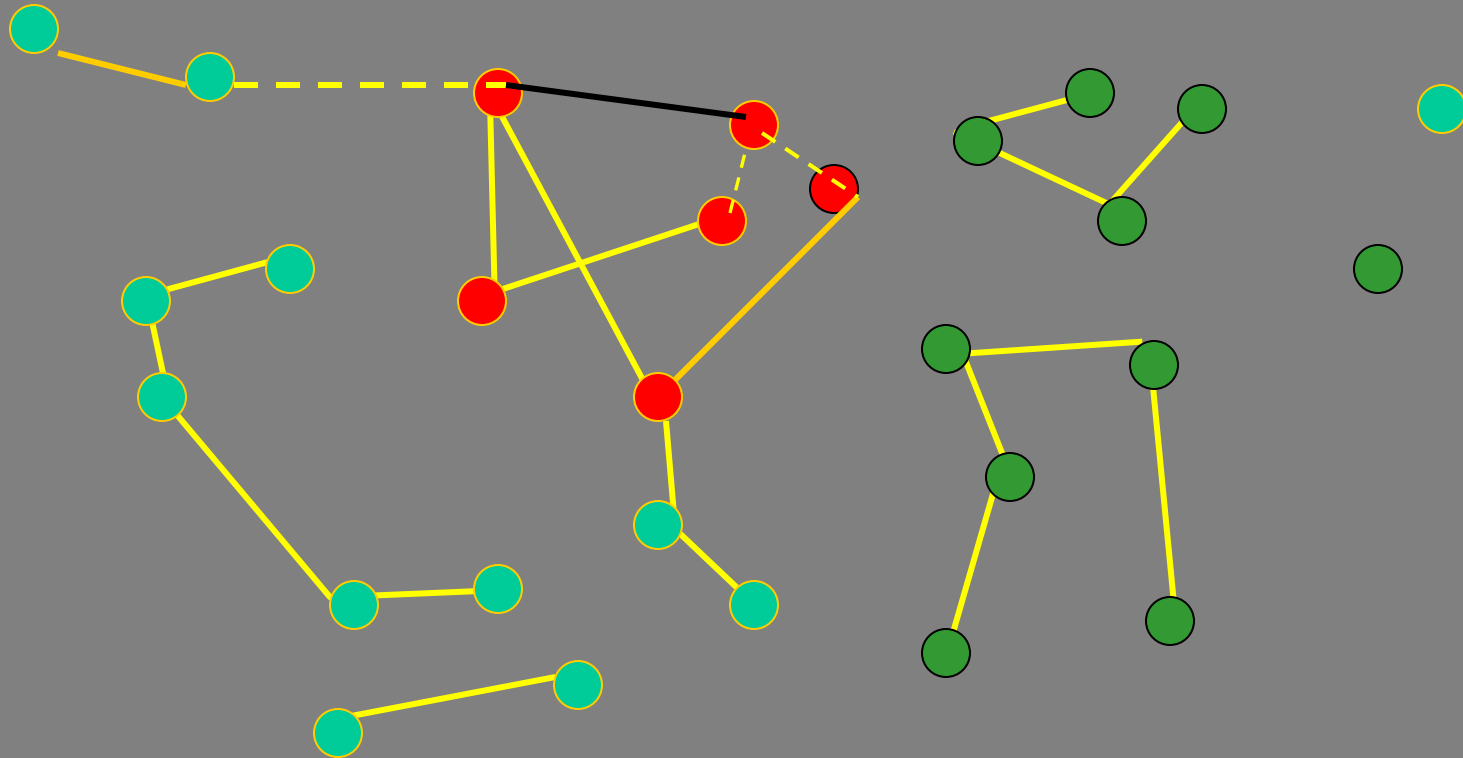
- I will show you one from a study of injection drug users in New York City; one from a study of sex workers in British Columbia (Canada), and then spend some time discussing a New York City mixed-group network.

SFHR slide of 30-day risk relationships among IDUs in Brooklyn in early 1990s



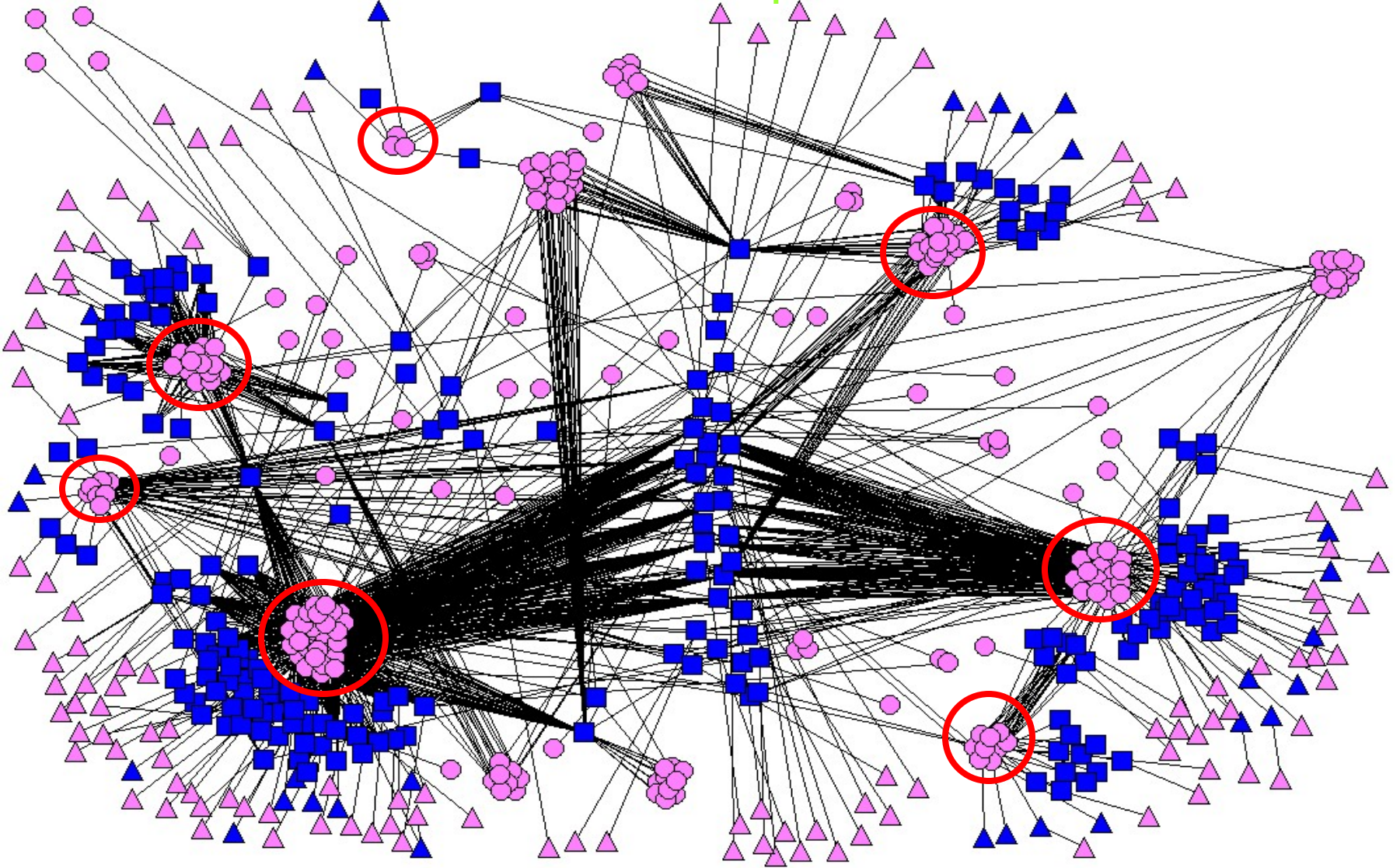
Microstructures of large components in SFHR:

more risk behavior, more HIV, but more health communication about condoms and bleach.



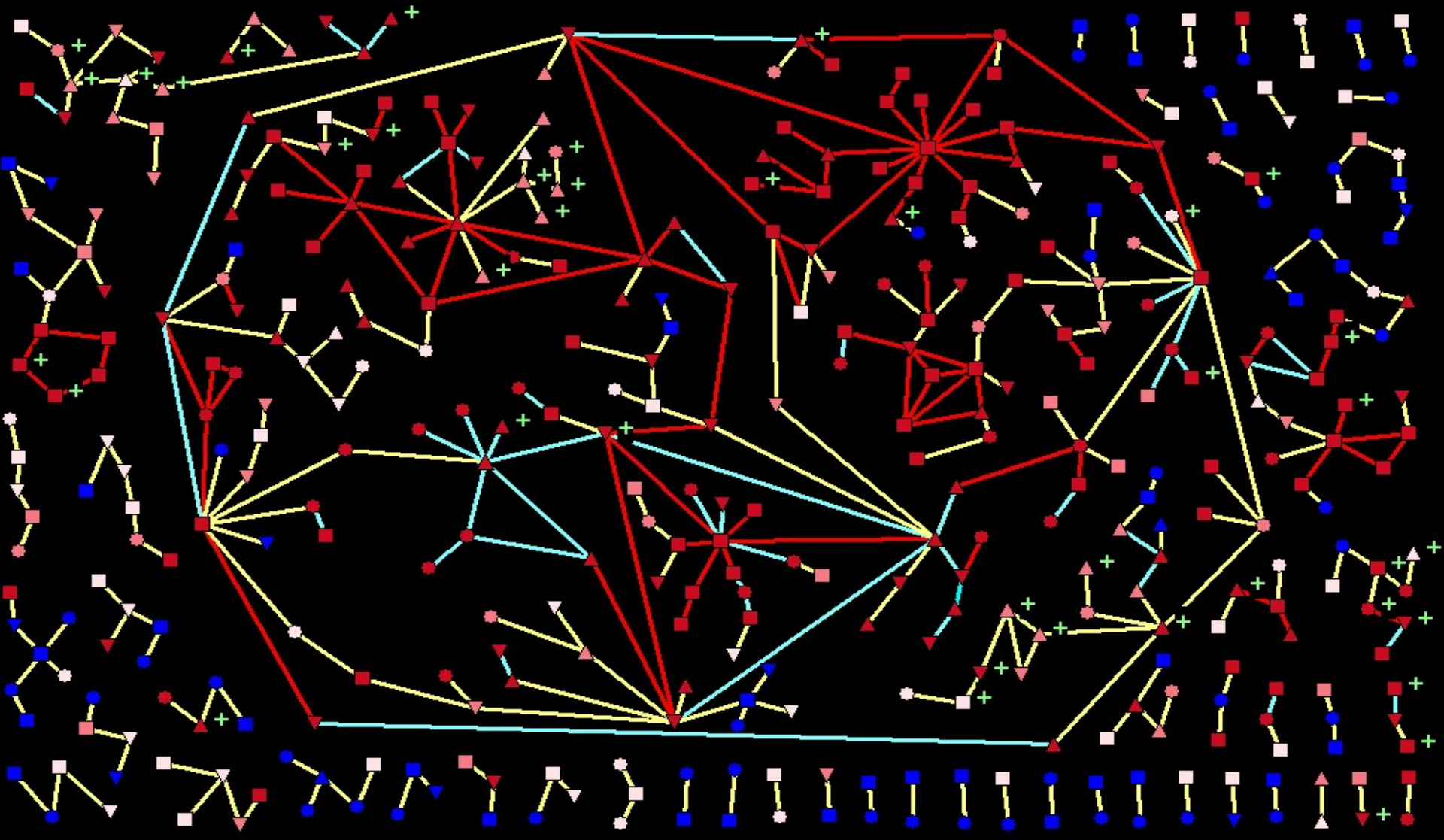


Canada: sex workers are pink circles, clusters of pink circles are brothels (massage parlours), blue squares are commercial clients, blue triangles are boyfriends or husbands, and pink triangles are wives/girlfriends. The 7 circles clusters represent massage parlours where recruitment took place, from 4 cities in the Vancouver area. Source: Valencia Remple.

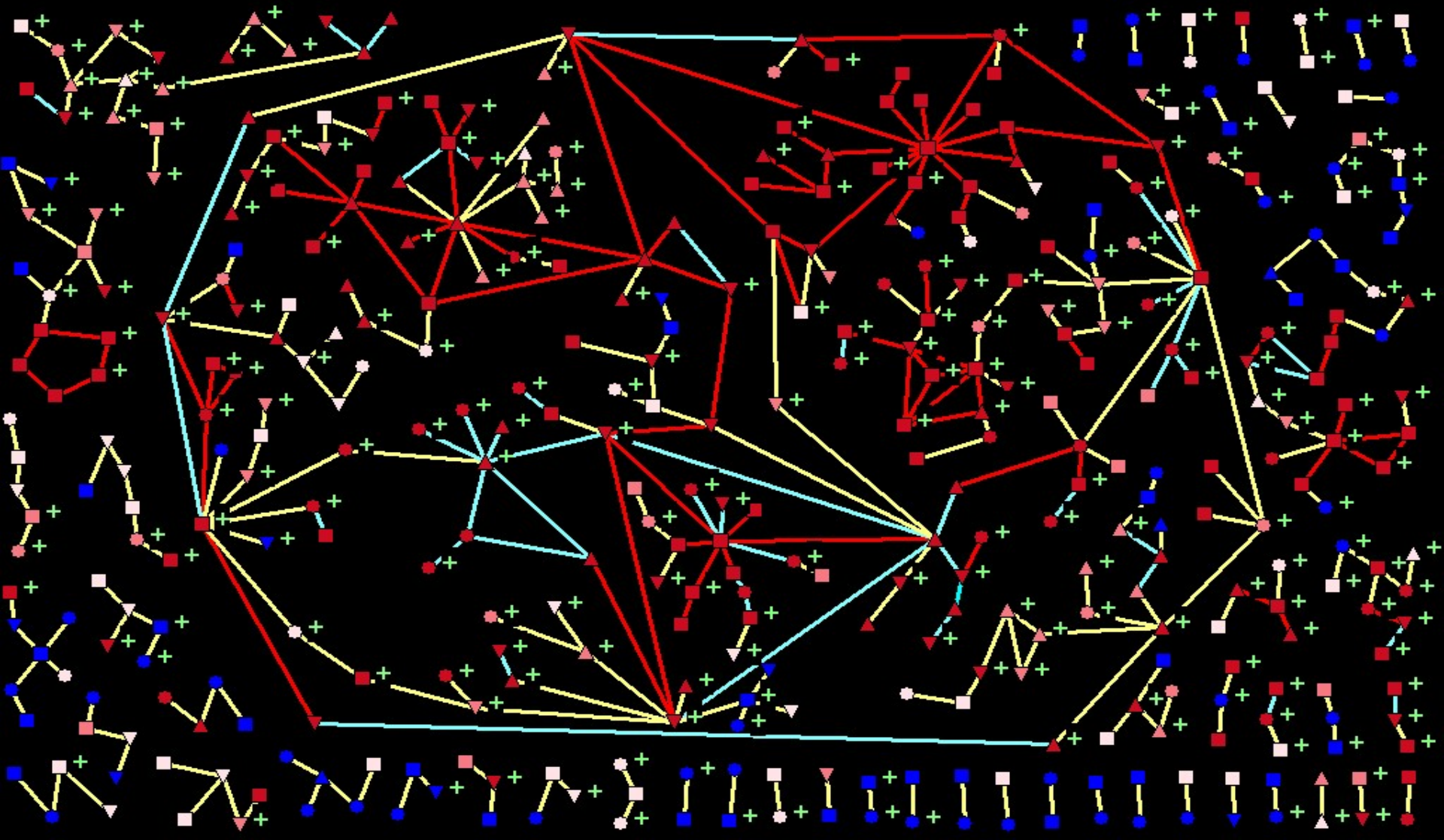


HIV Positive by Gender/Sexuality (MSM=up triangle, WSW=down triangle, other female=circle, other male=square) by Hardest Drug Use Ever (from dark red to light pink: IDU, Crack, Non-injected Heroin or Cocaine; blue=other) by Link Type (sex=yellow line, IDU=red, sex and IDU=blue) (New York)

3-month links



HSV2 Positive by Gender/Sexuality (MSM=up triangle, WSW=down triangle, other female=circle, other male=square) by Hardest Drug Use Ever (from dark red to light pink: IDU, Crack, NI Heroin or Cocaine; blue=other) by Link Type (sex=yellow line, IDU=red, sex and IDU=blue)



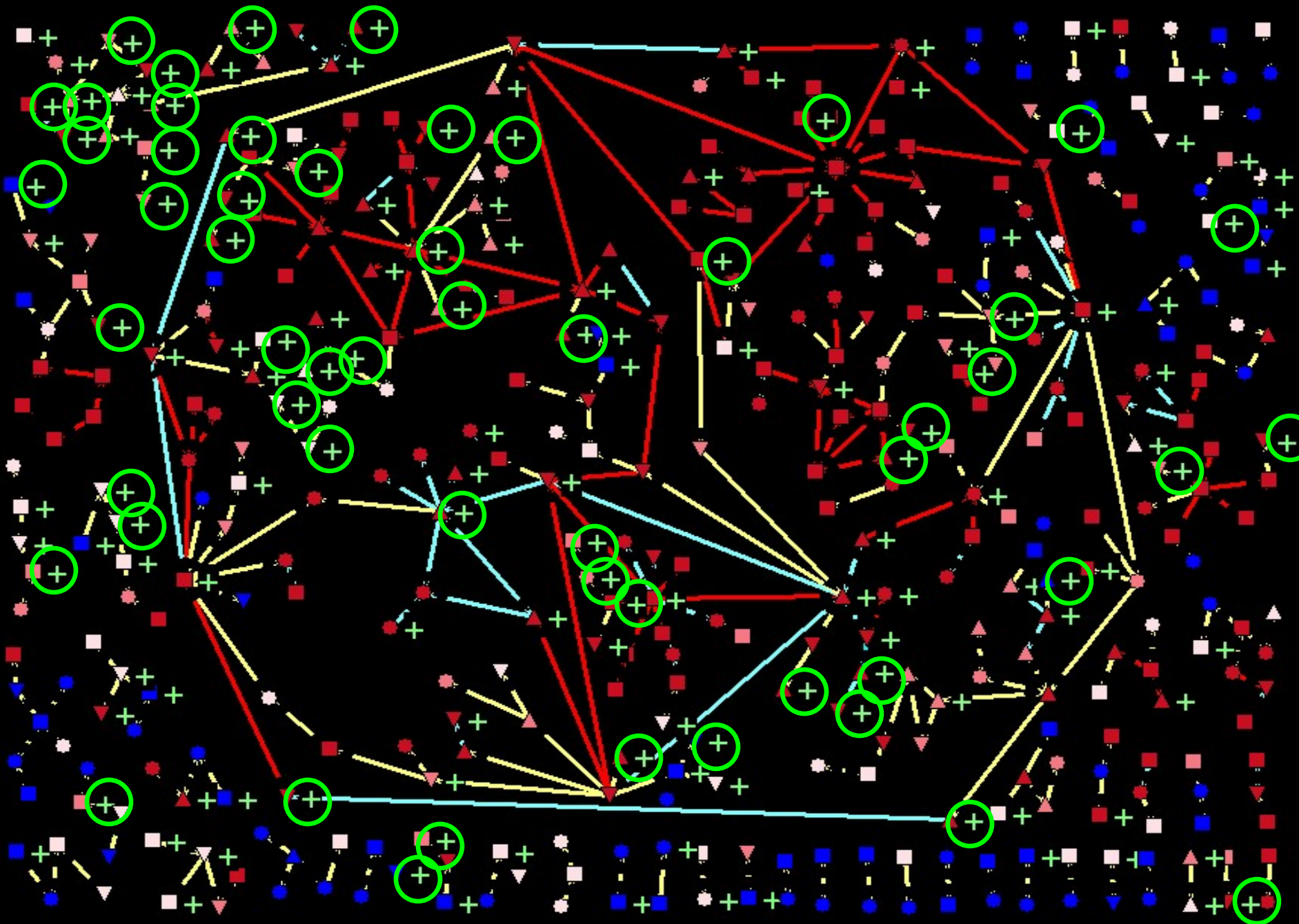
HIV discordant couples are where much HIV transmission takes place: Which STIs are likely to be important in facilitating HIV spread?

- Of 30 HIV-discordant partnerships in the diagram :
- 5 were same-sex male partnerships and 25 were opposite-sex partnerships.
- HSV-2 was present in 83% of the HIV-discordant couples; CT in 7%; and syphilis & gonorrhea in none.
- HSV-2 is probably more important for HIV transmission than bacterial STDs since it is more widespread in NYC—and some African studies.
- This may be because of effective syphilis and gonorrhea control in NYC at least.

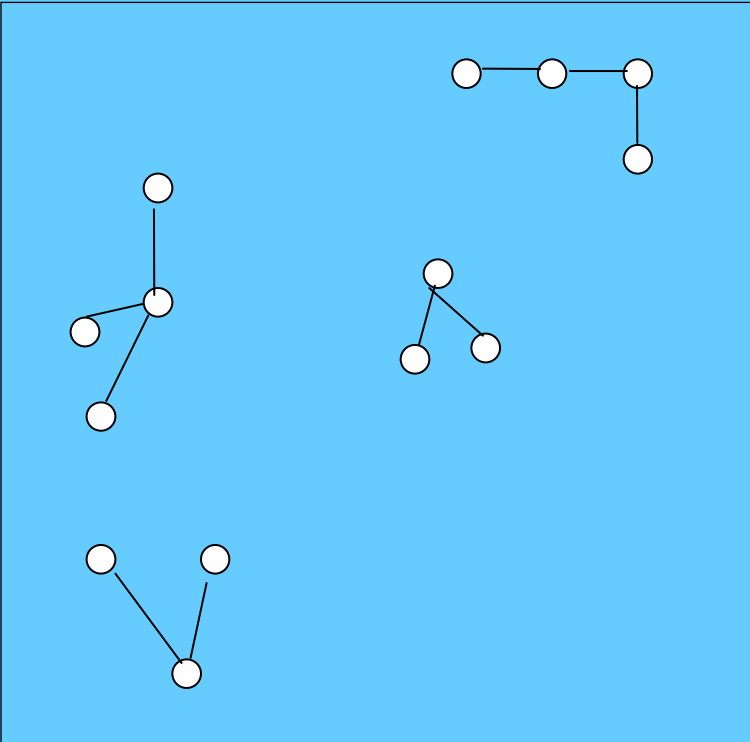
Hidden risk: Although very little research has been done on this, group sex activities are likely to increase risks

	Attended group sex event
Use no drugs or only marijuana	25%
Use non-injected cocaine or heroin	47%
IDU	35%
Female	28%
Male	42%
Non-injecting drug users in rural North Carolina	46%
Lower East Side (New York) youth aged less than 25	34%

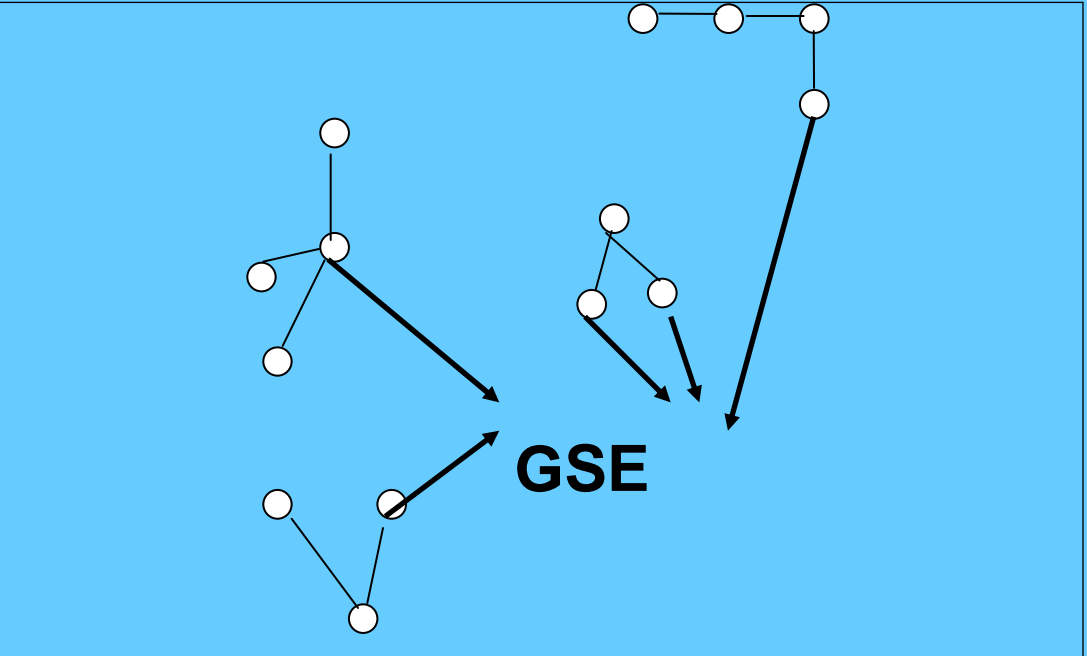
Attended Group Sex Party (Pluses) and Had Unsafe Sex at Group Sex Party (Circles) by Gender/Sexuality (MSM=up triangle, WSW=down triangle, other female=circle, other male=square) by Hardest Drug Use Ever (from dark red to light pink: IDU, Crack, NI Heroin or Cocaine; blue=other) by Link Type (sex=yellow line, IDU=red, sex and IDU=blue)



Two views of sexual networks, where lines represent partnerships between people (circles)

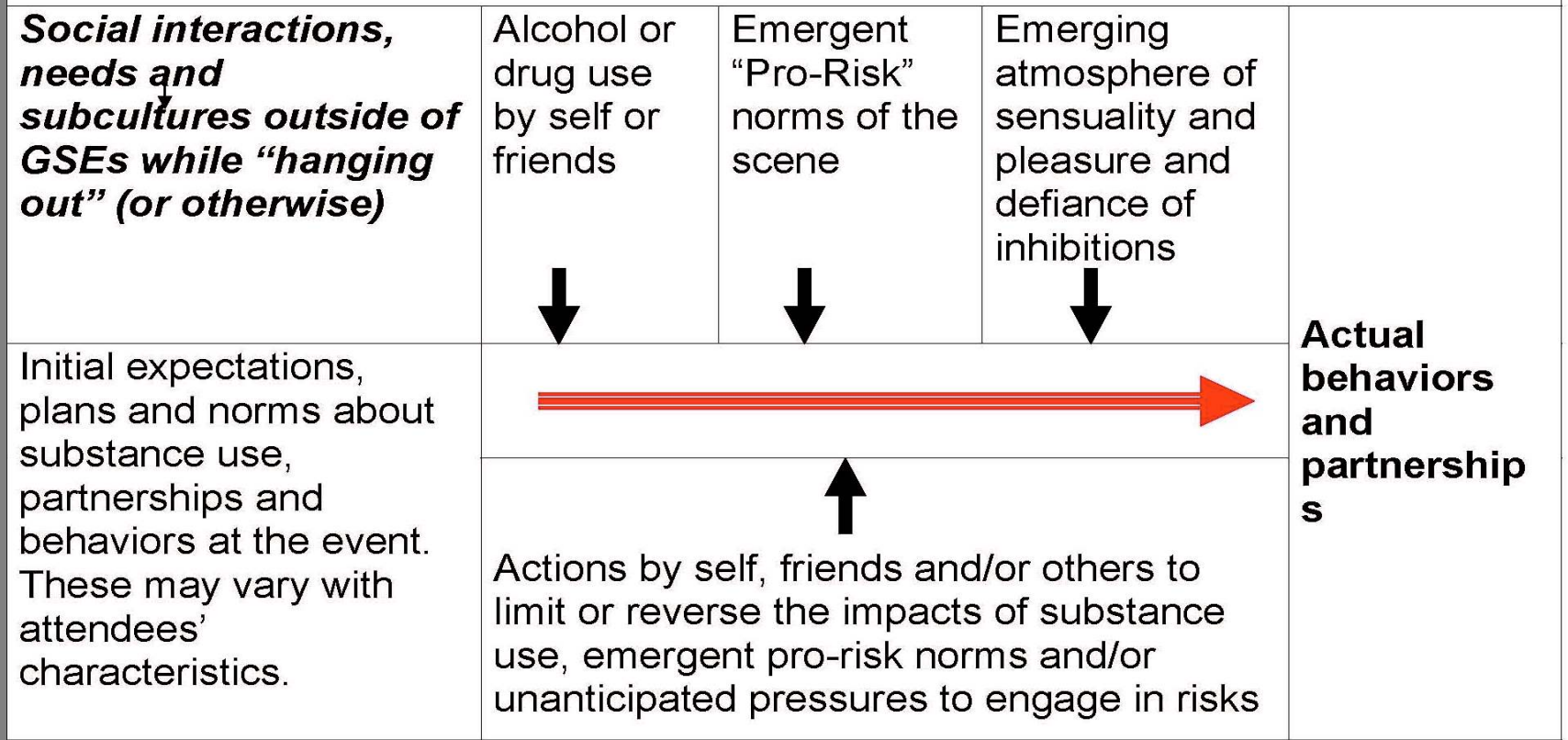


a. Several unconnected sexual networks



b. Several people attend a group sex event and some have sex with unknown strangers under the influence of drugs and the excitement of the event

Figure 2. Factors potentially affecting behaviors and partnerships at some GSEs. We anticipate that these processes may vary among GSEs of different types

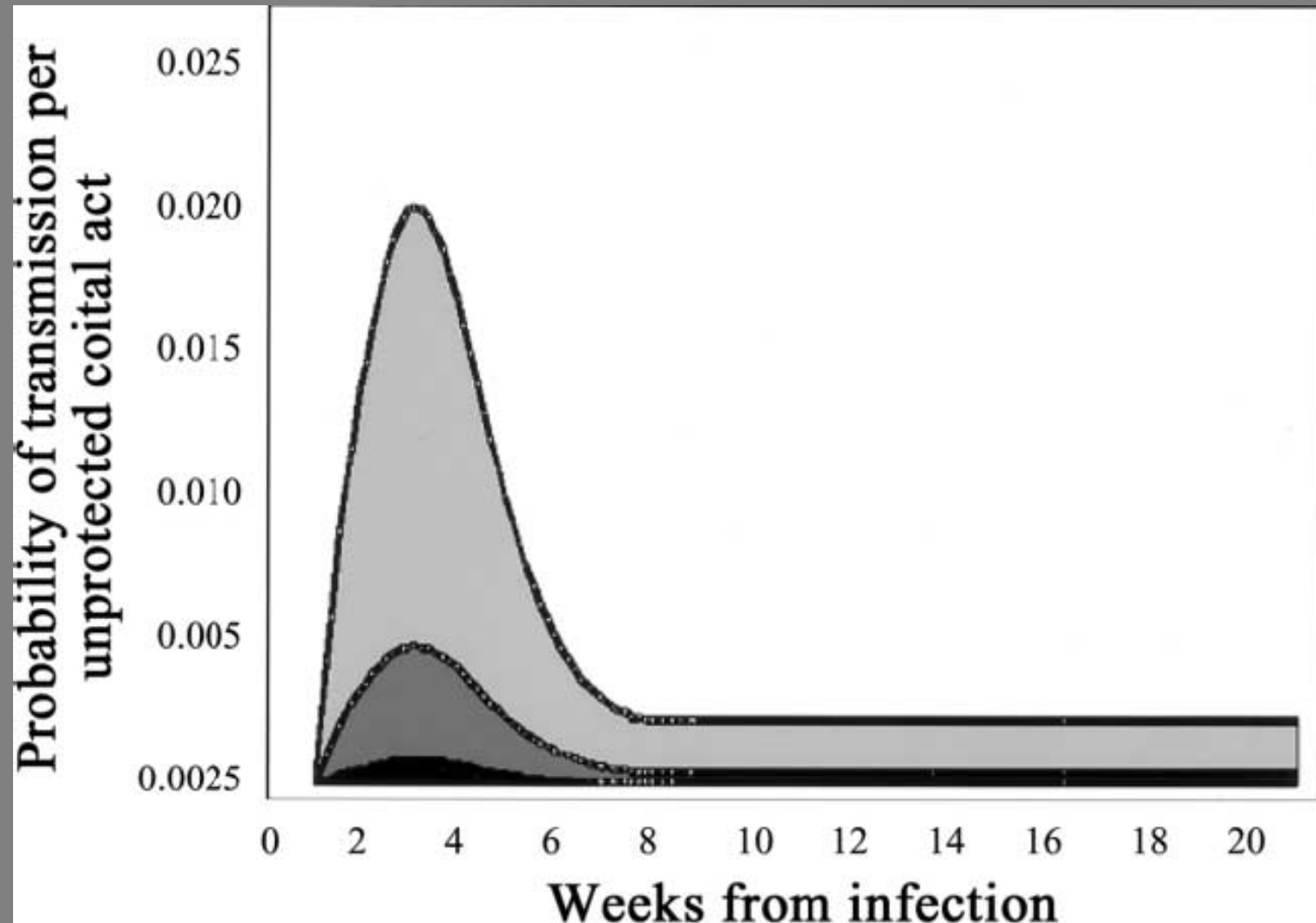




Role of AHI in Sustaining an Epidemic

- Hollingsworth et al suggest that the relative infectiousness of AHI may vary during the history of a local epidemic:
- Early in an epidemic: The number of infected individuals grows exponentially, most are in the early stages, most transmission is caused by individuals with AHI
- Epidemic progresses: Proportion of transmission due to AHI decreases, while proportion due to asymptomatic or AIDS increases
- Established epidemic: Transmissions due to AHI = 11%, Asymptomatic = 68%, AIDS = 21%

Calculated probabilities of transmission per coital act



Pilcher CD, Tien HC, Eron JJ, et al. Brief but efficient: acute HIV infection and the sexual transmission of HIV. *J Infect Dis* 2004; 189:1785–92.

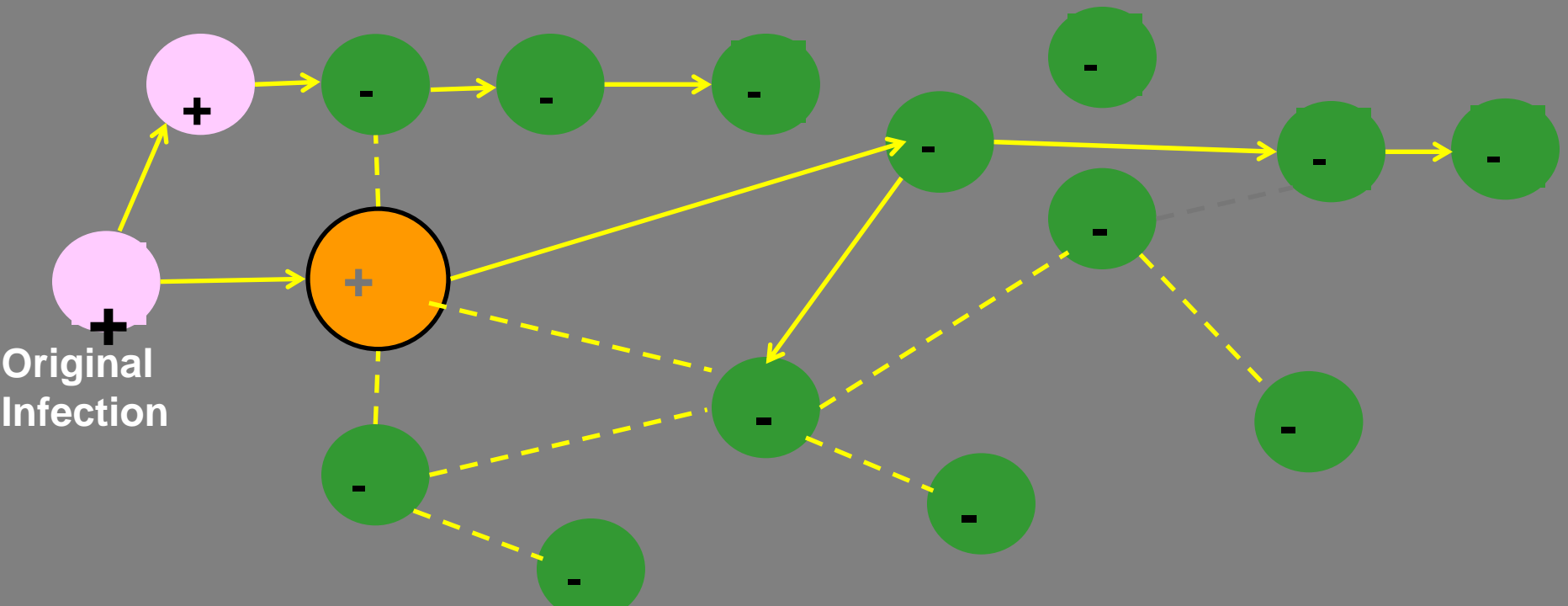
HIV infection chains

- The concepts below will be shown visually over the next few slides
- Infection chains show how transmission events move through injection or sexual networks over time, and provide cues for locating and recruiting people with highly-infectious acute HIV infection (AHI).
- Venues are locations where people take risks together (shooting galleries; group sex events; brothels) or meet new partners (bars, strolls)

Stages of HIV infection and CURRENT testing technologies

- At Risk for HIV Infection
 - Negative on all tests
- Acute HIV Infection (AHI)
 - VL positive, antibody negative; duration ~ 2 months
- Recent HIV Infection (RHI)
 - Non-acute infection detected within about 6 months of HIV acquisition; duration ~ 4 months
- Chronic HIV Infection
 - Duration ~ 10 years before AIDS

Infection Chains



Solid arrows are actual infection paths

Dotted lines are other IDU or sexual networks

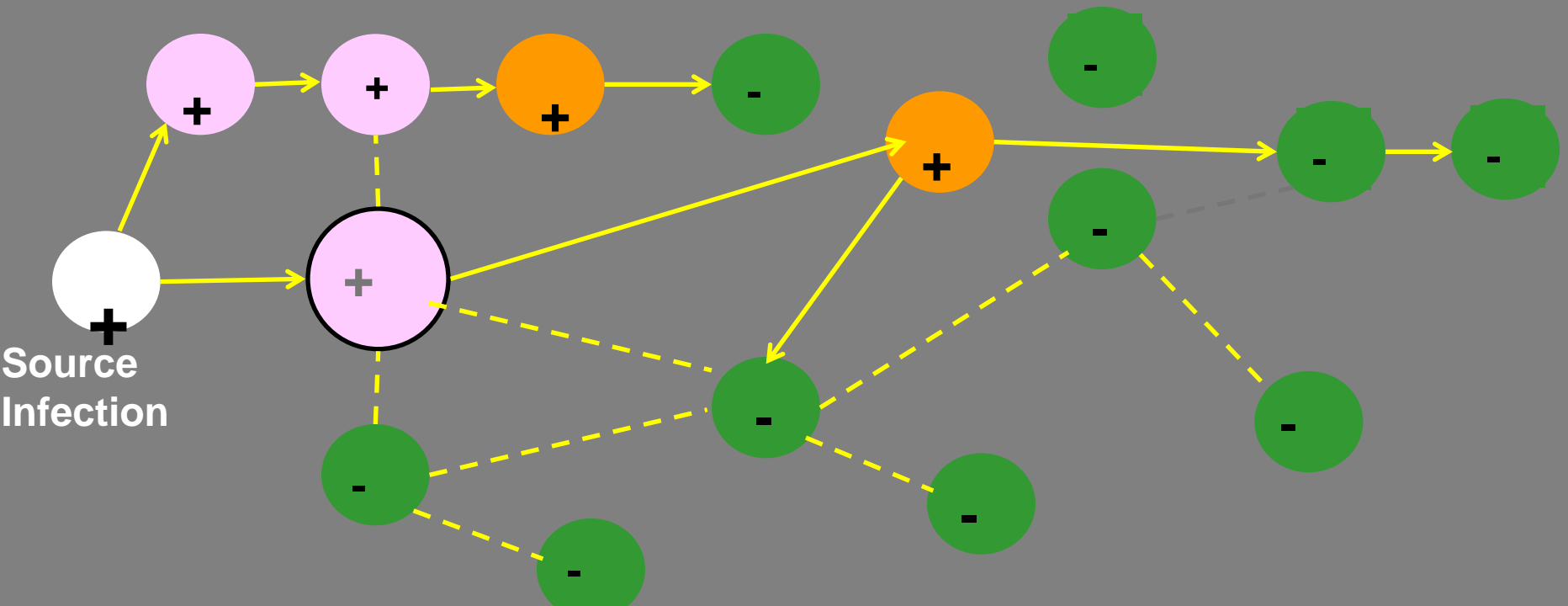
Chronic HIV Infection

Recent HIV Infection

Acute HIV Infection

At Risk for HIV Infection

Infection Chains



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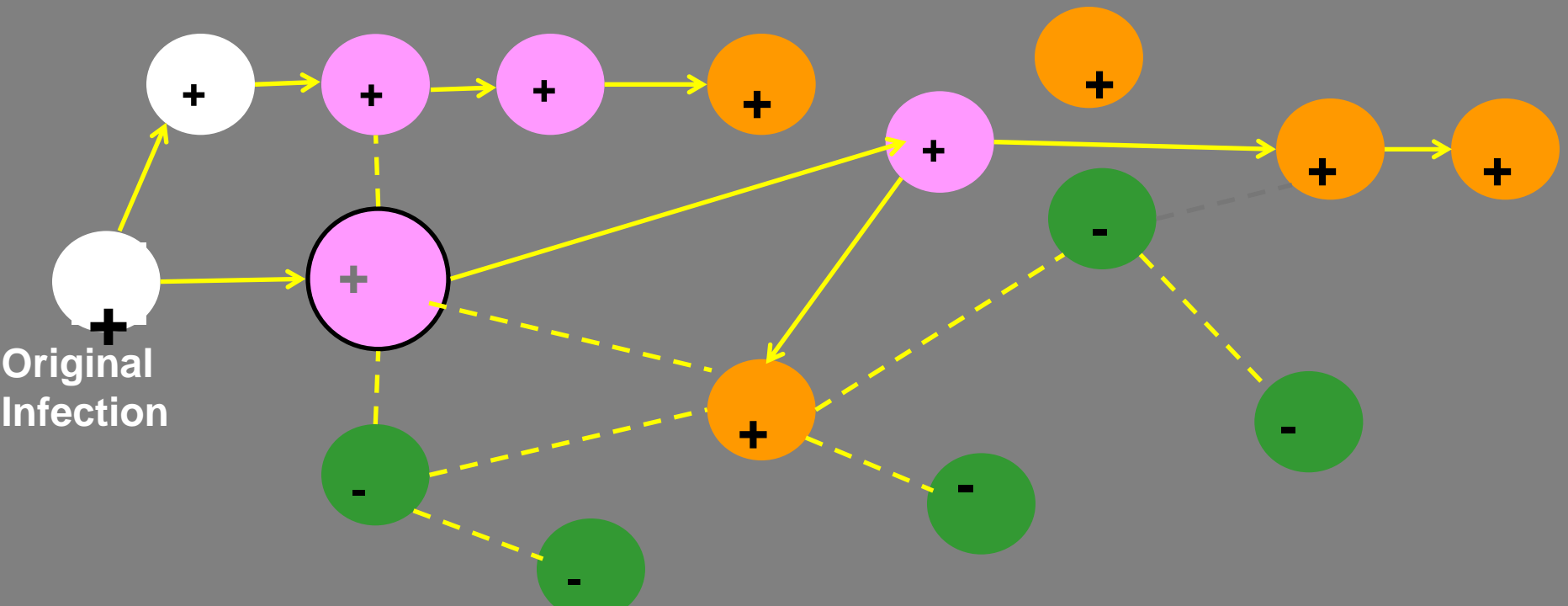
Chronic HIV Infection

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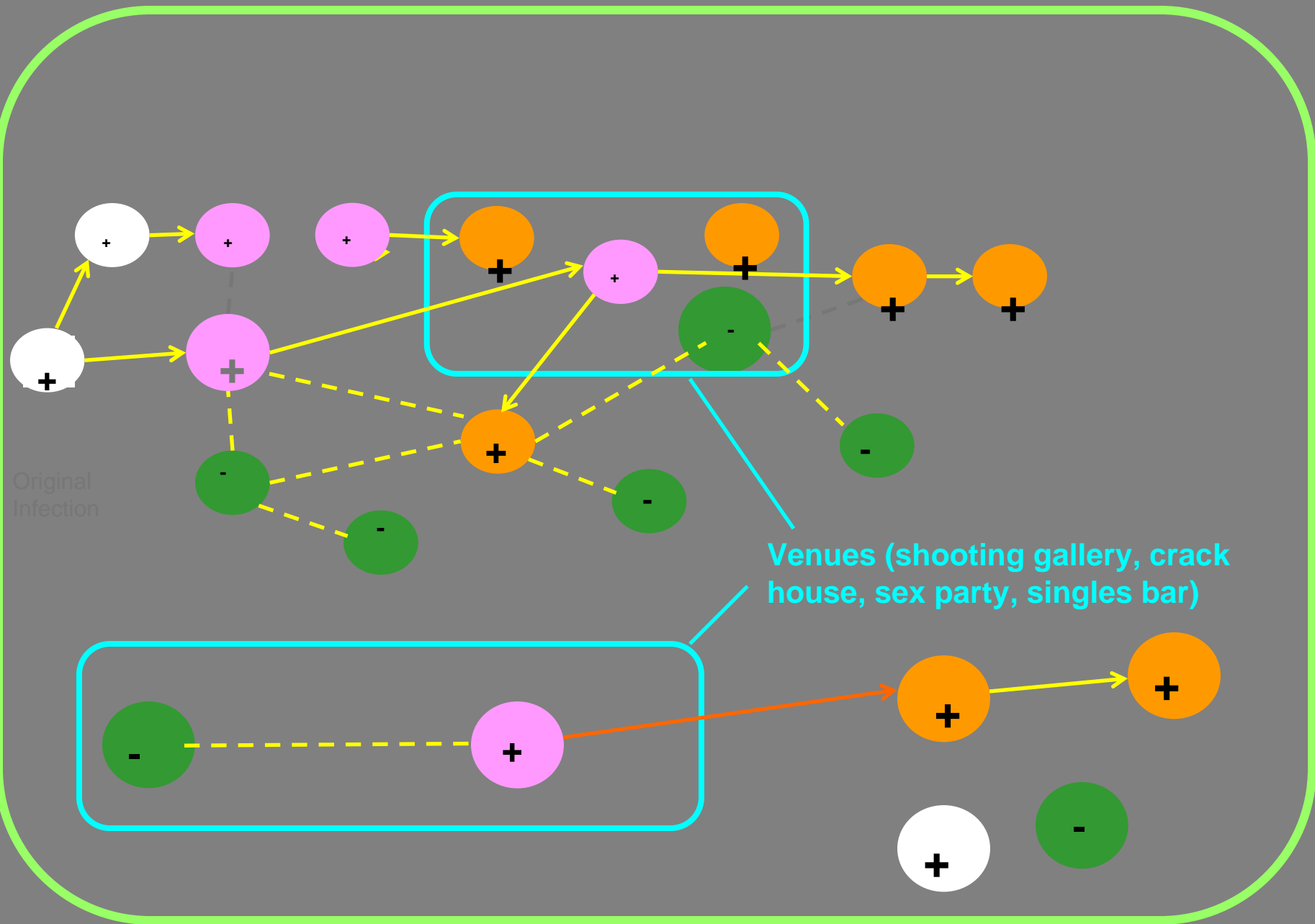
● Chronic HIV Infection

● Recent HIV Infection

● Acute HIV Infection

● At Risk for HIV Infection

Social network and venue tracing save time



Social research insight 2:

social influence networks

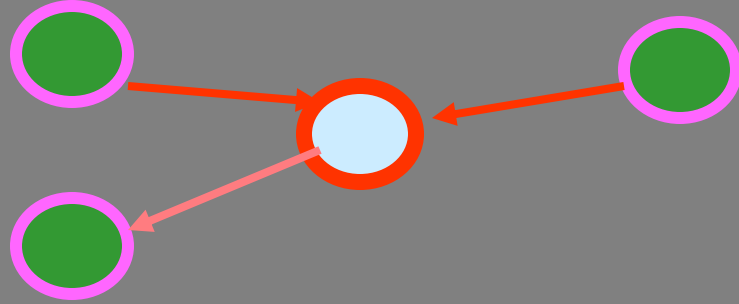
carry messages, norms, and other influence that can shape risk behaviors, the extent to which people seek medical treatment or counseling, and the extent to which people adhere to medications.

This involves the activity of SOCIAL network ties, which can carry influence:

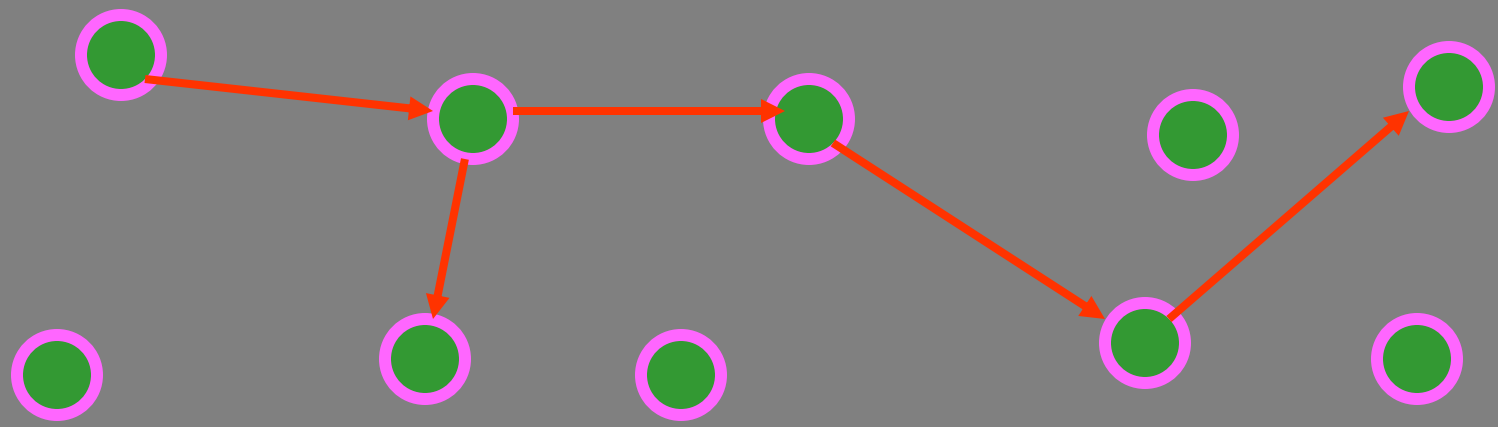
Within relationships



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Throughout a community or small group

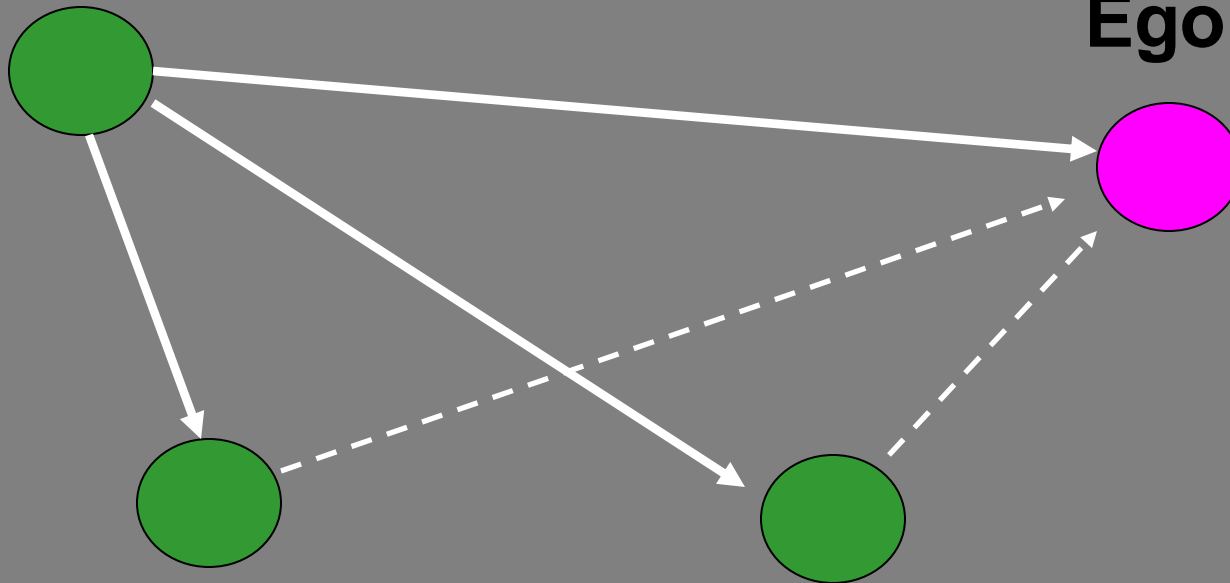


Drug users and others provide risk reduction and medical adherence education and persuasion to others

- We invented the word “intravention” to describe people in a community acting to help others to take actions that will protect them or improve their health.
- When they urge others to behave in safer ways, or to adhere to the rules on when to take their medicines, this is how norms are enacted and maintained.

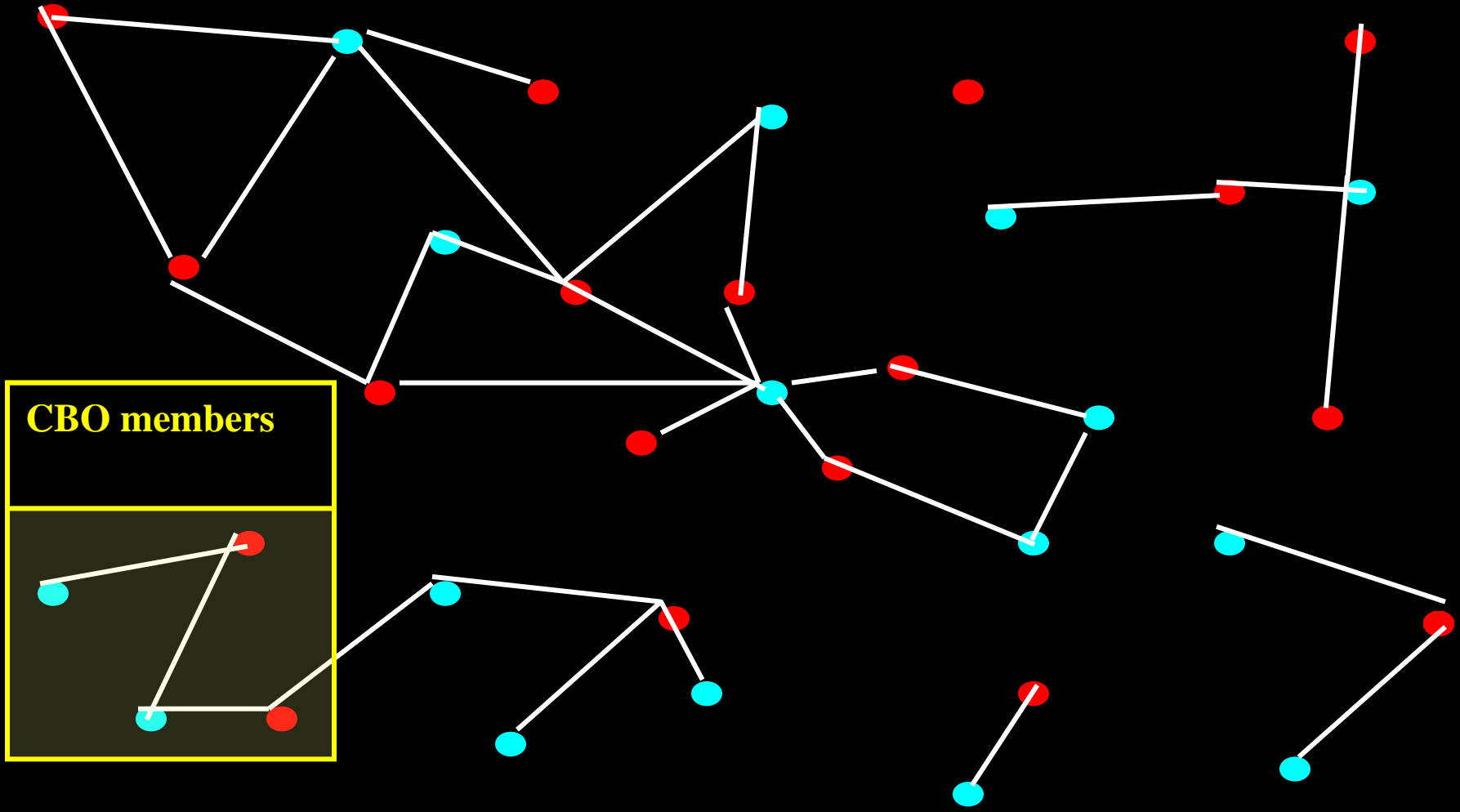
Alters' urging shapes Ego's external normative environment

Alter



Ego

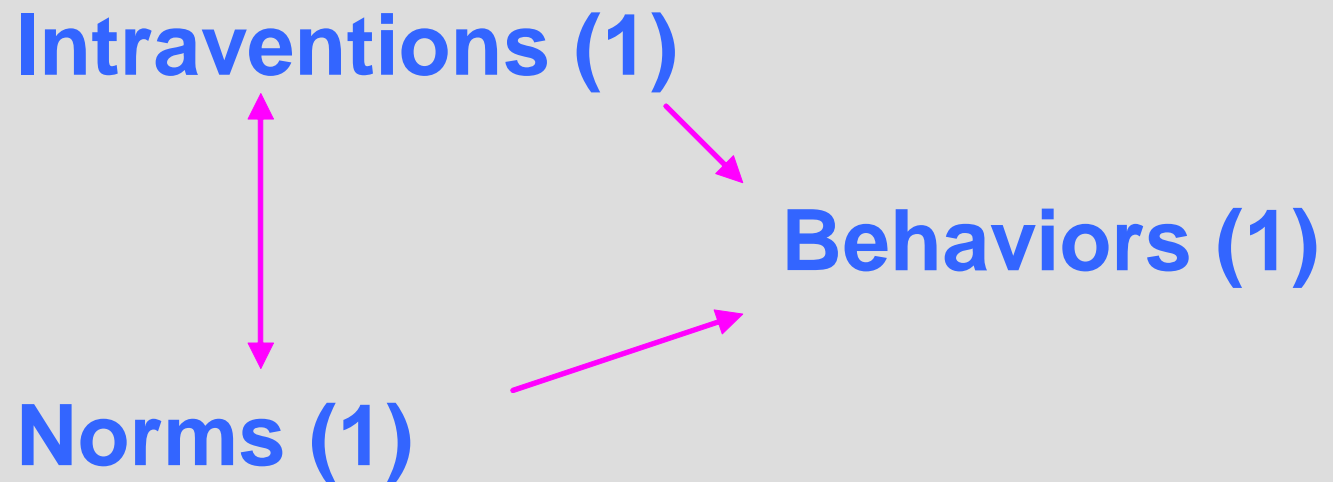
Community organization in relationship to networks: Even the most “rooted” CBO has the problem of trying to reach and influence non-members



Schematic diagram of intravention as a context for intervention efforts (1)

(NOTE: Behaviors here are INTERACTIVE behaviors)

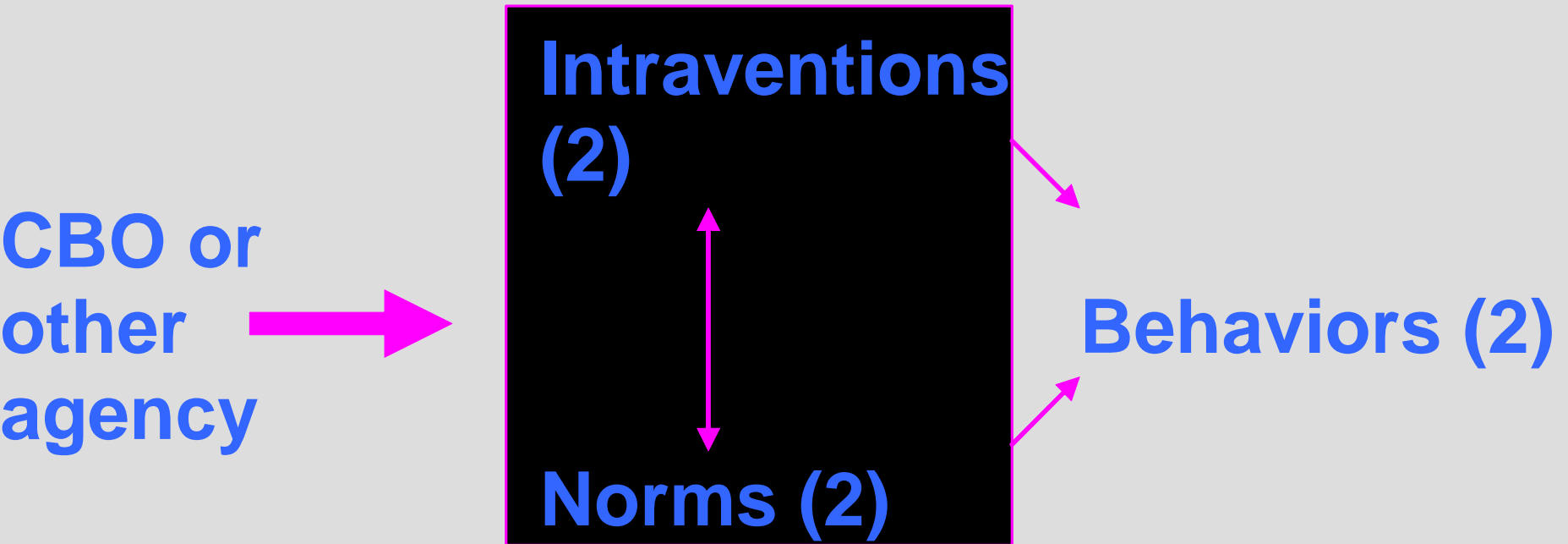
Time 1



Schematic diagram of intravention as a context for intervention efforts that can diffuse through networks (2)

(Note: Behaviors here are INTERACTIVE behaviors)

Time 2



**Those who are at risk,
whether sex workers,
drug users, men who
have sex with men, or
other people, are those
who REALLY do
HIV prevention**

They do this as individuals, small groups, and formal organizations

This has been shown, for example, in:

- Gay men in many cities
- New York IDUs knew of the new disease long before CDC—and began to reduce risk behaviors
- International Network of People Who Use Drugs
- Sex workers in Calcutta
- Youth groups in many parts of Africa

Summary

- **People are people, not just behaviors.**
- **Sexual and drug injection networks are key to HIV spread**
- **Social networks (including often sexual or drug relationships) are key to adherence and prevention.**
- **The people are the ones whose action spreads or stops epidemics. They are often ahead of public health agencies in this.**
- **Community, medical and counseling agencies must work with the people in this—or be of little help.**

Additional thoughts

- 1. Overlapping sexual (and injection, where relevant) networks of heterosexuals, MSM, and WSW; and the implications of this for transmission patterns.**
- 2. Venues like massage parlours in Vancouver, shooting galleries in SFHR and group sex parties in NNAHRAY are important.**
- 3. Infection chain logic is important: It provides the basis, together with what we know about high rates of HIV infection during the first weeks of infection, network recruitment and social intervention models, to develop new HIV prevention approaches**